

AN ALTERNATIVE APPROACH TO URBAN NATURE IN
ENVIRONMENTAL EDUCATION AT KS2

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ABSTRACT

A dominant feature of environmental education in British schools has been the centrality of the concepts of 'nature' and 'conservation'. Since the late 1970s, two influences have shifted educational attitudes away from purely considering rural nature and conservation, towards a more balanced approach which includes urban nature and conservation.

The first influence was of the development of 'urban studies'. The second was the growth of 'Urban Wildlife Groups' (UWGs). UWGs have influenced teacher approaches to urban nature at KS2 - not by using new ideas adapted to the unique circumstances of urban ecosystems, as the founders of the UWG movement had intended, but by using rurally-based ideas from their own progenitors: the County Wildlife Trusts.

It is the contention of this thesis that curriculum planners and teachers at KS2 have been influenced by UWGs, who have selected and promoted concepts from a set of ecological values, theories and practices. The distinction between 'native' and 'alien' plant species on the basis of utility to wildlife is a key concept which permeates UWG theory and practice, and has influenced teachers.

The 'alternative' approach provides both the contextual and theoretical underpinnings for the study of urban nature at KS2, through the *entity* of the Multicultural City Ecosystem and the *process* of multicultural ecology. It provides a framework for thought and practical reflection amongst education officers in UWGs, curriculum planners and teachers. It accepts dynamism in ecology, especially in cities. It accepts change over different scales of time and space in linking introduced species from overseas to prehistoric and historic cultural, social, economic and other human processes and agencies in cities. In so doing, it provides curriculum planners and teachers with an approach to urban nature at KS2 which is based upon an analysis of real events, historical (and prehistoric), contemporary and future. In essence, it focusses on what is there and why it is there, not on what urban ecologists say should be there. The KS2 text 'People, Plants and Places' (Agyeman (1995)) is an outcome of this approach.

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INTRODUCTION

AN ALTERNATIVE APPROACH TO THE STUDY OF URBAN NATURE IN ENVIRONMENTAL EDUCATION AT KEY STAGE 2

Introduction

In order to provide a wider context for this thesis, it is essential to understand the pivotal role of the concepts of 'nature' and 'conservation' within environmental education (see Dorion and Gayford (1990/91)). It is argued that, whilst their role was stronger in the past, it is still prevalent today, despite a generally broader perception of what environmental education is. In addition, it is argued that certain ecological concepts and theories, such as the division between 'native' and 'alien' plants, are being accepted by teachers, who may be unaware of the ideological baggage which they carry, and are themselves contested, especially in the context of urban wildlife. Urban wildlife exists in a very different, human-made system to those rural systems which were, and still are, the focus of the training of most ecologists.

This Introduction maps out some of the key themes which will be revisited in later chapters.

1 Environmental education, nature, and conservation

A dominant feature of environmental education in schools, both historically (Watts (1969), Ward and Fyson (1973), Goodson (1987), Carson (1978), Mercer (1978), Goodey (1978)) and presently (UNESCO-UNEP (1990), Dorion and Gayford (1990/91), Agymen (1991a)) has been the centrality of the rurally-linked concepts of 'nature' and 'conservation' to both its theory and practice. Storm (1995:vi) notes that "environmental education has for a long time been sadly asymmetrical. Its none-too-hidden curriculum message has been that real environments are exclusively rural: environment equals countryside".

This 'asymetry' is not surprising given the history of the countryside and nature conservation movement(s) in Britain (see Lowe (1983)), and their

major influence, not only on the wider environmental movement (Green (1985), Lowe and Goyder (1983)) but also on environmental education itself (Watts (1969), Carson (1978), Mercer (1978), Goodey (1978)). Carson (1978:vi) notes that "the earliest environmentalists in schools were those teachers interested in natural history and rural education" and that "the basic pattern of thinking in environmental education is ecological" (Carson 1978:81). Similarly, Watts (1969:47) argues that "the naturalist element remains a mainspring of the environmental studies movement". Initially, and certainly until the advent of the UWGs in the late 1970s, which aimed to both educate people about nature in the city and demonstrate that nature needed to be encouraged and conserved, 'nature' was interpreted by the majority of conservationists (and teachers) as being synonymous with 'rural nature' (was there nature anywhere but the countryside?).

The promotion of rural nature by statutory and voluntary agencies was part of a post-war strategy which attempted to provide accessible space for urban dwellers through the 1949 National Parks and Access to the Countryside Act and subsequent Acts (the 1968 Countryside Act and the 1973 Nature Conservancy Council Act). School 'field studies' in the countryside, promoted by bodies such as the Field Studies Council (formed in 1943 as the Council for the Promotion of Field Studies), were the educational manifestation of such a strategy. Storm (1995:vi) builds on his point about the 'asymmetry' of environmental education by arguing that "even the terms fieldwork, field studies, field centres convey a predominantly pastoral message to lay ears." However, Mercer (1978:3) takes a traditional view when he notes that "it is the enormous intricacy of the living countryside which keeps us in proper perspective. Understanding of that intricacy from clay particle to mountain, and amoeba to man, is thus essential not only for proper contemporary management of the resource, but for the long term progress of man. Thus, it seems to me, it must remain a cornerstone of environmental education".

Linking rural nature in Britain, to people in a predominantly urban society, was a strategy in the dominant ideology which valued rurality above urbanism, and still does (see Williams (1975)). Storm (1995:vi) notes that "although most of us live and work in urban and suburban environments, the message to our pupils is often that interesting places are to be found beyond the towns". Goodey (1978:23) sees this as "the dichotomy

between urban and rural, stereotyped as grey and bad, versus green and good". The dominant, pro-countryside ideology also viewed urban people as different. Mercer (1978:4) reflects this when he argues "that urban man is an alien, may indeed be partly true".

This pro-countryside ideology has been in place since at least the last century. Lowe (1983:349), reflecting the North American nineteenth century transcendentalist thinking from writers such as Muir, Emerson and Thoreau notes that "from the turn of the century period comes an aesthetic and spiritual identity with the wild, strong anti-urban and anti-industrial sentiments, and a sense of stewardship, associated on the one hand with an appreciation of the web of life and its fragile balance, and on the other hand with a patriotic attachment to the indigenous flora and fauna". The notion of links between patriotism and indigenous nature, including examples of xenophobia in the media, is fully investigated in Chapter 3 (Urban ecology and environmental education).

In educational terms, it was argued that the need was to 'educate' urban children about the countryside. Mercer (1978:16) continues that "as more and more rural schools become community colleges, those near large urban centres ought to begin offering courses to their urban neighbours - courses in rural life, agricultural history, and of course wildlife in all its forms. The course has to be attractive-through its title. Get them there to learn about birds and butterflies, if that's what the latest TV inspiration has been, and then use the opportunity to do the proper environmental educational job".

This presumption in favour of rurality, and of using the rural environment "to do the proper environmental education job" (Mercer (1978:16)), was further cemented by many of the policies and activities of what are now Government agencies - English Nature and the Countryside Commission, and, to a lesser extent, the Forestry Commission, and voluntary organisations such as the Field Studies Council, the National Association for Environmental Education (formerly the National Rural Studies Association) and National Association of Field Studies Officers.

2 Towards a balance

Since the late 1970s however, two influences in particular (there were others) have sought to balance the rurally-favoured 'asymmetry' in environmental education, mentioned by Storm (1995), towards a more equal emphasis on 'urban nature'.

The first of these was of the development of 'urban studies' as defined by Ward and Fyson (1973) and Storm (1971), which emphasised 'the local' and developed post-Skeffington ideas on urban community participation in environmental decision making. Goodey (1978:23) notes that "while there might seem to be a certain imperative for urban studies to develop as an essential element for education in an overwhelmingly urbanised society such as Britain, recoil from the obvious has meant that an accepted corpus of knowledge is less developed than in rural studies". Urban studies was ideologically driven, borrowing from Goodman, Kropotkin, Geddes, Friere, Morris, Ruskin, Bruner and others. Its political intent was to prepare children for an adulthood of active participation in local issues. Proponents of urban studies began to question the wisdom of 'bussing' pupils out to the countryside for their environmental education (ie someone else's environment), when understanding their own was of more immediate relevance and they were more familiar with, interested and experienced in it.

The second particular influence was the growth from scratch, in 1980 of a countrywide network of UWGs numbering some 60 groups in 1995. They were launched with vigour as being new, with innovative ideas and a brief to both involve and educate a wide cross section of local people in practical conservation projects, unlike the typically elite membership and activists of their rural counterparts (Gaines and Micklewright (1988), Lowe and Goyder (1983), Cowell and Jehlicka (1995)), and to develop educational projects with schools (Millward (1990)). Have they done this? Yes, to an extent, and this is to be welcomed educationally, as an effective counterbalance to Storm's (1995) 'asymmetry' created by rurally-dominated courses (see Mercer (1978)). But in making their play for teacher's hearts and minds by showing the environmental educational potential of the urban environment, what they have also done is to fundamentally influence both teacher approaches to urban nature at KS2, and the content of urban nature work. They have done this, not by using new, process-based ecological concepts and ideas adapted to the different environmental

conditions in urban ecosystems (see Chapter 3 Urban ecology and environmental education), but by using recycled 'traditional' concepts and ideas (see Nicholson (1987/88)) from their own rural progenitors: the County Wildlife Trusts.

In particular, UWGs amongst others have promoted certain concepts, approaches, ideas and practices which now inform, and are commonplace in environmental education within the KS2 curriculum, and elsewhere. These concepts, approaches, ideas and practices have been promoted both directly to schools in the form of information and activity packs, pre- and in-service courses, advice and consultancy, and indirectly, through TV programmes, open days, leaflets etc. These concepts, approaches, ideas and practices, it is argued, serve the interests and agendas of the UWGs themselves. It is also argued that KS2 teachers, the overwhelming majority of whom are not ecological experts, are teaching in accordance with these ideas with little awareness of the possibilities of a broader, or alternative approach to urban nature. This is not to criticise either the UWGs or teachers. The former are, first and foremost, campaigning charities whose role is to conserve urban habitats; the latter are not generally experts in ecology.

3 Ecological theory and environmental education

Should the dominance of certain concepts, approaches, ideas and practices within nature, conservation and urban ecology, which are at best contested, and result in what the leading urban ecologist Barker (1994:14) has called "an unhelpful nature conservation mythology", be allowed to inform curriculum approaches and content, without, until now, a serious educational debate?

The urban ecologists in UWGs are just 'doing their job', and so are the curriculum planners and teachers. Yet should the unhindered transmission of concepts, approaches, ideas and practices from urban ecologists to teachers ie from expert to novice, be allowed to continue unchecked given the contested and ideologically driven nature of some of them? In his discussion of cultural analysis, and the selection of facets of culture which should be transmitted to the next generation through the curriculum, Lawton (1987:17) argues that "those responsible for making

the selection have a duty to demonstrate that it is neither arbitrary nor idiosyncratic; it should be open to rational enquiry and justification."

It is the contention of this thesis that, in doing their jobs, curriculum planners and teachers are, in the absence of any realistic alternative, being both arbitrary and idiosyncratic. They are merely 'going with the flow' in what they have selected from a set of ecological values deeply rooted in British culture (see Lowe (1983:349)) which are patently xenophobic (see Schoon (1992)), at best pseudoscientific (Egler (1961), Williams (1992)), have ideological and patriotic links (Trepl (1990)) and have recently been challenged (Gilbert (1994), Morton-Boyd (1992), Barker (1994), Agyeman (1991a)). Whilst it is appreciated that there is a 'lag effect' between the reassessment of a particular issue (in this case, concepts in ecology), and its appearance in the curriculum, it is clear that curriculum planners and teachers have selected the basis of their work in urban nature at KS2, not on a rational basis, as Lawton (1987) suggests, but on an arbitrary and idiosyncratic basis.

Particularly important in these ideas is the distinction between 'native' and 'alien' plant species which is usually assessed on the basis of a given species' residence time in Britain, and whether the species came to Britain with (alien), or without (native), human intervention (see Chapter 3 Urban ecology and environmental education). On the basis of residence time and mode of travel to the British Isles, a given species is so assigned and given a greater or lesser value according to its perceived utility to wildlife. Unsurprisingly, native has been promoted and interpreted by ecologists, following the work of Southwood (1961), as being synonymous with 'good' (for wildlife) and alien as 'bad' (for wildlife). This simplistic divide of native-good and alien-bad, parallels Goodey's (1978:23) wider point about the urban-rural divide: "the dichotomy between urban and rural, stereotyped as grey and bad, versus green and good". Not only is the assignation of wildlife value on the basis of whether a plant is a native or an alien a great generalisation, it is a contested concept which is simply not true in all cases (Gilbert (1994), Morton-Boyd (1992) and Hare (1988)). This is *especially* so in urban areas, the subject of this thesis, given their very different environmental parameters when compared to rural areas (see Chapter 3 Urban ecology and environmental education).

Yet the focus of the research in this thesis shows that, in the management of their reserves, and in advice to the public, 53% of UWGs have a policy on alien plant species, and 46% of UWGs communicate these policy ideas to teachers. In addition, 60% of teachers at KS2 have read, or been advised of the 'fact' that native plants are more attractive to wildlife than alien plants, and 42% of teachers at KS2 are utilising the distinction between native and alien plants in their ecological/nature studies.

Indeed, this thesis argues, that firstly, the distinction between 'native' and 'alien' plants is not only a contested concept which is used in the classroom by many teachers, but that, secondly, it is also informing the selection of species for the increasingly popular school nature gardens, promoted by such organisations as Learning Through Landscapes and English Nature, which are the focus of much nature related work at KS2 (see Chapter 4 Research methodology, methods and results (Phase I)). The third effect of teacher usage of the 'native-alien' concept is that adherence to may affect a teacher's likelihood of using certain locations in urban areas for nature study. The argument here is that if teachers are being put off 'the alien', then they will be unlikely to seek out teaching opportunities in areas where aliens are dominant such as wasteland, railway embankments, canals etc (Agyeman (1994c)).

In addition to the three key theory and practice points above, the ideological (Trepl (1990)) and pejorative nature of such terms has been questioned by Agyeman (1991a) in terms of the messages it gives to pupils in multiracial schools; by Agyeman and Kinsman (forthcoming) in terms of the anthropomorphism of ecology and more generally by Niemann (1992), Yarrow (1994) and Barker (1994).

Continued adherence to the rural-native and urban-alien distinction by UWGs, curriculum planners and teachers, despite the recent growth of more enlightened attitudes amongst the UWGs and some teachers, not only ignores the work of a growing number of influential urban ecologists such as Gilbert ((1989) and (1994)) and Barker ((1991), (1992) and (1994)), but misses out on potentially exciting and innovative curriculum approaches.

4 The alternative approach

The 'alternative' approach to urban nature at KS2 put forward in this thesis does not *totally* negate the 'dominant' or 'traditional' approach to urban ecology and urban nature, rather, it is intended to provide a more coherent framework for thought and practical reflection amongst education officers in UWGs, curriculum planners and teachers. However, rather than differentiating between 'natives' and 'aliens' purely on a wildlife ie good-or-bad basis, it accepts dynamism in ecology, especially in cities. It accepts change over different scales of time and space in linking introduced species from overseas to prehistoric and historic cultural, social, economic and other human processes and agencies in cities (Agyeman (1991a), (1994c), (1995)). In so doing, it provides curriculum planners and teachers with an approach to urban nature at KS2 which is based upon an analysis of real events, historical (and prehistoric), contemporary and future, rather than being, as is the case with the native-alien division, an ideological straightjacket. In essence, it focusses on what is there and why it is there, not on what ecologists say should be there. It also cautions against the use of the pejorative term 'alien', preferring, if absolutely necessary, the terms 'introduced' or (Barker, quoted in Deedes (1992)) "species recently established"

5 Research

The research in this thesis was undertaken in order to *broadly* investigate:

the traditional ideas and practices being promoted by UWGs, through an examination of their use of the native-alien concept;

the use of the native-alien concept by teachers;

the potential for the development of a book which presents an alternative curriculum approach to urban nature for teachers, based on a new, inclusive, process-oriented approach to urban nature at KS2;

the effectiveness of the book in challenging and changing teacher attitudes and consequent curriculum practices at KS2

The research was split into three phases: Phase I, Phase II and Phase III although in practice the phases overlapped. Phase I specifically sought answers to the following research questions:

1 What advice are urban wildlife groups (UWGs) giving to teachers at KS2 in relation to native and alien plants?

2 Are teachers at KS2 utilising this advice regarding native and alien plants in their programmes of study in relation to ecology and environment?

Phase II in part depended upon the results of Phase I in that Phase IIa consisted of researching, developing, and, based on the results of Phase I, clarifying the rationale, and writing an alternative approach to urban nature for teachers at KS2 in People, Plants and Places' (Agyeman (1995)). Phase IIb consisted of an initial evaluation of its use by teachers, and an independent expert. In effect the research question was:

3 How does the book, its concepts and activities fit into the curriculum approaches, plans and Programmes of Study of teachers at KS2?

Phase III extrapolated the rationale (ie the aims and objectives) of the alternative approach developed in Phase IIa into a series of questions for use in evaluative interviews with teachers at KS2 in order to answer the question:

4 How effective is 'People, Plants and Places' (Agyeman (1995)) in informing teacher attitudes and consequent curriculum practice?

Phase I utilised pre-piloted questionnaires amongst both teachers in urban primary schools and all English UWGs to ascertain the answers to the first two research questions. The results of the survey were not intended to provide a statistically significant index, and as a result, no such claims are made. Rather they were utilised to give an indication of the use of the native-alien concept by teachers and the kind of advice which UWGs give to teachers.

Phase II consisted of both clarifying the rationale, researching, developing and writing an alternative approach to urban nature for teachers at KS2 through People, Plants and Places' (Agyeman 1995) and an initial evaluation by practising teachers at KS2 of its use.

People, Plants and Places (Agyeman (1995)) aims to offer an inclusive, process-oriented approach to urban nature at KS2. This book appears as Appendix 5 of this thesis. Teachers were asked to evaluate how the book, its concepts and activities fit into their curriculum approaches, plans and Programmes of Study. This was done by sending out an evaluation pro-forma (see Appendix 6 Evaluation form; People, Plants and Places) and follow up telephone interviews. An independent expert, Dr Ian Edwards, Head of Public Education at the Royal Botanic Gardens, Edinburgh, also undertook an evaluation.

The book was commissioned by Learning Through Landscapes as part of their "In the School Grounds" series, and was conceptualised, researched, developed and written between 1991-4, as an integral part of Phase II of the research contained in this thesis. It was developed in order to give teachers at KS2 an alternative curricular approach to urban nature. This approach it is argued, recognises the centrality of historic, prehistoric and contemporary processes in the spatial distribution of plant species within Britain, especially those within its urban ecosystems. It also looks at the cultural importance of plants, plants as foods and cures, and integrates the growing of cosmopolitan, Asian and West Indian food crops into the study of urban nature.

The book is not wedded to contested conservationist concepts of what should be there (ie native plants) and what shouldn't (ie alien plants). It looks at the historical, geographical and ecological origins of many 'British' plants through both information for teachers and novel activities for pupils. This fits well with the notions of 'questions and concepts in geography' introduced by the International Geographical Union in their International Charter on Geographical Education (IGU (1992)). The book culminates in advice on the planning, design and implementation of a 'cultural garden' in the school grounds, using plants from around the world to reflect the cultures within the school. Whilst aesthetically such a garden may be pleasant, and indeed, a renaming of what horticulturalists have been doing

for centuries, it can also act within the curriculum as a 'window on culture', enabling teachers and pupils to investigate the cultural uses of the plants chosen within their countries of origin, and as a 'window on the environment' whereby a given plant's environmental requirements within their countries of origin can be investigated and compared to those in Britain.

Phase III utilised recorded evaluative interviews with teachers at KS2 in order to ascertain how effective the book has been in informing teacher attitudes and practice. The transcripts of the interviews are in Appendix 9 'Book effectiveness interviews'.

In summary, this thesis provides both the contextual and theoretical underpinnings, and an alternative curricular approach to the study of urban nature at KS2.

The contextual and theoretical basis is *the entity* of the 'Multicultural City Ecosystem' together with *the process* of multicultural ecology. Agyeman (1991a) has proposed the Multicultural City Ecosystem as a potential new theoretical and contextual model for use by teachers of urban nature within environmental education. It has a radical futures orientation whilst acknowledging historical and prehistoric physical and cultural processes and does not utilise the outmoded, outdated traditional paradigm offered by many urban ecologists.

Taking a global, rather than a parochial and nationalistic view of ecology Agyeman (1991a:21) argues that "whilst some form of ecological control may be justified in the case of special (and predominantly rural) habitats such as Sites of Special Scientific Interest (SSSIs), ancient woodland, upland, downland, heath, bog or meadow, is it justifiable in the context of the diverse ecology of urban areas?.....multicultural city ecology recognises that just as human populations are in a state of flux, with inputs and outputs of people from diverse backgrounds and ethnic, cultural or religious groups, plants and animals from around the world form a significant element of the ecology of cities".

He continues that cities are "dynamic open systems involving inputs of energy and different forms of matter, and outputs such as manufactured

products and waste.....moreover, improved global communications mean that urban areas are increasingly heterogenous and cosmopolitan; they now receive inputs from all over the planet. This means greater diversity, not only in human, but in ecological terms. Viewed in this way the town or city becomes becomes an ecological system comprising a wide range of life forms and cultures, a multicultural ecosystem" (Agyeman (1991a:21)).

The alternative curricular approach and practical activities which both support and expand the concepts of the Multicultural City Ecosystem and multicultural ecology outlined above, are explained to teachers in People, Plants and Places (Agyeman (1995)) which is to be found in Appendix 5. The rationale ie the aims and objectives of People, Plants and Places (Agyeman (1995)) in terms of its specific links to the concepts of the Multicultural City Ecosystem and multicultural ecology (also called cultural ecology) generally, are fully explained in Chapter 5 (Research methodology, methods and results (Phase II)).

6 A personal reflection

Whilst being aware of the potential dangers of positionality (positioning the researcher as part and parcel of the research), it cannot be denied that the ideas, challenges to the 'traditional' approach to urban nature at KS2, and the conclusions contained in this thesis, are a part of its authors own unique set of circumstances and chances, personal development and growth. This section begins to explain some of the 'positional' elements which are integral to the thinking behind, the researching of, and the content and context of this thesis.

The idea for a 'Multicultural City Ecosystem', a 'cultural garden', for looking at what is there and why it is there, not what an 'expert' says should be there, are all tied into the experiences of a black environmental educator, and founder of the Black Environment Network, who was brought up on an environmental education littered with inconsistencies.

It has required courage to 'rock the boat', to speak out. Nevertheless, there has been some resistance to the ideas which have evolved through a series of articles into this thesis, by ecologists: "aren't you being a bit sensitive?". At first, challenging the orthodoxy was a lonely task. Once a few

'established' people, such as George Barker at English Nature began to listen and write, the task became easier.

Why have environmental educators so long shunned an explicit equality focus to their work? Shah (1985/86) was perhaps the first to comment on this need in terms of environmental education generally, although after members of the 'urban studies sub group' (see Hirst (1983)). Yet where are Shah and Hirst now? Neither works in environmental education any longer. I feel privileged to take up the issues which they commented upon, and to develop them into my specific area of interest: urban nature.

I was interviewed by Bill Deedes for his article 'Another Country' (see Deedes (1992)) on my attitudes to access to the countryside for black and ethnic minority groups, and natives and aliens, in the lobby at the Charing Cross Hotel. This is, again, another issue which the gatekeepers of countryside access and white ramblers and walkers had largely ignored. As the interview drew to a close and I got up to leave, Bill said to me "Do you know Julian, I believe that you've lit a candle here. It's not quite a bonfire, its a candle". I'm glad that I've lit a candle.

In order to contextualise both this introduction, and the personal reflection above, the notions of theory and ideology in environmental education; the development of environmental education and the relationship between urban ecology and environmental education must be fully explored. It is to the first of these that we now turn.

CHAPTER 1

THEORIES AND IDEOLOGIES IN ENVIRONMENTAL EDUCATION

Introduction

What is environmental education today and what are some of the challenges facing its practitioners? What are its theories and models? Is there an ideological aspect to environmental education? In this chapter, the current 'state' of environmental education is investigated, including the role of other areas of theory to both its own theory and practice. The chapter looks at different 'orientations' of environmental education before focussing on its likely convergence with other curriculum areas.

1 Environmental education in a whole curriculum context.

Schools have a statutory responsibility under section 1 of the Education Reform Act (1988) to "provide a broad and balanced curriculum which promotes spiritual, moral, cultural, mental, and physical development of pupils at the school and in the wider society; and prepares pupils for the opportunities, responsibilities and experiences of adulthood".

A part of this statutory responsibility must, by definition, and by the increasingly complex nature and realities of an interdependent world, include an environmental education. Environmental education in schools in Britain in the 1990s, as distinct from environmental studies, or environmental science, (or from environmental education in some other parts of the world), is not a separate curriculum subject. The National Curriculum Council (NCC (1990a:13)) note that "it is clear that there needs to be an overall plan for the whole curriculum: this should *incorporate* environmental education" (my emphasis).

Should environmental education merely be '*incorporated*' into the whole curriculum, or should it be a broadly based process of learning and teaching through a holistic and structured approach which '*informs*' 'whole curriculum?' Smyth (1995:6) notes that "the holistic approach will not be complete until education has taken its place in the whole system of environmental care". This is the focus of some debate in environmental

education today, whether the aim is a 'radical' environmental education 'for' the environment, aimed at personal and socio-political transformation, or more 'traditional' forms, which aim to teach 'about' the environment whilst accepting the socio-political status quo.

The notion of the 'whole curriculum' is in itself the subject of much debate. Indeed, the NCC (1990b:1) note that "in a system as decentralised as ours, it is not surprising that there has been little consensus". The NCC (1990b) then proceed to attempt a definition of what the whole curriculum should encompass. They include the National Curriculum; religious education; additional subjects beyond the National Curriculum; an accepted range of cross curricular elements; extra curricular activities; spirit and ethos of the school; the most effective teaching methods and the efficient and effective management of the curriculum and of the school. The 'whole curriculum' has also been defined by Brigg (1991) as consisting of English and Welsh National Curriculum core and foundation subjects; teaching and learning styles; the learning environment; cross curricular themes and issues and progression and continuity. Brigg (1991:6) emphasises the 'learning environment', in which he includes the school environment, asking "was it a place which presented a caring and considerate approach to the environment?". This is implicit, rather than explicit in the NCC document.

In terms of practice, at the primary level, environmental education is often delivered as a series of cross curricular 'topics' or 'themes' such as 'waste and recycling' or 'nature in the city'. In terms of curriculum coherence and integration, the topics or themes vary from merely touching on many Attainment Targets in different subjects, to being fully integrated into the Programmes of Study as planned and holistic packages of work. As Palmer and Neal (1994:37) note: "the theme (*of environmental education*) can be a highly successful starting point for formal, subject-based learning or a unifying element in topic work" (my addition in italic).

What are teacher's perceptions of what environmental education is about at the primary level? In a survey of teacher's understanding of the nature and aims of environmental education in primary schools in Hertfordshire, Berkshire and Avon carried out between January 1987 and January 1990, Dorion and Gayford (1990/91:28) noted, in line with arguments introduced in the Introduction, that "the majority interpreted the scope of

environmental education as the investigation of the 'natural' environment in the local area. 92% understood the environment as wildlife and 77% defined it as the countryside. Fewer mentioned in their definition of 'environment' the built environment (59%), towns and cities (45%) and heritage (35%)". They also noted that "over 75% regarded the development of an awareness of the environment, appreciation of the natural environment and concern for wildlife and endangered species as very important". This reflects both the continued centrality of 'nature' and 'conservation' within the theory and practice of environmental education amongst primary school teachers, and the dominance amongst many teachers, of geography and science as delivery vehicles for environmental education, with other subject areas being seen as being of less relevance to environmental education (see Chapter 5 Research methodology, methods and results (Phase II) and Chapter 7 Conclusions).

Dorion and Gayford (1990/91:28) continue that "the political and economic processes in the environment were also regarded as less important". This, combined with the tendency towards interpreting environmental education as being about nature, despite the fact that the teachers were ostensibly 'up to date', ("86% of teachers had participated in in service training in EE in the last five years"), leads one to conclude, as the authors do, that "children's involvement seemed to be limited generally to understanding and experiencing the natural world only" and that "problems involving controversy arising from political, economic and social factors were regarded as less appropriate at the primary level". Clearly, there is a presumption at the primary level within environmental education, in favour of nature, wildlife and the countryside, with an acknowledgement of the local area, amongst the teachers studied by Dorion and Gayford (1990/91). This backs up Storm's (1995:vi) assertions about the "asymmetry" of environmental education, and reflects continuing post-war promotion of nature, especially rural nature.

At secondary level, except for schools where an 'environmental ethos' has developed (often through an influential teacher, headteacher or governor), environmental education is primarily delivered through related subjects such as science, geography, history or technology. Gayford and Dillon (1995:178) concur. They note that "although environmental education may be found in many parts of the curriculum, for most teachers in secondary

schools it is still the traditional subject areas which provide the basis for its teaching". This subject-based delivery will be more or less coordinated (see Brighouse (1992) below), with some attempting a 'green day/week', depending on senior (and junior) teacher motivations, interests and time available.

Brighouse (1992:5) reflects this range. He notes that "at best, environmental education in secondary schools has become an audit, a display, an occasional project and a series of uncoordinated events, none of which are coherently developed in some subject areas. In others it burns brightly in the classroom of one or two teachers, and yet in others- and worst of all- it doesn't feature in the consciousness of the curriculum at all". Thus, according to Brighouse (1992), the majority of secondary schools fall short of even '*incorporating*' environmental education into the whole curriculum, as recommended by NCC (1990a), let alone developing a broadly based process of learning and teaching through a holistic and structured approach which '*informs*' the 'whole curriculum'.

Embedded into this whole curriculum context, in which environmental education at primary and secondary levels is variously interpreted (Dorion and Gayford (1990/91))and practised, is another level of complexity and debate.

This surrounds what environmental education actually is: its goals, its methods and pedagogy, its content (see Dorion and Gayford (1990/91) above), its theoretical basis, its relationship with ideology: the 'worldview' of wider political, economic, cultural and social processes which shape the world and its convergence with other 'adjectival' educations (see below). Personal experience, and Dorion and Gayford's (1990/91) results show that few teachers, let alone specialist environmental educationalists, have developed a coherent proactive theoretical position, a view of environmental education as an agent for change, which informs their classroom practice. Most have adopted a 'traditional' interpretation of environmental education (see Sterling (1992)), which, as Huckle (1993) argues, cannot deliver a proactive, radical, nor theoretical critique. This situation may change given the recent development of some comprehensive linked-resource and in-service initiatives (see, for example WWF (1994) Reaching Out).

Instead, most react to a wide range of external stimuli and ideas from both the environmental movement (including UWGs) and from the educational world, which has resulted in what Sterling (1992:2) calls "valid yet limited traditional approaches that characterize a sizeable area of environmental education practice". However, it is probably true to say that proponents of 'radical' approaches to environmental education (see Huckle (1993) and Fien (1993)), and more recently Education for Sustainability (or its variants; see Tilbury (1995), Fien (1995)), are more advanced, that is focussed, than 'traditionalists' in developing clear goals, methods and pedagogy, content, theory and ideology (see Huckle (1993) and Fien (1993)).

2 Challenges

Given the foregoing arguments, and, in order to lift much of what passes for environmental education out of Sterling's (1992:2) safe, "traditional" approach, and into a more personally and socially transformative, or 'radical' approach (see Huckle (1993) and Fien (1993) for example), will require concerted thought, reflection and action at all levels within what might tentatively be called the 'environmental education movement'. Some of the major challenges in doing this will require that those involved:

- 1 *clarify* their positions on the wide ranging definitions of what environmental education is (or should be);
- 2 *understand, develop and take action* in forming an ideological position in terms of education (see Kemmis, Cole and Suggett (1983), Skillbeck (1976) and Lawton (1987)) and environmentalism (see O'Riordan (1981)). This should inform both theory and practice;
- 3 *assert and justify* the position (or an interpretation of the position) of environmental education within the National Curriculum;
- 4 *review* the changing and convergent nature of environmental education as it has moved along a continuum from a narrow focus ('nature' or 'rural' studies) through a much broader focus (environmental education) towards convergence with other areas of the curriculum ('Education for Sustainability');

-5 *understand* the shaping of environmental education ideologies, theory and practice in schools through the considerable influence of 'narrow' focus environmental interest groups (eg UWGs), or 'broad' focus groups (eg Friends of the Earth) on teachers. The former influence is another focus of this thesis.

Each of these major challenges need to be reflected and acted upon by those in the environmental education movement. There are others which will be more or less important in each school (and between each teacher) according to circumstance. Each major challenge is introduced briefly below, except for the influence of 'narrow focus' environmental interest groups, which forms a part of the body of discourse and research in this thesis, and the changing and convergent nature of environmental education, which is introduced, then more fully explored through the development of environmental education in Chapter 2.

The practical, school-level result of a lack of clear thinking on the major challenges amongst environmental education advisers (statutory or voluntary) and teachers, at an individual, school, local authority or national scale, is a very diverse interpretation of, and orientation of environmental education (see Fien (1993)), which directly affects the curriculum offer to pupils, as Sterling (1992) has intimated, and Dorion and Gayford (1990/91) and Brighouse (1992) have shown in primary and secondary schools respectively.

3 Definitions?

A starting point for many teachers and environmental educators is to work to a definition of environmental education. However, on reading different definitions of environmental education, one might be forgiven for thinking that they were describing totally different subjects and approaches. For instance:

"the task of environmental education is to place the conservation ethic, the last cornerstone of civilisation, firmly into the understanding of all people" (Bellamy (1991:8));

"essentially it focuses on helping people to understand human behaviour and not the environment, and explores how each subject within the curriculum can be mobilised to help young people understand the forces that direct and motivate human action" (Martin (1991:8));

"it is an approach to education which seeks to help people make informed decisions about the kind of place they would like to live in. It is education that encourages people to be active participants in protecting, or, if necessary changing their environment, and having the knowledge, skills, will and confidence to do so as individuals or in groups" (Agyeman (1991b:8)).

These definitions, and there are countless others (see Chapter 2 The development of environmental education), illustrate something of the range. Bellamy's (1991) definition is related to what many would now call an aspect of environmental education, albeit a popular and dominant one: conservation, and reflects his well known personal and professional interests. It also gives an insight into the results of Dorion and Gayford's (1990/91) survey into primary teacher perceptions of environmental education. Martin (1991) takes a behavioural and a school-centred view, whilst Agyeman (1991b) takes an empowering, long term political view, using words such as 'decisions', 'active', 'participants', 'protecting' and 'changing'.

However, whilst many would argue that there must be a single, unitary definition of environmental education, and that environmental educator energies can then turn to pedagogical, methodological and implementation strategies, in short, developing good practice, another view is that definitional discourses should be continuous, leading to and informing refinements of theory and practice, in response to changing circumstances in education, and developing views on the environment and human futures. A strong case for the latter argument is the increasing convergence between different 'adjectival' educations of which environmental education is one, and the growing presence of the concept of 'Education for Sustainability' (ES): an educational response to the post-Brundtland and post-Rio challenges of sustainability and sustainable development.

4 Theories, models and ideologies

Is there a single 'theory' of environmental education, or are there many theories? This is another debatable point, but it is probably true to say that there has, until relatively recently, been less academic 'theorising' within, and about, environmental education in Britain, and more 'doing' outside a rigorous ideological and theoretical context than in, for instance, Australia (see Robottom (1987), Fien (1993)) or the USA (see Stapp (1969), Disinger and Opie (1986) and Hines, Hungerford and Tomera (1986)). Indeed, the USA and Australia have had specialist refereed academic journals devoted to environmental education for many years. The first British based academic journal, Environmental Education Research, which focuses *solely* on 'all aspects of environmental education', (as opposed to the University of Salford's International Journal of Environmental Education and Information: 'a meeting place for the disciplines involved in environmental matters at all levels'), was launched in 1995 by environmental educators Chris Oulton and William Scott at the University of Bath.

The British 'doing' approach, devoid of a coherent theoretical base, is the 'traditional' approach of Sterling (1992). It was promulgated through influential early environmental education texts such as those of Watts (1969), Martin and Wheeler (1975) and Carson (1978:unpaginated). The latter, in its introduction notes that "education is a process and environmental education is a style of education". This appears to be the only 'theoretical' reference in the whole book, the rest being taken up by 'environmental concerns', 'particular educational considerations' (detailing the relevance of environmental education to various subjects) and 'educational patterns' (project and curriculum ideas at different ages). Even Palmer and Neal (1994), the former an academic environmental educator, devote only 5 pages, of a 267 page book to what they call "Threads of a Theme: Principles and Structure". This falls far short of coherent theoretical base, dominated as it is by questions of content.

Lawton (1987:2) indirectly points out that the atheoretical basis of environmental education in Britain is common to other curricular areas. He notes that "the history of the Schools Council provides an excellent illustration of the British dislike of theory".

The origin of the British 'doing' approach to environmental education lies in the practical, nature-oriented beginnings of environmental education as 'nature' or 'rural' studies. Carson (1978:vii) acknowledges this: "the earliest environmentalists in schools were those teachers interested in natural history and rural education". More recently, Palmer (1992) has researched the development of personal concern for the environment amongst environmental educators. Using retrospective analysis, she found that, of 232 usable responses, 211 cited 'outdoors', particularly childhood countryside experiences, as being formative in their concern. Through countryside, conservation and nature projects, linked to post-war ideologies about the need for urban dwellers to gain access to, and learn about the countryside (Mercer 1978), many of our present day environmental educators cut their teeth. Dorion and Gayford's (1990/91) results regarding teacher perceptions of environmental education therefore come as no surprise. There was an environmental education which apparently did not require theoretical underpinnings, nor, because of its apolitical focus, could it deliver a radical critique.

There are however, exceptions to the 'doing' approach. Key individuals (see Huckle (1983) and (1993); Sterling (1990) and (1994) and Hicks and Fisher (1985) and Hicks (1994)) and 'sub groups' such as the 'urban studies sub group' (see Chapter 2 The development of environmental education) and Ward and Fyson (1973)) and the Centre for Global Education (see Grieg, Pike and Selby (1987) and (1989), and Pike and Selby (1988)) have been instrumental in challenging the 'doing' approach by raising radical theoretical debates. Whatever the answer, in terms of there being one theory of environmental education, or many theories, the grounding of the more radical end of environmental education, the substance upon which "this dynamic but eclectic mass of skills, knowledge and values" (Agyeman (1994a:11)) draws its uniqueness, is the result of constant cross-fertilisation between many areas of theory, including:

-educational theory:

whether based upon 'vocational/neo-classical', 'liberal/progressive' and 'socially critical' ideologies (Kemmis, Cole and Suggett (1983)) or 'classical humanism', 'progressivism' or 'reconstructionism' (Skilbeck (1976));

-environmental theory:

from 'ecocentrism' (a belief in working with the environment) to 'technocentrism' (a managerialist/'technofix' approach to environment) and points in between (O'Riordan (1981));

-social theory:

including the move from modernist to postmodern worldviews (see Griffin's introduction in Orr (1992));

-critical theory/science:

understanding why things are as they are and developing a notion of how they should be, through a process of critique (see Habermas' general influence in education in Ewert (1991); specifically in environmental education in Huckle (1993) and (1994), and in geography in Unwin (1992));

-psychological/behaviourist theory:

utilising the concepts of 'environmentally relevant behaviour' and the 'operant paradigm' to construct a behavioural model of environmental education (see Cone and Hayes (1984) and Skinner (1966) and (1968))

Admixtures of each of these theoretical influences, together with the influences of other 'adjectival' educations (peace, futures, global, human rights, world, citizenship etc), have led to a situation where there are a growing number of ideological/theoretical positions, or 'orientations' on environmental education, if not actual theories.

Environmental education is dominated in Britain, and worldwide, by the '*in/through*', '*about*' and '*for*' model, first popularised by the Schools Council in Project Environment (Schools Council (1974)). In it, environmental education was seen as taking place:

- '*in*' or '*through*' the environment;

- it is '*about*' the environment;

- it is 'for' the benefit of the environment.

This model is suggested in Curriculum Guidance 7 Environmental Education (NCC (1990a:7)) as support for "planning for environmental education through national curriculum subjects". It notes that "environmental education can be thought of as comprising three linked components: education *about* the environment (knowledge), education *for* the environment (values, attitudes, positive action), education *in* or *through* the environment (a resource) "

However, there have been many criticisms of the model and its use by the NCC. Huckle (1991:46) is dismissive in pointing out that it "could have been written in 1970". Ebbutt (1992:11) criticises the synthesis, and simplification of this model as presented, and Palmer (1993:12) expands this critique by identifying "three further crucial elements": 'experience' (in), 'concern' (about) and 'action' (for). Her critique is similar to that of the Association for Science Education (1990:7) who suggest that 'in' and 'for' the environment should be made up of 'experiences', 'opinions', 'decisions' and 'actions'. These criticisms however, build on, or adapt the NCCs (1990a) version of the model, but do not develop a radical critique of its lack of ideological and theoretical underpinning.

One general agreement amongst environmental educators, according to Sterling (1994:250), is that in the move from 'environmental studies' to 'environmental education', the emphasis and goals of environmental educators have shifted from being predominantly based 'in' and 'about' the environment, to 'for' the environment. Huckle (1993) however, disagrees. Using the model as a base around which to develop ideological and theoretical positions, he overlays it with the ontology of realism, and, building on Habermas' work in critical science, he expands the tripartite model to accommodate the types of knowledge and outcomes likely, from pursuing a given arm of it. In effect, like Fien (1993:15) who calls the 'in/through', 'about' and 'for' model "three relatively discrete forms" of environmental education, Huckle (1993) is arguing that these are, in effect, *different* 'environmental educations' .

Huckle (1993:63) postulates:

'education for environmental management and control' - based on empirical/analytical science and approximates closely with education 'about the environment;

'education for environmental awareness and interpretation' - based on hermeneutic/interpretive science and approximates most closely with education 'through' the environment;

'education for sustainability' - based on critical science and theory and approximates most closely with education 'for' the environment'

He argues that "there is an overwhelming predominance of 'education for environmental management'" (1993:65) in schools (ie education 'about' the environment). This ties in with Sterling's (1992) assertion about the dominance of safe, traditional approaches. Huckle (1993) then goes on to link this to "the restructuring of education...(which) seeks to ensure that environmental education ...plays its part in the greening of capitalism". Thus, he continues, the emphasis and goals of much of what passes for environmental education are part of a conforming process in which the hegemony of the dominant political ideology, or what Milbrath (1984) and (1989) calls 'the Dominant Social Paradigm' ("the worldview or ideology which has become entrenched as a result of the structures of power in a society" (Fien (1993:23)) is secured.

Popular attitudinal change, from an acceptance of the values and beliefs inherent in the modernist Dominant Social Paradigm, towards those of the postmodern 'New Environmental Paradigm' (Milbrath (1984) and (1989) has, according to Milbrath, begun. He notes that many of the expansionist, individualistic, status quo type assumptions are now being challenged. However, the evidence for anything more than superficial attitudinal, rather than deeply held value change (and certainly not what could be called a paradigm shift), does seem elusive. Fien (1995:23) agrees when he notes that "while there is debate about particular directions and the pace of this 'paradigm shift' and about the effectiveness of different strategies for social change, there seems to be wide agreement, both in Australia and internationally, that education has an important role to play". Schleicher (1989:277/278), in a similar way to Milbrath, argues that there is a need for a



new "ecological ethic,an ecologically oriented value system based upon fundamental change(s) in human attitudes and actions towards ourselves and the environment".

Milbrath's distinction between the Dominant Social Paradigm and the New Environmental Paradigm, is mirrored by Smith's (1992:45) "Modern Industrial Worldview" and "Sustainable Worldview" (73). However, Smith (1992) goes on to look at the educational implications of a 'Sustainable Worldview'. He is more pessimistic, or maybe realistic about change than Milbrath. He notes, in a similar way to Huckle (1993) that "cultural institutions like the schools interact closely with economic and political institutions and are largely dependent upon the nature of these critical spheres of human activity. Though schools can serve as one site of social change, if comparable changes are not also enacted within the marketplace and government, educational experiments are likely to be short-lived and ineffectual" (Smith (1992:111)). This a point which Trainer (1990:105) also makes in stating that both the overt and hidden curricula of schools tend to reproduce the values of "industrial, affluent, consumer society" which are ecologically unsustainable.

Whereas Smith (1992) and Trainer (1990) are concerned with the role of education systems and schools in change, Fien (1993) is more specifically concerned with the transformative potential of environmental education, ie it, and its practitioners' ability to effect change. Like Huckle (1993), he insists that education 'for' the environment must be underlain by an ideological position on education, environment and thereby, environmental education. He uses Kemmis, Cole and Suggett's (1983) three educational ideologies, which are the '*vocational/neo-classical*', '*liberal/progressive*' and '*socially critical*' ideologies and relates these to a continuum of environmental ideologies first developed by O'Riordan (1981) from '*technocentrism*', the belief in the status quo and managerialist/'technofix' solutions to environmental problems, to '*ecocentrism*', the need for redistribution and decentralisation and to work with nature. There are, in practice however, many points in between ecocentrism and technocentrism. The result (Figure 1) is a matrix of ideologically driven environmental education 'orientations' of which Fien (1993) and Huckle (1993) are firmly within the ecosocialist-socially critical one.

Figure 1

Educational and environmental ideologies in different approaches to environmental education (from Fien 1993:40)

Environmental ideology		Educational ideology		
		Vocational/ neo-classical	Liberal/ progressive	Socially critical
Techno- centric   Ecocentric	Cornucopian	Conservative education <i>about</i> the environment		
	Accommodation Managerialism (Light green)		Liberal education <i>about</i> the environment	
	Communalism Ecosocialism (Red-green)		Liberal education <i>through</i> the environment	Critical education <i>for</i> the environment
	Gaianism Utopian (Dark green)		Liberal education <i>for</i> the environment	

Major ideological direction of less restrictive definitions and analyses of education *about*, *through*, and *for* the environment.

Fien (1993:43) notes that "education for the environment represents an integration of a socially critical orientation in education and ecosocialist environmental ideology. The objectives of critical education for the environment include the development of moral and political awareness as well as the knowledge, commitment and skills to analyse issues and participate in an informed and democratic way in environmental decision making and problem solving. Pedagogically, critical education for the environment generally begins with the study of environmental issues and problems on a local scale. This is to provide opportunities for students to

develop the concepts, procedural values and skills of political literacy so that they may learn how to participate actively in seeking solutions to the problems that concern them. The analysis of local concerns is then extended to consider national and global concerns".

This view bears similarities to Agyeman's (1991b) definition of environmental education, developed for the London Borough of Islington (LB Islington (1990)). It also links well with the ideas of Ward and Fyson (1973) surrounding local and urban studies, and those of Hicks (1994) and Hicks and Fisher (1985) surrounding local-global links. Thus, for Fien (1993:47) critical education for the environment "is a counter-hegemonic activity" intended to challenge the Dominant Social Paradigm. Both Fien (1993) and Huckle (1993) are aware of the difficulties of implementing such an orientation. Fien (1993:47) notes that the dilemma is that of the "social reproduction versus social transformation potential of education", whilst Huckle (1993:65) argues that "the chances of teachers 'subverting' the National Curriculum in England are further reduced by changes in teacher education".

Critics of Fien's (1993) *ecosocialist-socially critical* position include Sterling (1990) who argues for a '*Gaianist/liberal-progressive*' educational orientation for the environment. He asserts that it is less restrictive than the limiting ecosocialist orientation which focusses on social, economic and structural issues in society and separates humanity from nature (ie is anthropocentric). Gaianist perspectives emphasise unity, integrity and inner reflection, which when combined with liberal/progressive educational approaches can still provide an education for the environment. He sees a potential reconciliation between the two approaches through the interlinked notions of individual (Gaianist), collective (ecosocialist) and ecological interest. Aligned with Sterling's (1990) orientation are Greig, Pike and Selby (1989) and Randle (1992).

Other orientations not considered in Fien's typology are those of Hungerford and Volk (1993) and Hines, Hungerford and Tomera (1986) who favour a behaviourist orientation (close to a *cornucopian-vocational/neo classical orientation*) which is popular in the US and Canada in which environmental education programmes are strongly behaviourist and are

designed to develop "environmentally relevant behaviors" (Cone and Hayes (1984:1)).

In order for teachers at KS2 to understand the ideological implications of the advice on urban nature they are given by UWGs (regarding native and alien plants), it is clear that they will need to move towards a more socially critical or liberal progressive orientation within education. This, combined with a move towards a more ecocentric environmental ideology, would equip teachers with the wider awareness needed to 'see behind' some of the advice they are offered.

5 The National Curriculum

The Education Reform Act (1988) has had a major impact on the profile of environmental education in schools, if not on its practice. It has certainly raised the profile of environmental education; however, its contribution to raising ideological and theoretical debates is less clear.

The original National Curriculum 5-16 Consultation Document (1987), did not mention environmental education as a 'core' or 'foundation' subject. Palmer (1989:4) notes that within the document "probably the most important statement at this stage tells us that: ' there are a number of subjects on themes such as health education....which can be taught through other subjects....It is proposed that such subjects or themes should be taught through the foundation subjects' (para 18)....a glimmer of hope in 1987".

Hale (1989:257) however, suggests that "against a background of increasing public concern for the quality of the environment and resolutions passed by the European Parliament which will affect all member states, environmental education rapidly gained a new level of respectability as an area of knowledge about which individuals should possess at least a basic understanding".

The Resolution to which Hale (1989) refers is that of the Council of Ministers of Education of the European Parliament. In May 1988, they agreed to promote environmental education, as a matter of priority, within the Community. The task of promoting environmental education in England and Wales was delegated to the then National Curriculum Council (NCC) and

Secondary Examinations and Assessment Council (SEAC). Public concern over the environment, together with the Council of Ministers initiative, and powerful lobbying from organisations such as the Council for Environmental Education (CEE), National Association for Environmental Education (NAEE), Worldwide Fund for Nature (WWF), Friends of the Earth (FoE) and others succeeded in persuading the Interim Whole Curriculum Committee (IWCC) of the NCC that environmental education should be one of five cross curricular themes.

The Task Group on Environmental Education of the Interim Whole Curriculum Committee (IWCC), coordinated by the CEE, submitted evidence on: cross curricular environmental education including suitable Attainment Targets (ATs) in core and foundation subjects; a suggested broad outline of entitlement; knowledge and understanding in relation to the environment and the development of skills, including progression and its role in skills development. In addition, as Hale (1989:259) notes "the Council for Environmental Education is committed to communicating the role of environmental education to the working groups in each of the subjects and to 'shadowing' every stage of the formulation of the recommendations by submitting comments at each reporting phase".

Environmental education is now one of five cross-curricular themes which are intended to enrich the core and foundation subjects. Its inclusion, albeit belated, was a recognition of its ability to inform, and be informed by, other subject areas "and other timetabled provision, in addition to being promoted through the wider aspects of school life" (Graham (1990:foreword)).

Perhaps the key paragraph in the NCC document Curriculum Guidance 7 Environmental Education is that: "environmental education is an essential part of every pupil's curriculum. It helps to encourage awareness of the environment, leading to informed concern for and active participation in resolving environmental problems". (Graham (1990:foreword)).

This statement, from an influential, official document, can be viewed in many ways. It can be seen as a positive position statement representing the NCCs thinking on the place of environmental education within the framework of the National Curriculum in September 1990. Another view is that of Ebbutt (1992:4) who notes that "the non-statutory status of cross

curricular themes within the National Curriculum (England and Wales) can be viewed either as a source of strength or as a high risk for environmental education". Huckle (1993:65), sees environmental education in the National Curriculum as both being 'relegated' to cross curricular theme status, itself a 'high risk' situation and it being predominantly 'education for environmental management', with no understanding of 'education for sustainability'. To an extent, Ebbutt (1992) and Huckle's (1993) concerns over risk, have been borne out, as Gayford and Dillon (1995:174) note: "now, with efforts to slim down what is perceived as an over elaborate scheme, and the publication of The National Curriculum and its Assessment: Final Report (SCEA (1993)), it appears that environmental education could lose significant standing", and that, following the publication of the 1992 and 1993 inspection handbooks by the Office for Standards in Education (OFSTED), "there has been a systematic paring down of the content concerned with environmental education" (174). Shephard (1995:5), the Secretary of State for Education, understandably does not agree: "I am glad to be able to say that, in the course of slimming down the national curriculum, we have kept the environmental content of the geography, science and technology requirements virtually intact".

Equally, on another level, the NCC's statement shows just how far the concept of environmental education has come as a synthesis of present and past subject areas such as biology, science, geography, rural studies, field studies, art, technology, English, history and the social sciences, via its forerunners, nature and environmental studies (see Chapter 2 The development of environmental education). However, it must be remembered, as Sterling (1994:50) notes, and was noted earlier in greater detail, that environmental education has "roots primarily in two main areas-educational theory and environmental theory". There have been significant inputs which have shaped, and continue to shape environmental education, from outside the contributory subjects above within the formal education sector. These inputs have come from professional associations such as the Town and Country Planning Association (TCPA) and environmental organisations such as FoE and WWF.

The NCCs position statement, which is now five years old, should not be seen as an end point. Rather it should be seen as describing a position along an evolutionary continuum which represents the development of

environmental education. Lobbyists and interest groups both within and outside formal education continue to influence its development along the continuum from a variety of perspectives: global and development education, citizenship, futures, peace and human rights education, earth education, holistic education, urban studies, conservation, ecofeminism and outdoor education to name but a few.

6 Convergences

Out of these sometimes divergent, sometimes convergent interests, a powerful cross-curricular area has developed in the broadly interpreted form of environmental education. It not only has broader messages than the sum of its parts, but it has pioneered innovative, original and now commonplace methods for transmitting those messages: experiential learning; issue-based learning; participatory learning; open and democratic learning; role play and other games and simulations.

Grieg, Pike and Selby (1987:30) argue that what they call "the four educations", namely human rights, peace, development and environmental education, show, in the widest context "an extremely marked degree of convergence". Similarly, the United Nations Environment Programme (UNEP) UK have called for 'Education for Sustainable Development' (ESD) which "is an integrated approach to environmental and development education. As an integrative and holistic approach, it also draws on related areas such as economic awareness, citizenship, health education, political education, intercultural and human rights education and conflict resolution as well as established disciplines" (UNEP-UK EDET Group (1991:3)).

However, following much discussion and comment through the EDET consultative process, ESD became ES: 'Education for Sustainability'. This change was brought about in the run-up to the United Nations Conference on Environment and Development (UNCED) in June 1992, because of a concern amongst those consulted about the pejorative nature of the word "development". Fien (1995:27) mentions "education for sustainable living" which, he notes, "requires a reconceptualisation of some aspects of environmental education and some of the assumptions upon which it is based". Education for sustainable living, as a concept, was developed by the International Union for the Conservation of Nature (IUCN) Commission on

Education and Communication in 1993. In a similar way to Fien's (1995) notion of 'reconceptualisation', Tilbury (1995:196) postulates that a 'reorientation' of environmental education is needed: "environmental education in the coming decade must reorientate itself towards improving the quality of life for all citizens under the focus of environmental education for sustainability (EEFS)".

Overlaying the growing convergences of adjectival educations, is the older concept of 'Education for Transformation' (ET), which Sterling (1994:65) sees as "the continuing goal of all radical forms of education". He continues that ET "has an older tradition than the concept of 'education for sustainability'. The latter may be seen to give education for transformation focus and direction, being concerned with the relation between present change and the state of future social, economic, and environmental conditions".

Perhaps these reconceptualisations, reorientations, convergences, transformative and integrated approaches mark the development towards a broader and unified approach to 'humans and the environment' (which was initially developed by geographers); an approach which has been called ES since 1992 by UNEP/EDET, Education for Sustainable Living by the IUCN and EEFS by Tilbury (1995) and could become a more all encompassing transformative and liberating 'Education for Participatory Democracy' at some point further along the developmental continuum. Agyeman (1994b:52) asks:

"Does Education for Sustainability (ES) provide environmental education with a new focus, an integrating framework, or is it a move away, a further development along the continuum which started with nature and rural studies? Whatever the answer, it seems certain that convergence is taking place between the 'human-environment' adjectival educations. And why not? We share increasingly common aims and objectives; increasingly common goals; an increasingly common vocabulary and increasingly common educational approaches. Indeed, it is not impossible to visualise that, somewhere further along the continuum, a complete convergence will take place. At that point (or time), the defining elements of each adjectival education should be woven into a core framework utilising the concept of 'sustainability', to produce an accessible, balanced and empowering

'Education for Participatory Democracy' (EPD). Is it not more sustainable to travel collectively towards a common goal of social and environmental change in one vehicle, rather than in a set of individually owned vehicles?"

Pursuance of the 'leading edge' of environmental education theory and ideology is out of the scope of this thesis. However, when a reconceptualised, reoriented and fully converged environmental education emerges, as ES, one of its variants such as Education for Sustainable Living (IUCN in Fien (1995)), EEFS (Tilbury (1995)) or Education for Participatory Democracy (Agyeman (1994b)), it is hoped that the alternative approach to urban nature at KS2 proposed in this thesis through People, Plants and Places (Agyeman (1995)) will be seriously considered for inclusion, representing as it does, new process-based, rather than 'old' 'straightjacket' thinking.

But how has environmental education become what it is, and where it is today: a cross curricular theme (a contested point in practice) which looks likely to converge with other adjectival educations? We now turn to the historical development of environmental education.

CHAPTER 2

THE DEVELOPMENT OF ENVIRONMENTAL EDUCATION

Introduction

The theoretical and ideological debates within environmental education, and its likely transition to ES, and perhaps EPD, some of which were introduced in the last chapter, can only be fully understood in the context of the history, or development of environmental education. However, like the differences between 'traditional' and 'radical' approaches, there is no one 'history' of environmental education. As one of its 'urban' pioneers, Wheeler (1994:12) notes, "the full account has yet to be written".

1 Approaches to the development of environmental education

There is no 'official' story, yet there are many possible approaches to the study of the early development of environmental education.

Two key approaches are those of Watts (1969) and Goodson (1987):

The philosophical-historical approach (Watts 1969)

The 'philosophical-historical' approach of authors such as Watts (1969) and others, is one in which environmental education within the curriculum (or environmental/rural studies as it was in Watts time) is justified on philosophical and historical bases "with reference to Comenius, Rousseau, Pestalozzi, Froebel and Piaget" (Watts (1969:20)). In the philosophical-historical approach, Watts (1969) traces back the development of ideas relating to the study of the environment, to Locke (1690) who wrote that "it is about these impressions made on our senses by outward objects, that the mind seems first to employ itself in operations, as we call 'perception, remembering, consideration, reasoning etc" (Locke quoted in Watts (1969:20).

Watts (1969:21) then identifies "three main strands.....in the evolution of the environmental idea: epistemological, philosophical and naturalist", into

which he places influential thinkers such as Hebart, Darwin, Froebel, Dewey, Rousseau, Pestalozzi and Wordsworth. He concludes that "the naturalist element remains a mainspring of the environmental studies movement" (Watts (1969:47)). This is a similar point to that of Carson (1978) regarding the natural history bias of teachers in environmental education.

This philosophical-historical approach is understandable in the context of the development of environmental studies in the late 1960's and early to mid 1970's, and is typical of an emergent curricular area; historical justification with reference to the writings of known educationalists and philosophers. The drawback of this largely descriptive approach in the 1990s is that it offers little insight into curriculum processes and the politics of the establishment of environmental education, both in relation to other allied areas, and in the context of the whole curriculum.

The 'socio-historical' approach (Goodson (1987)).

Whilst the philosophical-historical approach has its merits, the socio-historical approach of Goodson (1987) is favoured in this thesis. Its focus is on developments within the school curriculum. This affords a closer look at curriculum processes and politics within the pre-1970's development of what was to become environmental education.

Goodson (1987:3) adopts "a socio-historical approach.to the process of becoming a subject". His "subject" is environmental studies, a term he confusingly interchanges with environmental education. In order to provide an analytical framework for his study he developed three hypotheses which relate the genesis of environmental studies/education to:

power;

resources;

academic aspirations within the curriculum.

His method was to test three hypotheses (below) through case-studies, whose main points are outlined below. The case studies were of the educational developments in biology, geography and rural studies. They were "the main

subjects involved in the aspirations of this new contender for a place in the curriculum" (35). These subjects, whilst having a great deal of territorial commonality, especially in their respective field studies traditions, had varying levels of power, academic respectability and access to resources.

Goodson's (1987) first hypothesis asserts that "subjects are not monolithic entities, but shifting amalgamations of sub-groups and traditions. These groups within a subject influence and change boundaries and priorities" (3). This could be called the 'boundary hypothesis'.

His second hypothesis asserts "that in the process of establishing a school subject (and university discipline) base subjects tend to move from promoting pedagogic and utilitarian traditions towards the academic tradition" (3). This could be called the 'academic hypothesis'.

His third hypothesis asserts that "much of the curriculum debate can be interpreted in terms of conflict between subjects over status, resources and territory" (3). This could be called the 'influence hypothesis'.

Goodson's (1987) biology case study.

Goodson (1987:41) notes that "the biologists played a far less central role than the geographers" in the development of environmental education, but that there was an attempt at "containment of the field studies tradition" (47) within school biology. However, the academic status of biology was only achieved through its emphasis on "hard science" (50). This effectively gave the field studies and ecology tradition the "soft science" image. The soft science image began to change, he argues, in the 1960's, with the development of ecology and environmental science courses at the post-Robbens universities, polytechnics, and, significantly, at Oxford University under Sir Arthur Tansley, a noted and eminent ecologist.

Tansley was the first president of the Council for the Promotion of Field Studies formed in 1943 (now the Field Studies Council) and one of the founding fathers of British ecology; his academic influence was enormous. The Nuffield Biology Project and various Schools Council initiatives, such as Project Environment and the Environmental Studies Project were other catalysts in the change in fortunes of ecology within the "hard science"

side of biology. Dowdeswell, who had studied at Oxford, became director of the Nuffield Biology Project in 1962. Whilst he was a convert to ecology and field studies ("I was a fanatic so we decided that we would go to town on ecology" (Goodson (1987:49)), he recognised, according to Goodson (1987), certain methodological and organisational problems for teachers in taking students out of the classroom.

Goodson's (1987) geography case study

In terms of geography, Goodson (1987:80) notes that "environmental studies posed a particular threat because of its obvious similarity to field geography". In 1967, the President of the Geographical Association (GA) went one step further in stating that "we geographers have built up our subject into a discipline which is at last treated with academic respect: now we are asked to undermine it with superficiality, propaganda-and pictures of water taps" (Marchant (1968:139)).

The Presidents' attack illustrates well the operation of all Goodson's (1987) hypotheses: boundary, academic and influence. The word "undermine" is perhaps a little mischievous given the development of the major part of the field studies tradition in geography, according to Goodson (1987), Wheeler (1981) and Martin and Wheeler (1975), from a botanist, town planner and educationalist, Sir Patrick Geddes (1854-1933). Wheeler (1981:22) accords Geddes the title "father of environmental education" and Ward (1973:3) that of "one of those universal men who defy categorisation". Ward (1973:3) continues that he was "the great pioneer of the idea of regional planning, of environmental education" .

Geddes main contributions to field studies and environmental education generally, were the concept of the "Outlook Tower" (one was built in Edinburgh at the end of Castle Esplanade) from which he observed the local environment, and the concept of "The Valley Section", a prototype land use model. His work as an educationalist yielded some of the earliest examples of experiential thinking: "a child brought into contact with the profound realities of his environment would not only be more likely to learn better, but also develop a creative attitude towards his surroundings" (Geddes quoted in Martin and Wheeler (1975:4))

Geddes was influenced by the French sociologist Frederic Le Play (1806-82) who considered botany "the most significant factor for understanding the nature of society" (Fletcher (1969:236)). Geddes, according to Ward (1973:4) in turn influenced "the great anarchist geographers Peter Kropotkin and Elisee Reclus (Paul Reclus' uncle)". He also influenced Herbertson and Mackinder who were at Oxford and were "two pioneers of geography teaching" (Goodson (1987:67)). Also influenced by Geddes pioneering ideas was Cons, Head of Geography at Goldsmiths College who, according to Goodson (1987:67) "pioneered many strategies for training pupils and students in fieldwork methods" and, according to Wheeler (1981:22) "contributed greatly to persuading primary schools to use the local environment in their teaching".

A later influence on the use of the environment for teaching in primary schools was the 1967 Plowden Report Children and their Primary Schools. Razzell (1968:134), whilst welcoming Plowden, notes that "the Plowden Report devoted several long paragraphs to describing and praising such (outdoor) activities. However it is probably true to say that apart from a few notable exceptions the majority of junior children get little opportunity in this direction".

Midwinter (1972:8/9) builds on this criticism by adding a social dimension with his assertion that "there is no point in an environmentally-based curriculum without corresponding sturdy links with home and community". This was a point which Storm (1971), in a seminal article promoting the value of urban studies and Martin and Wheeler (1975), had made a year earlier.

Goodson (1987:36) goes on further to show how jealously guarded each subject was over its territorial "rights" in the drive towards academic status. "In the early stages....the biologists and geographers were merely unconcerned, or latently hostile observers". The apparent academic successes of biology and geography in secondary and higher education merely compounded the crisis in a subject which had growing identity problems : rural studies.

Goodson's (1987) rural studies case study

The Schools Council (1969:5) note, of rural studies, that "the term first appeared in 1926, in pamphlet No. 46 of the then Board of Education". At this time the emphasis "was almost entirely upon gardening, with successful cropping and a mastery of the routine practices involved as acceptable aims" (Schools Council (1969:5)). This emphasis was carried on for decades, as a direct result of entrenched views within the subject which had adhered to the "Dig for Victory" campaign during World War II.

Rural studies in the late 1950's notes Goodson (1987:99), "was faced not only with status problems, but with actual survival problems". By the early 1960's, change was imperative. Rural studies teachers "were faced with a rapid decline in its intellectual and occupational acceptability" (Goodson (1987:127/8)), largely because it was seen, according to the Schools Council (1969 p5) as "gardening for the backward boys" or, as Goodson (1987:117) puts it: a "low status subject offered to those secondary school pupils defined as less-able". Comprehensivisation from the late 1960s onwards, merely compounded these problems, according to the National Rural Studies Association (NRSA): "as many of the new heads of comprehensive schools were being appointed from grammar school backgrounds" and "had little or no experience of the value of rural studies in the education of the secondary child" (NRSA Report (1967:unpaginated)).

In 1963 however, the Council for Nature and The Observer newspaper organised an exhibition on wildlife and the countryside. It focussed attention on the lack of a rigorous approach to the coordination of conservation and education about the countryside. This is another example of the points introduced in the Introduction: the centrality of 'nature' and 'conservation' to environmental education. The result of the Council for Nature/Observer newspaper collaboration was a series of study conferences, the most important of which was at Keele University in March 1965.

The Keele Conference, "The Countryside in 1970", organised at the suggestion of HRH The Duke of Edinburgh, patron of the Council for Nature, was in many ways a watershed, not only for rural studies, but for the emergence of Goodson's (1987:35) "new contender" ie environmental studies/education. Indeed, the then Department of Education and Science (DES), now Department for Education (DfE), hailed the conference as "the beginning of a formalised environmental education movement in this

country" (DES (1981:5)). The attendees at the conference confirm Sterling's (1994:50) view that environmental education has "roots primarily in two main areas-educational theory and environmental theory" -most were educationalists and conservationists. It also confirms the notion of the early hegemony of 'nature' and 'conservation' with environmental education.

One of several specific recommendations of the conference was the setting up of the Council for Environmental Education (CEE). This happened in 1968, according to Wheeler (1981:22). "to provide a focal point for coordinating effort and disseminating advice". One of the main promoters of the CEE was the then Nature Conservancy, now English Nature.

There were, however, signs of strain at the conference. The conference secretary, Pritchard (1965:11) noted in his address that "environmental studies must be firmly anchored to scientific disciplines", whilst Carson of the NRSA "felt that the approach of the biologists in schools, colleges and universities was too narrow and formally scientific" (Carson (1965:16)).

Goodson (1987:118) however states that "following the Keele Conference and the Nuffield projects, biologists and geographers began to gain control of 'field studies' of the environment", at the expense of rural studies.

One strategy for overcoming this, according to Goodson (1987:119) was to "attempt to redefine and redirect rural studies". This strategy eventually gave rural studies a new name: 'environmental studies'. Carson, a prime mover in the rural/environmental studies debate, wanted an exclusive place for environmental studies, out of the geographers' and biologists' grasp. He concluded that (Carson (1964/65:32)) "the term 'environmental studies' (as opposed to 'science') is almost unknown outside a few colleges and has no clear definition within schools or universities". He felt that, as Goodson (1987) notes, this would ensure content definition from within, rather than it being imposed by other subjects, namely biology and geography.

This, however, was not quite the view of the Schools Council (1969 foreword), whose Working Party, set up in 1965 at the request of the NRSA, concluded that "environmental study (education *through* the environment) involves a complex of subjects of which rural studies might well prove among the most important", and that (Schools Council (1969:23)), "much

more investigation is necessary into the context, method, objectives and, above all, the higher intellectual disciplines inherent in any advanced treatment of the subject".

Ward and Fyson (1973:15) agreed with Carson, but had different (social) motives: "of existing courses, those with a 'studies' emphasis tend to include social questions and problems of policy and planning, whereas the science based courses tend to be exclusively biological or ecological in their approach". The NRSA, at their Annual General Meeting of September 1969 endorsed the Carson redefinition. A year later, in line with these changes, the NRSA changed its own name to the National Association for Environmental Education (NAEE). The NAEE today strongly reflects its rural studies roots (see Environmental Education, the NAEE journal).

Another strategy adopted by rural/environmental studies activists, reflected in Goodson's second ('academic') hypothesis, was based on the need to move from a utilitarian ("Dig for Victory") to an academic ('A' level or higher) base. This had also been strongly noted by the Schools Council Working Party ("the higher intellectual disciplines inherent in any advanced treatment of the subject" (Schools Council (1969:23)). Carson and Topham, according to Goodson (1987:36) launched an "attempt to develop an 'A' level in environmental studies". This, it was felt would achieve two objectives, and cover one of Goodson's (1987) hypotheses: the 'influence' hypothesis ("priority inside the school in terms of finance, rooms, furnishings, equipment, resources, and graded posts" (Goodson (1987:36)). This was in addition to the main aim of academic respectability: "territory in terms of a separate 'department' or even 'faculty'" (Goodson (1987:36)).

The 'A' level was finally achieved in 1973, with much bargaining and heated debate, primarily by the devotion of Carson, Topham and colleagues who set up the campaigning Hertfordshire Working Party and organised the influential 1970 Offley Conference in Hertfordshire which brought together academics, teachers, the then DES, examination board personnel and (ecological) interest groups to debate and present a case.

By the early 1970's there was a discernable, if confused and fought over 'environmental' offer in the curriculum of many schools, as distinct from that in biology and geography. Goodson (1987:113) notes that it occurred on



two levels: "the broadly conceived environmental studies 'faculties' which developed in the humanities and science sections of comprehensive schools" and "the new environmental studies departments which originated in existing rural studies departments".

Other influences in the development of Goodson's (1987:35) "new contender".

Out of this 'curricular quicksand' of shifting intra- and extra- subject allegiances which were overlain by the push towards comprehensive schooling and the genesis of "environment" as a public interest, hence political issue (witness for instance Carson's (1962) Silent Spring, The Ecologist's (1972) A Blueprint for Survival, Nicholson's (1970) The Environmental Revolution, Schumacher's (1973) Small is Beautiful and the Club of Rome's (1974) The Limits to Growth), further struggles for academic respectability, resources and territorial control were, and are still being carried out.

Particularly powerful in these struggles were an assortment of subject associations and special bodies, set up by professional interest groups, academics and by governmental bodies whose main remit was not primarily educational, but who saw it as part of their duty.

Such a body was the Nature Conservancy (now English Nature), established by Royal Charter in 1949, who set up the Study Group on Education and Field Biology in 1960 and were influential in convening "The Countryside in 1970" conferences. They felt, according to Goodson (1987:196), that biology should have "a bearing on the teaching of geology and geography" and that "it should involve much more fieldwork" (Goodson (1987:197))

Goodson's conclusions.

Goodson (1987) concludes by, justifiably, claiming support for his three hypotheses. Of his study he noted that it "shows a range of conflicting sub-groups within the subjects, and that these often concentrated around the three major 'traditions' of biology, geography and rural studies. He notes that "the pursuit of material self interest ultimately ensured that the sub-groups attached to the academic tradition came to dominate the subjects.

This was because the flow of resources, finance and recognition of 'departmental' territory and needs has been linked especially to 'scholarly disciplines' that can be taught to 'able' students" (191). This led to the barring from academia of the environmental studies sub-group within rural studies, and to the biologists and geographers "defence of subject integrity" (Goodson (1987:192)).

It was not until the wider, more rounded concept of environmental education emerged, but especially during the Working Groups' negotiation stages in the National Curriculum, that the old wounds were reopened; separate Attainment Targets (ATs), especially in science and geography, or a cross-curricular approach? This debate was visited in Chapter 1 (Theories and ideologies in environmental education).

However, excepting ecology and field studies, Goodson's (1987) study of the emergence of environmental studies really does not explore other legitimate sub-groups; parts of what today would be considered as essential within an environmental curriculum, namely those related to planning and social issues.

2 Urban studies and environmental education

The rural, nature and conservation-based dominance of environmental studies which was noted and promoted by Watts (1969) and Carson (1978), and was outlined in the Introduction, was a spur which resulted in the development of what might be termed the 'urban studies sub-group'. It was spearheaded by Ward and Fyson, who were both involved in education and planning/architecture, and were concerned with trying to break away from the push towards academia, noted by Goodson (1987).

Bishop, Adams and Kean (1995:49) note that "urban environmental education in Britain gained its vitality from a remarkable coalescence of ideas and people, activated by a supportive context of social and political demands and opportunities". Leaning heavily on the ideas of liberal educational philosophers such as Rousseau, Goodman and Geddes; curriculum theorists such as Bruner; anarchists such as Kropotkin; 'de-schoolers' such as Illich; social theorists such as Morris and Ruskin and planners/environmental psychologists such as Lynch, Canter, Hall, Sommer

and Tuan, Ward and Fyson (1973 preface) felt that an 'urban studies' approach (a term not mentioned by Goodson), to environmental studies, should be aimed at "the non-academic urban child-in other words with the vast majority of the population".

The urban studies approach to the then environmental studies, was inherently more 'radical' ie political and theoretical than the 'traditional' nature/conservation ie field studies approaches. How could it be otherwise when its focus was people, not ponds? Ward and Fyson (1973:15), in a visionary statement redolent of the main outcome of the United Nations Conference on Environment and Development, Agenda 21/Local Agenda 21, argued that "we should aim at the preparation of school children for their future roles as participators in environmental decision-making. There are public arguments in all our cities over planning issues; school is the right place to rehearse the individual's role in such controversies". Ward and Fyson (1973:14) continue by summarising Crick (1972), that there is a "need to accept conflict over political issues and to avoid presenting the system and the consensus as some kind of universal truth", which is also relevant to the native-alien debate as well as urban studies. These issues were later to be addressed by Hicks and Fisher (1985) in terms of local-global links, and futures education.

Prior to the development of a coherent 'theory' for urban studies in schools, nature and environmental studies was devoid of a varied 'ideological' or 'political' input. This was deliberate, and as Dorion and Gayford's (1990/91:28) survey of teachers showed ("children's involvement seemed to be limited generally to understanding and experiencing the natural world only", and that "problems involving controversy arising from political, economic and social factors were regarded as less appropriate at the primary level"), is still the teacher-preferred curriculum approach today.

Martin and Wheeler (1975:5) note that "the late 1960's were fateful years for the evolution of environmental education ideas, and marked the watershed between the apolitical, naturalist practices of environmental studies and the committed activism of environmental education".

Their identification of the change from environmental 'studies' to environmental 'education' as being a political/activism-related ie

ideological, is probably true, and resulted in a quantum leap along the continuum, outlined in Chapter 1 (Theories and ideologies in environmental education), which represents the development of environmental education. Sterling's (1994:250) point, that in the move from 'environmental studies' to 'environmental education', the emphasis and goals of environmental educators have shifted from being predominantly based 'in' and 'about' the environment, to 'for' the environment, is also valid here. Ward and Fyson justified this new move along the continuum of environmental education by correctly asserting that until the early 1970's, the dominant ethos in environmental education was field studies, whether biological, geographical or rural studies based. This, they argued was untenable when 85% of the population was urban and only 15% rural. Goodson (1975:72) notes that the "rural bias is present in nearly all of the environmental studies courses found in contemporary English secondary schools, as any survey of current CSE, 'O' level and 'A' level syllabuses will confirm". This is a curious statement, given the criticism of Goodson's (1987) case studies (above), that, excepting ecology and field studies, he did not explore any other areas of what could legitimately be included within a rounded environmental education curriculum

The concern of Ward and Fyson (1973:3) was that, by transporting predominantly urban (and multicultural) students out to the countryside, and learning about the countryside, students were always discovering other people's environments rather than their own: "we are concerned here with the education of active citizens, and where else can this be undertaken if not in the city?" This is similar to Storm's (1995:vi) points, mentioned in the Introduction, that "environmental education has for a long time been sadly asymmetrical. Its non-too-hidden curriculum message has been that real environments are exclusively rural: environment equals countryside" and that "although most of us live and work in urban and suburban environments, the message to our pupils is often that interesting places are to be found beyond the towns" (Storm (1995:vi)).

The rurally biased, nature and conservation paradigm in environmental studies, which Dorion and Gayford (1990/91) have shown continues today, had arisen for many reasons, most of which were outlined in the Introduction. The great post-war enabling acts such as The National Parks and Access to the Countryside Act (1949) which set up the Parks themselves,

the Countryside Commission and Nature Conservancy; the establishment of the Council for the Promotion of Field Studies in 1943 (now the Field Studies Council); the establishment of rural studies and rural studies centres; the development of the "Countryside in 1970" movement and the influence of bodies such as the Country Landowners Association (CLA) and the Council for the Protection of Rural England (CPRE) had all fuelled a great interest in recreation, agriculture, wildlife and rural life which schools naturally reflected in their curriculum (see Lawton (1987)).

If, as Lawton (1987:17) has pointed out that "education is concerned with making available to the next generation what we regard as the most valuable aspects of culture", then the predominance of rurally-biased environmental courses, in a culture which, as Williams (1975) and others have shown has shown, still values the country over the city, is not surprising. Williams (1975:7) notes that "there is almost an inverse proportion, in the twentieth century, between the relative importance of the working rural economy and the cultural importance of rural ideas". Uzzell (1990:25) supports Williams' (1975) view in that "the natural environment has a special place in most people's psyche, and the countryside is seen as the true home of the modern urban dweller". But does Uzzell's view hold true for all groups in British society, or are some excluded?

Phillips (quoted in Coster (1991:6)), a black writer and lecturer, answers this question but goes further in linking the notion of countryside with nationality when he states that "the notion of the countryside is a last refuge of English nationality". Coster (1991:6) notes that "we even use the same word to mean both countryside and nation".

The theme of ethnicity and countryside access has been explored by Agyeman (1989a) who investigated the popular dislike of alien species amongst conservationists (see Chapter 3 Urban ecology and environmental education), to black people's experiences of alienation when venturing out of the city, into the British countryside. He quotes Fenton (1986:21) who notes that "perhaps dislike of alien species is indeed similar to racial discrimination-wanting to preserve the genetic integrity of one's own stock (a natural human failing). Alien species are welcome in strictly defined areas (gardens) but must not be allowed to pollute the native culture (the

wider countryside)" and adds "black people in the countryside are perhaps seen as 'polluting' human 'aliens'; they are perceived as being 'out of place'" (Agyeman (1989a:336)). (see also Schoon (1992), Doughty (1978) and Fenton (1986) in Chapter 3).

Whilst not a focal area of this thesis, there is an issue worth briefly pursuing here. If, as has been argued throughout this thesis, that the rurally-biased nature and conservation dominance of environmental studies/education is accepted, and that the views of Fenton (1986) are held by some, why has there been no research specifically into the perceptions and feelings of children from ethnic minority groups who venture into the countryside on school field trips? Evidence here is anecdotal, but suggests that certain field centres, run by the ILEA, had problems with the attitudes of local people when, as would usually be the case, multiracial groups visited. Having a bad experience on a school field trip would be likely to put a child off future countryside visits, and, if communicated to parents, could do the same for a whole family.

However, an enlightened approach to the issue of countryside and culture comes from Common Ground whose May Day Poster for Local Distinctiveness (in P Wright (1992a)) notes that just as we should "oppose monoculture in our fields" and celebrate genetic diversity in plants and animals, we should also "exile xenophobia which fossilises places and peoples" and "welcome cultural diversity" (P Wright (1992a:31)).

The dominance of rurality and nature/conservation in environmental studies/education curricula was, by the mid-1970's, under serious threat. From the teacher's point of view, 'ruralism' was innocent as Carson (1978:vii) points out: "the earliest environmentalists in schools were those teachers interested in natural history and rural education" .

The rurally biased nature-conservation paradigm began to change, with arguably the biggest role in this change being a body outside the formal education sector: the TCPA. In early 1971, it set up an Education Unit staffed by Ward and Fyson, a mixture of planner/educationalist/architect. Charged with enthusiasm at the 1969 Skeffington Report which advocated citizen participation in planning issues and community forums "to provide local organisations with the opportunity to discuss collectively planning and

other issues of importance to the area" (Skeffington (1969:51)) they launched the Bulletin of Environmental Education (BEE). BEE became the standard bearer of urban studies. It revelled in its own radicalism and innovation. As Bishop, Adams and Kean (1992:56) note "BEE was unique. It immediately addressed urban and built environment issues at a time when environment was still seen by many as exclusively about rural and natural aspects."

In the first issue, Storm (1971:unpaginated)) provided the 'urban studies sub-group', according to Martin and Wheeler (1975:16), "with a 'manifesto' based on the educational recommendations of the Skeffington Report and urging the adoption of a conflict-centred curriculum for environmental studies oriented towards understanding community issues in an urban context".

In a seminal article, he called for a curriculum which "would bear relatively little resemblance to present courses bearing this label; pupils might be more concerned with pressure groups and the mechanism of environmental decision making than with the mere recording of existing land-use. A crucial stage of political sophistication would be reached once it was realised that opposing interests are not necessarily physically distinct as are the adequately housed preservationists, and the inadequately housed militant". (Storm (1971:unpaginated)).

Environmental education, in Martin and Wheeler's (1975) 'politics/activism' sense, had arrived through a combination of 'traditional' environmental studies, and the more 'radical' urban critiques of the 'urban studies sub-group'. This new realism also had its own mouthpiece: BEE.

Was this form of radical urban study adequately described as 'fieldwork?' Often it took place on 'grey' (built) as opposed to 'green' (natural) surfaces. Ward and Fyson (1973:15/16) defined the use of the urban environment for radical study purposes as "streetwork" because the experiences with which students came into contact seemed "barely represented by that bland and curious phrase 'urban fieldwork'". The Streetwork/'urban studies sub-group' was, and still is "about ideas: ideas of the environment as the educational resource, ideas of the enquiring school, the school without walls, the school as a vehicle for citizen participation in environmental

decision making, ideas above all about a 'problem-oriented' approach to environmental education" (Ward and Fyson (1973:preface)).

Central to the development of a radical urban approach, through streetwork and urban studies, were the development of Urban Studies Centres (USCs), and town trails. USCs, according to the Council for Urban Studies Centres (CUSC) Second Report (1976), were set up "as a learning base....as a centre serving visitors....as a teaching resource centre....as a centre through which local authority-particularly planning authority- information about the local environment, can flow to the local school and adult population....as a venue for community forums....as a specialist institution". (CUSC (1976:4-5)). This is similar in ideal to, and was based on both Geddes' 'Outlook Tower' and were a direct spin-off of Skeffington's (1969) 'community forums'.

Whilst many things have changed since the CUSC Second Report in 1976, the essentials of the urban studies centre remain the same. Indeed HMI (1987:14) note that "the urban studies centres, voluntary in nature though they are, are providing a valuable service in education in enhancing understanding and concern about the urban environment. This seems to be particularly important at a time when there is concern about inner city decay".

It is worth noting in more detail that the CUSC Second Report (1976:3) mentions "the local authority-particularly the planning authority". Urban studies, and USC's, have, always been closely linked with planners and planning. One of the earliest urban studies centre projects, Town Teacher, in Newcastle On Tyne, started operating in 1978. David Lovie, a director, was also a planner. The Royal Town Planning Institute (RTPI), which, since 1979 has had an Environmental Education Group, note that: "if the planning system is to become more responsive to community needs and aspirations, the importance of environmental education in enhancing the awareness of the environment and in encouraging more active citizen participation in decision making, must become better recognised" (RTPI (1985:2)). In 1990, the RTPI produced Environmental Education: A Handbook, an update of the 1985 version, for the use of planners involved in environmental education.

Carson (1978:vii), an NRSA/NAEE traditionalist, seems to have missed the point, or perhaps he just couldn't bring himself to talk about 'urban studies

centres' when he notes that "the Council for Urban Studies Centres was set up in 1974 to encourage the setting up of *field centres in urban areas* to balance the influence of the rural field centres" (my emphasis). Urban studies centres are now represented by a vociferous and well organised grouping: the National Association of Urban Studies (NAUS), who publish Streetwise, the successor to BEE from the Lewis Cohen USC at Brighton University. In 1994, NAUS became 'Places for People', and in 1995, the Lewis Cohen USC was closed.

Town trails became an early focus of streetwork activity, often from a route developed by, and from, an USC. Wheeler and Waites (1972:16) note that "the length of a town trail depends on the number and variety of visual experiences to be included. Contrast, juxtapositions and surprises are essential to the success of the trail. Do not lead the trail along the obvious route, but deviate; find out unusual pathways; do not stick to the 'beaten track'; go through controversial areas where the planner or developer may be in conflict with the public over the use of a particular site". They conclude that "the town trail is intended to be an open-ended exercise in informal environmental education which leads the tracker to ask questions and evaluate experiences without having the answers fed to him".

The aim of town trails was to awaken a sense of ownership in students. This, it was felt would inculcate a sense of pride and caring. Another exponent of town trails, Goodey (1974) summarises this view: "you're the expert. Nobody knows your neighbourhood better than you do" (Goodey (1974:66)).

The radical ideology behind Town Trails, as noted by Wheeler and Waites (1972:16) ("do not lead the trail along the obvious route, but deviate; find out unusual pathways; do not stick to the 'beaten track'; go through controversial areas"), is similar to that of this thesis in outlining an alternative approach to urban nature, and specifically that of Agyeman (1994c:VIII) who argues that "when looking for places to study nature, it is often tempting to go to the places where you know 'typical' nature is, such as parts of the countryside. If your school is in a town or city, the temptation is to go to an urban nature reserve, an ecological park or an ancient woodland. Whilst there are tremendous curriculum (and mental health!) benefits in certainty, there is an unmatched excitement in

ecological uncertainty, in 'atypical' nature". This theme is further developed in Chapter 3 (Urban ecology and environmental education).

3 The international context to the development of environmental education

Against this background of the development on environmental studies/education within Britain, efforts were being made on the international stage to promote wider environmental awareness and environmental education. This was not surprising given the plethora of awareness/'doomsday' publications which had arrived in the 1960s and early 1970s. These, together with the first satellite pictures of earth, and the consequent description of the planet by early astronauts as 'the big blue marble in space', provided fertile ground for popular interest in the environment.

In 1970, the IUCN who had been involved in education since 1949, convened a conference at Carson City, Nevada, USA. Representatives from the then DES, were, however, conspicuous by their absence.

The 'Nevada Declaration', which is a definition of environmental education (see Chapter 1 Theories and ideologies in environmental education) states that: "environmental education is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture, and his biophysical surroundings. Environmental education also entails practice in decision making and the self formulation of a code of behaviour about issues concerning environmental quality" (DES (1981:60).

The Nevada Declaration was, and still is utilised by many as *the* definition of environmental education. The report by the Scottish HMI (Scottish HMI 1974) utilises it, as does the Scottish Curriculum Development Service/Strathclyde Environmental Education Group (1985) and the NAEE. The DES (1981:6) state that it is "perhaps the earliest and certainly the most often quoted attempt at a working definition".

It was unique in that, for the first time, the word "biophysical" was used as an attempt to integrate the natural and built environments, again reflecting the perceived need to move away from purely nature related

definitions (see Bellamy (1991) in Chapter 1 Theories and ideologies in environmental education). Also, the use of the word 'culture', the totality of societal interactions and productions, was unique in that British attempts at definitions prior to Nevada focussed, as has already been argued, on the rural aspects of environmental education and did not mention 'culture' as an issue. This again reflects the dominance of the nature-led 'traditional' approach in Britain.

At the 1972 UN Conference on The Human Environment ('The Stockholm Conference'), resolution 96 recommended that the UN and United Nations Educational, Scientific and Cultural Organisation (UNESCO) "take the necessary steps to establish an international programme of environmental education", "with a view to educating him (the ordinary citizen) as to the simple steps he might take, within his means, to manage and control his environment" (UNESCO (1972:212)) One result of this recommendation was a series of regional workshops, the most important being the Belgrade Workshop.

The Belgrade Workshop was organised by UNESCO and the United Nations Environment Programme (UNEP) in 1975. The International Environmental Education Programme (IEEP) was launched at the Belgrade Workshop, and was a descendent of the 1972 Stockholm recommendation 96. It was the first intergovernmental statement on environmental education. It detailed the aims, objectives, key concepts and guiding principles in The Belgrade Charter-A Global Framework for Environmental Education. It built on the Nevada Declaration, and in many ways is a superior synthesis of environmental education. It was utilised in the HMI Working Paper Environmental Education which formed part of the document, Curriculum 11- 16 (DES (1977a)).

The Belgrade Charter, published in 1977 states that the aims of environmental education are: "to foster clear awareness of and concern about economic, social, political and ecological interdependence in urban and rural areas; to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment; to create new patterns of behaviour of individuals, groups and society as a whole towards the environment" (DES (1981:6)).

Politics was not mentioned in the Nevada Declaration nor was the urban-rural contrast made explicit. These additions in the Belgrade Charter were probably, in no small part, the result of the influence of organisations such as the TCPA and the growing 'urban studies sub-group', together with the designation of 1975 as European Architectural Heritage Year and the DoE's instigation of the Heritage Education Group, the educational wing of the Civic Trust.

After Belgrade, a variety of further regional meetings occurred which carried on the momentum and finally resulted in the first intergovernmental conference on environmental education at ministerial level: the Tbilisi Conference.

The Tbilisi Conference was again organised by UNESCO/UNEP as part of the IEEP. The conference took place in Tbilisi, Georgia, USSR in October 1977. The DES presented an information pack entitled Environmental education in the UK '77 (DES (1977b)) representing both the formal education sector and voluntary environmental and educational organisations.

Tbilisi "helped to specify the actual nature of environmental education by laying down its aims and characteristics, as well as the strategies to be adopted at the national and international levels" (UNESCO (1980:preface)). The 'Tbilisi definition' (recommendation 1) states that: "a basic aim of environmental education is to succeed in making individuals and communities understand the complex nature of the natural and the built environments resulting from the interaction of their biological, physical, social, economic and cultural aspects, and acquire the knowledge, values, attitudes and practical skills to participate in a responsible and effective way in anticipating and solving environmental problems, and in the management of the quality of the environment" (UNESCO (1980:preface)).

Interestingly, in Recommendation 2 of the Tbilisi Conference, the three "goals" of environmental education were a re-endorsement of those "aims" of environmental education, first enunciated as the Belgrade Charter: "to foster clear awareness of and concern about economic, social, political and ecological interdependence in urban and rural areas; to provide every person with opportunities to acquire the knowledge, values, attitudes,

commitment and skills needed to protect and improve the environment; to create new patterns of behaviour of individuals, groups and society as a whole towards the environment" (DES (1981:6)).

Tbilisi yielded 41 other recommendations and "considered that environmental education, as an essential component in comprehensive lifelong education, with a problem-solving approach and providing for active involvement by the public, should help to make education systems more relevant and more realistic" (UNESCO (1980:preface)).

Post-Tbilisi, the IEEP has been active on the international stage in promoting environmental education. It convened the 'Tbilisi plus ten' conference in 1987 in Moscow and produces Connect, an international environmental education newsletter which details regional, national and international workshops and conferences together with new developments worldwide, including those in teacher education (UNESCO-UNEP (1990)). It also produces three types of publication: the Environmental Education Series, a series of pamphlets on issues such as problems in cities, values, problem-solving and teacher education; Basic Documents, a series of booklets detailing research and resources; and Final Reports, a series of brochures detailing recommendations of conferences and workshops.

Many other major international conferences and reports, not specifically educational, but environmental and/or development-oriented mention some form of environmental education as an essential part of any international strategy for global environmental management, and latterly, sustainability and sustainable development. The following are perhaps the most notable: The Brandt Report (1980); The Global 2000 Report (1980); The World Conservation Strategy (1980); North-South: A Programme for Survival (1980); The World Commission on Environment and Development (1987); the European Resolution on Environmental Education (1988); CEC Green Paper on The Urban Environment (1990); Caring for the Earth: A strategy for sustainable living (IUCN/World Conservation Union (1991)) and The United Nations Conference on Environment and Development (1992).

4 Environmental education in the 1980s- towards a National Curriculum.

By the early 1980s, environmental education had received inputs from a very broad spectrum of sources: the school-level input came largely from the curricular battles between biologists, geographers and rural studies teachers (Goodson (1987)) and curriculum development projects such as those of the Schools Council in the UK. The urban ('radical') input came from the 'urban studies sub-group' and its satellites. The international input came from organisations such as UNEP, UNESCO and the IEEP. The Non-Governmental Organisation (NGO) input came from bodies such as the CEE, FoE, WWF and the NAEF. The governmental input came from English Nature, the Countryside Commission, the then DES, the DoE and the Civic Trust and the professional input from organisations such as the RTPi and TCPA.

There are, arguably, four interlinked themes which germinated in the 1960s and 1970s, whose explosive development in the 1980s have further shaped environmental education:

a greater acknowledgement of the importance of attitudes, values, moral education and political literacy;

the development of global and futures education approaches;

the surge in public interest in the environment;

the development of the National Curriculum.

The first three of these themes, and especially the first two, are themselves directly related. The development of the National Curriculum in terms of environmental education was introduced in Chapter 1 (Theories and ideologies in environmental education).

Attitudes, values and political literacy

BEE 110 (June 1980) was entitled 'Papers from the Institute' (Institute of Education, University of London). This was the result of a lecture series on environmental education. In her opening of the series, Slater (1980:4) notes that "values education and political literacy programmes are sharpening the debate and developing strategies which may be seen as possible avenues of exploration for an environmental educationalist" (see Slater (1993)

Learning Through Geography for classroom examples). This visionary statement is perhaps even more relevant today, given the development of sustainability and sustainable development as policy goals, and the possible convergence of environmental education with other 'adjectival' educations.

Huckle (1980:26), in the same issue of BEE, supports and amplifies Slater's (1980) view, albeit with a slight change in terminology, in asserting that "moral education is as central to environmental education in the early eighties as field study was to environmental studies in the late sixties". This is a similar kind of comment to that of Martin and Wheeler (1975:5) in that an input of a particular kind eg "committed activism" or "moral education" (Huckle (1980:26)) can change, or at least greatly influence the nature of the environmental education curriculum.

Gayford (1985/86:16) also supports Huckle (1980) and Slater (1980) when, in discussing the differences between environmental studies, environmental science and environmental education, he notes that "environmental education is concerned with issues which have a moral dimension" and that "moral education theory and environmental education theory provide common ground" (Gayford (1985/86:17)). Gayford's (1985/86) latter point is one shared by Wilson (1973).

The terminological differences between Slater (1980) on the one hand, and Gayford (1985/86) and Huckle (1980) on the other, are probably more apparent than real, as Caduto (1985:19) notes: "values education and moral education will be used interchangeably". This is in accordance with both Piaget (1932) and Kohlberg (1964), who insert attitudes, values and beliefs into a framework or model of moral development. Values are thus seen as a constituent part of the building blocks of morality.

The 'attitudes and values' approach was noted at the Belgrade workshop: "environmental education should not be confined to providing the learner with knowledge but should develop environmental attitudes and values which reflect awareness of the surrounding environment and acceptance of the responsibility for actions to resolve environmental issues" (UNESCO (1975:63)). It was also noted at the Tbilisi Conference: "environmental education should be aimed at creating an awareness and values directed toward improving the qualities of life" (UNESCO (1977:26)).

In Britain, the NAEEs Environmental education: a statement of aims (NAEE (1976:1)) was an early attempt to integrate attitudes and values into their post-NRSA, but still predominantly field studies based, 'traditional' form of environmental education. One of their recommendations for primary children was that environmental education should "encourage the development of value judgements and an environmental ethic". However, the potential impact of the NAEE statement of aims, together with other early attempts, is diminished because of its failure to link attitudes and values approaches to attempts to improve political literacy. In fact, nowhere in the NAEE statement is there a mention of politics.

If an aim of environmental education, as stated at Belgrade, Tbilisi and other fora, is to encourage people toward environmental action, then, as Huckle (1980:26) wisely states "our older pupils and students must be given an understanding of the nature and function of politics, for it is only when values find political expression that environmental change is likely to come about". He develops this idea by referring to Crick and Porter (1978) in stating that "Crick's programme for political literacy.....suggests the knowledge, skills and attitudes which pupils require before they can effectively participate in environmental politics" (Huckle (1980:26)) .

Pepper (1987:67) is more forceful in his views on values and political literacy than Huckle (1980). He describes five aims for a radical environmental education curriculum. Aims three and four are, respectively: "to open students minds to alternative world views" and "to work and live cooperatively". These are implicit pleas for concentrating environmental teaching on attitudes and values. His fifth aim, "to realise that humans can act collectively to shape society" makes an unashamedly explicit plea for political literacy in that, he notes, no substantial outcome will be derived from his earlier two aims "unless students can be weaned away from the most pervasive, insidious and odious educational doctrine of our time-that they are basically powerless" (67/68).

Williams (1985/86:13), describing the 1984-86 WWF-funded Global Environmental Education Project (GEEP), provides a clear and concise summary of the relationship between environmental issues, values and politics. He argues that "environmental issues.....are essentially political

because they result from processes which determine how people use and distribute resources". This is in marked contrast to the findings of Dorion and Gayford (1990/91) regarding teacher unwillingness to tackle 'political' issues at the primary level. He continues that GEEP is, in part, an attempt "to balance attention to culture, values and personal decisions with a more overt recognition of politics" (13).

Whilst the 'attitudes and values' approaches were developed in the late 1960's and 1970's, their ascendancy in environmental education in the 1980's has created a wealth of new avenues for exploration. It has also revolutionised the 'people-environment' approach in geography through projects such as Geography for the Young School Leaver (GYSL), the Geography 14-18 (Bristol) Project and the 'A' level Geography 16-19 Project, amongst others.

Perhaps the most important broad outcome of the development of the 'attitudes and values' approach in environmental education is that it has helped lead environmental education into potential or incipient convergence with other curricular areas noted in Chapter 1 (Theories and ideologies in environmental education). These curricular areas (peace and human rights, world studies, global, futures education etc), unlike the then (1970s) primarily knowledge-based environmental studies, had actually established and developed themselves around such an approach; it permeated their content and informed their teaching methodologies and strategies. It is further arguable that a prerequisite for convergence with the other areas, was that the then environmental studies took on board affective questions, related to emotion, to attitudes and values, for it is hard to see how a purely cognitive, traditional 'ponds and hedgerows' approach (ie rurally-biased, nature/conservation) could have led to the point where convergence might be possible.

Huckle (1980:26) observes this well: "education has promoted 'know-how' at the expense of feelings, emotions and values. That such areas as development, community, environmental and social studies education are showing a convergence of intent is an optimistic sign for the future". Huckle is here talking about the traditional emphasis laid on cognitive (knowledge based) as opposed to affective (attitude and value based) learning.

A note of caution must be inserted here. As Fien (1994) observes, one cannot simply assume that the linear progression from the 'right' knowledge and attitudes will lead to the 'right' (ie responsible) behaviour, as behaviourist commentators in the US such as Hungerford and Volk (1993), Hines, Hungerford and Tomera (1986) and Cone and Hayes (1984) imply. Attitudes and values, as Williams (1985/86), Pepper (1987), Huckle (1980) and others have argued, need to be constantly contextualised into a wider political and ideological framework. Whilst this is in itself fraught with difficulties, and is open to charges of indoctrination, Giroux (1988) calls for teachers to regard themselves as 'transformative intellectuals' who facilitate the development of critical skills within their charges. Slater (1989:5) makes a similar point in noting that the teacher is "the upholder of critical thinking" (see Chapter 7 Conclusions).

Global education and futures education.

Two areas undergoing convergence with environmental education, that have had a major influence on its development in the 1980's, are global education and futures education.

The term 'global education' is used here as a synthesis of what have variously been called development education, peace education, human rights education and world studies. It is probable that these are earlier terms, similar to environmental studies, for what has now become a more all-encompassing and, according to Selby (1987:24) "mutually illuminating" term: global education.

In 1974, the British Government signed the UNESCO Recommendation Concerning Education for International Understanding, Cooperation and Peace and Education Relating to Human Rights and Fundamental Freedoms. This paved the way for the development of international and intercultural understanding and approaches which considered human rights, injustice, inequality, war, disarmament and the environment. The School Curriculum (DES (1981)) formalised UNESCO's broad statements into concrete aims for schools.

D Wright (1983:5), in a discussion about initiatives in geography and development education, notes that "both documents combine high ideals with a very 'down to earth' attitude that a 'Global Community' should be the concern of every teacher and pupil". This was a broad conclusion of the later Swann Report (1985) which argued that education as a whole, not just geographical education, should develop individuals' ability to function effectively in society and in the wider world community.

Selby (1987:24) argues that global education has "four principal and profoundly interrelated dimensions". These are the *spatial* (world interdependence), the *temporal* (dynamic of past, present and future), the *issues* (environmental degradation, human rights, world inequalities) and the *inner* (personal journey/self awareness) dimensions.

Of these dimensions, the first three are, in terms of the body, 'outer', and the fourth, an 'inner' dimension. The outer and inner dimensions are seen to be in a dynamic relationship such that, according to Selby (1987:24), "an emerging awareness of the world necessarily goes hand in glove with a growing level of self awareness". This is the basis of Sterling's (1990) criticism of Fien's (1993) contention that only a *socially critical/ecosocialist* orientation can develop an 'education for the environment'. Sterling's (1990) *Gaianist/liberal progressive* environmental education orientation, in Fien's (1993) terms (see Chapter 1 Theories and ideologies in environmental education) is closely allied to Selby's (1987) thinking.

The holistic, ecocentric and bioethical aspect of global (and environmental) education owes much to the great tradition of early North American Romantic-Transcendentalist writings of authors such as Emerson (1836) Muir (1898) and Thoreau (1854), and latterly Leopold (1949).

The global approach also draws heavily on the radical ecological thinking typified by such journals as Resurgence and The Ecologist. Especially significant in these 'deep ecology/Gaianist' mouthpieces is the thinking of authors such as Schumacher (1974) and Lovelock (1979). Lovelock developed the earlier, less personal concept of the 'biosphere' into the more personal, holistic and bioethical concept, 'Gaia', the living, feeling Mother Earth. Lovelock (1988:57) notes that "the Gaia hypothesis sees the evolution of the species of living organisms so closely coupled with the evolution of their

physical and chemical environment that together they constitute a single and indivisible evolutionary process". This person-planet dynamic would appear to have been a starting point for Selby's (1987:24) "inner and outer dimensions".

Taking, as it does, a holistic stance, global education is diametrically opposed to the 'fragmentationalist' or 'reductionist' worldview which, according to Greig, Pike and Selby (1989:8) originated with Descartes ('Cogito, ergo sum') and developed through Newton, Copernicus, Darwin and others. They pursue and enlarge upon the idea that, in the fragmentationalists' view, the world needed to be reduced to its constituent parts in order that it could be classified, catalogued and studied, and that this system of thought "found congenial ground in a Western Christian world in which there had been a long and generally dominant tradition of human-centredness". One obvious result of this, they argue, is our present, reductionist system of education.

Greig, Pike and Selby (1987:40) develop the 'inner' and 'outer', or holistic theme when they argue that "a student brought face to face with new perspectives, new ways of seeing the world, alternative visions of the future; a student learning that her life is inextricably bound up with the problems and prospects of people and environments thousands of miles away, will inevitably begin to critically examine her assumptions, perspectives, values and behaviour".

Whilst the earliest coordinated attempts at global education were the One World Trust's World Studies Project (1973-80) and the Schools Council/One World Trust World Studies 8-13 Project (1980-83), arguably the biggest fillip to the approach were TV images of starvation and poverty, in places such as Ethiopia and Sudan, in the early and mid-1980s. Storm and Tinline (1983:6) share this view in noting that "this concern, in both teachers and taught, owes much more to the informal influences of TV, radio, newspapers and the aid agencies than to any institutionalised programmes of study".

More recently, Pyle, creator of 'Captain Planet' (a 'One World' TV children's cartoon do-gooder) and vice president of Environmental Programming for TBS Superstation, in an interview with Claire Messud (1992:6) notes that "the environment is not a matter of trees. It's an ethical and moral issue, a

problem of value systems, of people caring more about personal greed than the future. And the media is the only way to spread the message".

The global approach seems to have touched a chord with teachers. As part of their 1986 'Global Impact Survey', the Centre for Global Education at the University of York surveyed over 800 primary and secondary schools in 21 randomly selected Local Education Authorities (LEAs) throughout the UK. Amongst the findings were that "75% of teachers think that 'developing an understanding of that the world is an interrelated, interdependent system of lands and peoples' is very important or crucial in the promotion of a global perspective in education" (Greig, Pike and Selby (1987:unpaginated)) and that "67% of teachers think that the political aspects of development and environmental education are not too controversial to be dealt with in the classroom" (Greig, Pike and Selby (1987:unpaginated)). Although the Centre for Global Education research focussed on teachers in both primary and secondary schools, its findings as regards the political aspects of environmental and development education are at variance with the findings of Dorion and Gayford (1990/91:28) who found that "the political and economic processes in the environment were also regarded as less important" among primary teachers.

It could be argued that there is a conflict between the local approach of urban studies, and the global approach. Hicks and Fisher (1985:21) however, note that "the reverse...is the case: the two levels are complementary and inextricably linked. A world studies approach invites the teacher to draw out the links between a particular town or village and the wider world, and insists that to leave this wider dimension out is to present pupils with a parochial and distorted picture".

If the urban studies approach of the 1970's heralded the *politicisation* of environmental studies into environmental education, as Martin and Wheeler (1975) and others have noted, then the global education approach of the 1980s heralded an awareness amongst practitioners of the need to *personalise* (holism/person-planet) and globalise environmental education.

Both the urban studies (Hirst (1983)) and global education (Selby (1987)) influences have, however, had another major impact on environmental

education. This is that more teachers are now utilising and practising the concepts of social justice and equality. In an environmental studies framework which considered largely rural issues, and was largely cognitive, issues of equality and social justice were at best seen as marginal, and at worst ignored.

Agyeman (1989b:23) has argued that "the many definitions of environmental education contain abundant references to words such as 'skills, values and attitudes' and 'caring, awareness and participation'. The former words relate to the concept of 'quality', in that they are all prerequisites for environmental enlightenment and enhancement ; the latter can be related to human 'equality', which..... can be defined as 'having the opportunity to experience quality'. A global goal for environmental education must be a concern with these inseparable concepts because, as the Brundtland Report showed, there can be no real experience of environmental quality without human equality and vice-versa. This applies in Britain, just as much as in the developing world. The task for all environmental educators in the 1990's and beyond, is to ensure that quality and equality are inter-linked and are key features of their work programmes".

The urban studies/global education input has also brought to environmental education a heightened awareness of the issues of multiculturalism together with racial and sexual stereotyping. There are now some excellent resources for environmental education which have been 'screened' for teachers, and are available on loan from organisations such as the Letterbox Library (see Adler (1992))

Hirst (1983:46) notes that "the issues of race, inequality, class, gender and freedom.... are central to urban studies". Developing this line of argument into the role of LEAs, Shah (1985/86:21) argues that "environmental education should be seen by educationists and local education authorities as being part of their education policy with a multicultural, global perspective". She continues that "a core course on environmental education which does not acknowledge the multicultural or global aspects is unlikely to convince the students about its complete relevance" (24) and that "to treat environmental education as if it is not related to multicultural and

development education is tantamount to being unfair to its potential value" (24).

Shah (1985/86:23), interestingly, also notes an optimistic convergence in what she describes as a 'broad focus' approach to environmental, multicultural and development education. The broad focus includes a global perspective, one based on cultural equality and one in which all subjects take part. She states that "there is evidence that the broad focus-suggested as the right approach.....- is gathering support".

Whilst closely linked to global education, futures education is now of even greater relevance according to Hicks (1994). He notes that "much of the innovative work in global education over the last two decades has focussed on the need to teach about issues of global interdependence. Such interdependence also exists across time, however, and it is this dimension which now equally requires attention" (Hicks (1994:preface)). He is arguing that dominance of the *spatial* aspects of global education need to be supported by the *temporal* focus of futures education.

Futures education is concerned, notes Hicks (1994:1) with "developing skills of forward-looking thinking" and helps pupils "develop a more future-oriented perspective on their own lives and the wider world; identify and envision alternative futures which are more just and sustainable; exercise their critical thinking skills and creative imagination more effectively; participate in more thoughtful and informed decision making in the present; engage in active and responsible citizenship in the local and global community, on behalf of present and future generations" .

Clearly, both global and futures education have influenced thinking in, and have huge areas of commonality with environmental education.

Public interest in 'the environment'.

From the ongoing health craze which began in the early and mid-1980s, sprang a renewed interest in 'the environment'. It happened around 1986 and went on, through European Year of the Environment (1987) and Mrs Thatcher's 'green' speech to the Royal Society in September 1988, to become

one of the biggest political issues of the late 1980's. This is still the case into the 1990s (Worcester (1994)).

Several factors in the 1980s contributed to the rise, and rise of 'environment' up the political agenda. International events such as the Ethiopian Famine and subsequent pop chart number one ('Feed the World' by Band Aid)), Bhopal, Chernobyl, the Karin-B, seal die-off, the Exxon Valdez oil spill, the continued destruction of the rainforests, the publicity surrounding the destruction of the Ozone Layer, global warming and more local events such as the Great Storm of 1987 all hit the headlines.

In the late 1980s, organisations such as FoE and Greenpeace could hardly keep pace with donations and membership/information requests. As Rose (1993:289) notes: "in line with others, Greenpeace UK had grown rapidly: from 190,000 supporters in 1989 to 390,000 in 1991, and from 65 staff to 90". People wanted information, the truth, and the media tried to appease an information hungry public with a new breed of journalist: the 'environment correspondent'. This desire to know what was happening locally and globally, included school pupils. Environmental projects, sponsored by organisations such as Shell, Kentucky Fried Chicken, Ford, British Petroleum, British Telecom and others found receptive ground in schools, especially primary schools.

Capitalising on schools' interest, on October 8th 1990, the then DES and DoE wrote to all headteachers, about the implications for education of the then White Paper on the protection and conservation of the environment: This Common Inheritance.

The letter stated that "the matters the White Paper deals with are of vital concern to everyone, including children and young people. We hope that the information in the White Paper will help schools and teachers both in their teaching and in the wider life of the school" (DES/DoE (1990:1)). The letter also noted also the contribution which the National Curriculum would make in that "environmental education is a theme which runs across the curriculum" (DES/DoE (1990:1)).

Perhaps the most significant idea in the White Paper, a summary of which was supplied with the letter, was that "the education system must play an

important part in promoting environmental awareness, understanding and competence" (DoE (1990:223)). Keen to build on the encouraging remarks in the White Paper, in 1991 the CEE coordinated an alliance of opinion in Beyond This Common Inheritance: Education and Training (CEE, Scottish Environmental Education Council (SEEC), Welsh Centre for Environmental Education (WCEE) in association with Northern Ireland). The general recommendations were that Government:

- "commit extra and adequate funding to environmental education and training (EET) to.....achieve the objectives of the White Paper";

- "increase numbers of staff in government departments and environmental agencies"

- "endorse, support and enable development of UK strategy for environmental education and training policy and practice" (CEE (1991 page i)).

To date, none of these recommendations have been fully met in the way the CEE et al intended.

In January 1994, the White Paper Sustainable Development: The UK Strategy noted that "education and training are crucial to the achievement of sustainable development" (Government White Paper (1994:para 32.12)). This Paper set up the Government Panel on Sustainable Development.

After the White Paper, the Government Panel on Sustainable Development, promised by John Major after the 1992 UNCED and headed by Sir Crispin Tickell, produced its First Report on January 25th 1995. The report recommends that "education on environmental issues and on environmental values should be available throughout life" (DoE (1995:para 17)); "clearly environmental education far transcends the boundaries of formal education. Work in the field as well as the classroom, bringing in local communities, is an essential part of the education process from nursery and primary schools upwards" (para 18); that "the Panel recommends that the Government should develop a comprehensive strategy for environmental education and training to cover both formal and informal education" (para 24); that "environmental teaching in primary

and secondary schools should permeate virtually all aspects of the school curriculum, and not be confined to geography, science, and technology" (para 20) and that "teachers need further support and training to develop the skills and interdisciplinary approach required" (para 22).

In addition to the four interlinked themes above, which have further shaped environmental education, a huge influence, which is the theme of this thesis, is that of nature and conservation. The next chapter looks at nature, specifically urban nature, and its influence in environmental education, especially through the meteoric rise, in the 1980s, of UWGs.

CHAPTER 3

URBAN ECOLOGY AND ENVIRONMENTAL EDUCATION

Introduction

'Nature' and 'conservation', it has been argued throughout this thesis, have always been focal and integrative points for environmental education, and its precursors, nature, rural and environmental studies. Dorion and Gayford (1990/91) have shown how teachers in their survey still perceive much of the content of environmental education as being about wildlife, the countryside and nature, with, contrary to the findings of the Centre for Global Education (Grieg, Pike and Selby (1987)), a reluctance to deal with political issues related to the environment. Sterling (1992:2) has also argued that this is a feature of more "traditional" approaches.

However, within more radical approaches, there is an acknowledgement of the need to study nature (in this case urban nature), albeit in a more considered and contextualised manner (Agyeman (1991a) and (1994c)). There is also a growing interest in both the influence of "narrow focus" groups, such as UWGs on the curriculum and teachers, and also in different visions of what the study of urban nature could be at Key Stage 2 (Agyeman (1991a)).

An understanding of the key ideas in urban ecology is important in understanding the alternative approach to the study of urban nature at KS2 proposed in this thesis, and to answering the research questions. The research was split into three phases: Phase I, Phase II and Phase III although in practice the phases overlapped.

Phase I specifically sought answers to the following research questions:

- 1 What advice are urban wildlife groups (UWGs) giving to teachers at KS2 in relation to native and alien plants?

2 Are teachers at KS2 utilising this advice regarding native and alien plants in their programmes of study in relation to ecology and environment?

Phase II in part depended upon the results of Phase I in that Phase IIa consisted of researching, developing, and, based on the results of Phase I, clarifying the rationale, and writing an alternative approach to urban nature for teachers at KS2 in People, Plants and Places' (Agyeman (1995)). Phase IIb consisted of an initial evaluation of its use by teachers, and an independent expert. In effect the research question was:

3 How does the book, its concepts and activities fit into the curriculum approaches, plans and Programmes of Study of teachers at KS2?

Phase III extrapolated the rationale (ie the aims and objectives) of the alternative approach developed in Phase IIa into a series of questions for use in evaluative interviews with teachers at KS2 in order to answer the question:

4 How effective is 'People, Plants and Places' (Agyeman (1995)) in informing teacher attitudes and consequent curriculum practice?

1. What is urban ecology?

Whilst the term 'urban ecology' has been associated, in geographers' minds, with the classical ecological urban land use model of Park, Burgess and McKenzie (1925), Douglas (1992:17) notes that "within the discipline of ecology has grown a distinct field of urban ecology examining the behaviour of living things in the urban environment". This latter meaning will inform the following arguments. The use of the term 'urban nature', whilst not quite synonymous with 'urban ecology', reflects more accurately the language used by teachers at Key Stage 2.

2. The development of urban ecology in Britain

The 1990 Commission of the European Communities influential Green Paper on the Urban Environment noted that:

"In recent years, a widening interest in nature conservation has led many people to explore the habitats and wildlife of their immediate urban and suburban surroundings. Areas of abandoned land and seminatural habitats have often proved to be surprisingly rich in their variety and abundance of wildlife. The importance of such natural habitats in urban areas has grown as increased pressure has been placed on wildlife in the countryside by the use of intensive agricultural practices over the past few decades". (CEC:25 para 2.4.2)

Whilst the British urban ecology and urban nature conservation 'movement' is a comparatively recent development (the 1974 'Nature in Cities' Symposium organised by the Landscape Institute and Landscape Research Group was the first such meeting), in terms of the wider historical interest in rural conservation, Smyth (1987:7) notes that "in various ways, citizens had been interested in the natural history of their towns for centuries....though it was not until after the last war that it became a movement with significant impact." This interest, he argues, took three forms: the naturalists who often congregated in societies such as the London Natural History Society founded in 1858 and specialised in amateur scientific study; the protectors of open spaces such as The Commons, Open Spaces and Footpaths Preservation Society founded in 1865 (which became the National Trust in 1895) who fought to save open spaces such as Hampstead Heath (1829-1871) and the animal protectors such as the Royal Society for the Protection of Animals (RSPCA) founded in 1824 who aimed to promote legislation to protect animals.

Between the wars and after, in fact until the 1974 Symposium mentioned above, urban ecology resided as an abstract thought in the minds of academics, landscape architects and devotees such as Nathaniel Rothschild, Max Nicholson and, significantly, Richard Fitter, whose seminal London's Natural History (1945) was "a masterly account" (Smyth (1987:12)).

Influenced initially by developments in the USA, The Netherlands, where the Amsterdamse Bos was created as a 500 ha urban woodland in the 1930s, Germany and Sweden and, according to one of the British urban nature pioneers, Cole (1983:267), by "changing attitudes within the nature conservation movement itself", urban ecology and urban nature conservation 'came' to Britain in the 1970s. Naturalist Richard Mabey's The

Unofficial Countryside (1973), built upon Fitter's (1945) work in describing the fascinating urban ecology of London. It was televised a year later.

In 1980, Mabey followed with The Common Ground in which he argued that people enjoyed contact with 'common' nature per se, and that scientific obsession with rarity (see Ratcliffe's A Nature Conservation Review (1977)), could obscure the personal and perhaps more mundane pleasures which are for most people, a first line of interest in nature. Cole (1983:267) supports Mabey's thesis: "this thinking is closely allied with that in environmental education and the belief that a clear understanding of, and concern for, nature is best instilled through direct and frequent experience-quotidian nature". Underlying Cole's (1983) argument is the notion that commonplace, daily experiences of nature, as a feature of environmental education, could only be delivered close to the home ie in the urban environment for most people.

Bos (1981:19) is more romantic in his agreement of the need for daily contact with nature: "a child who has not tasted honey from a deadnettle or enjoyed the flying seeds of maple trees will never grasp the charm of real nature, even if the biology teacher is first class. We must go through life experiencing nature all around us".

The first attempt at large scale descriptive urban ecology in Britain was Teagle's survey, in 1975, of the urban, suburban and industrial land in Birmingham, Sandwell, Dudley, Walsall and Wolverhampton. The Nature Conservancy Council (NCC) (now English Nature) commissioned the research which was published in 1978 as The Endless Village. In his foreword, the then Director of the NCC, Robert Boote said "this report, which forms the first part of our national project-'Nature Conservation in Urban Areas'- shows that wildlife is a vital part of the urban environment and of the renewal of inner cities" (Boote, quoted in Teagle (1978)). Twenty years on, the editorial of English Nature's journal Urban Wildlife News, in celebrating Teagle's (1978) book, note that it "was the spark which lit the fuse for the huge amount of work done on urban ecology and nature conservation in Britain from the 1980s to the present day" (English Nature (1995:2)).

By the early 1980s, the simple assertions of a small, but growing band of urban ecologists about the putative educational, and other benefits to urban dwellers of the nature in the city, and the need to conserve urban habitats had grown into empirical research. One of the earliest pieces of research was Mostyn's (1979) inquiry into the personal benefits and satisfactions derived from participation in urban nature conservation. Her study, in Birmingham, Mexborough, London and Swansea showed that there were four primary responses amongst interviewees, who were either actively participating in urban nature conservation, or visiting sites. The primary responses, or benefits, are listed in Figure 2.

Figure 2

Personal benefits of participation in urban nature conservation (Adapted from Mostyn (1979) and Johnston (1990))

Emotional	relief of escaping from the city chance to identify with nature sense of freedom a peaceful way to repair emotions a sense of achievement and pride
Intellectual	observing the workings of nature learning about plants and animals and their variety learning about local history developing new skills
Social	getting to know people team and community spirit developing a greater sense of responsibility
Physical	pleasurable sensation feeling fitter a safe play and exercise space

Other specific research into peoples' values and attitudes to, and usage of urban nature sites and open spaces all show similar results to that of Mostyn (1979) including that of Walker and Duffield (1983); Mostyn and Millward (1989); Tartaglia-Kershaw (1982); Millward (1987); Barker and Graf (1989), Harrison, Limb and Burgess (1987) and Johnston (1990).

During the 1980's, two other key forces were at work encouraging the popular study of urban ecology and participation in urban nature conservation at all levels, from school-age to adulthood. These were the development of UWGs and Trusts, and the appointment, by some local authorities, of ecologists.

UWGs began to develop in the early to mid 1980s. According to Millward (1990:17) "the rapid expansion of the urban wildlife movement occurred between 1985 and 1987 by which time some 50 towns and cities around the country had acquired an urban wildlife group of some description". Smyth (1987:66) notes that there were three types: those which were 'town' branches of rural trusts; those which were associations of conservation organisations; and those formed as independent groups reacting to the rural bias of conservation. By 1985, the urban wildlife groups and trusts had formed an alliance, the Fairbrother Group which is allied to the Royal Society for Nature Conservation (RSNC), now called The Wildlife Trusts'. The RSNC has been the umbrella organisation for County Wildlife Trusts since 1976.

The links between environmental education, and the growing urban wildlife and conservation movement were, and still are, strong. Influential as a joint project between the RSNC and the Sunday Times is WATCH, the Junior Trust for Environmental Education. Many UWGs (and schools) now run WATCH groups for younger members. Elkin and McLaren (1991:118) note that urban conservation "has centred on the importance of providing urban people with the opportunity to experience nature and on providing educational programmes for children". Barker and Graf (1989:2) note that "an important facet of nature conservation programmes has been the provision of nature study areas in city school grounds". It is easy to understand why schools want to develop their own nature areas. Johnston (1990:4) notes that "visitor pressure on nature areas varies from site to site. Those with good facilities that have been widely publicised are fully booked for school visits up to a year in advance".

Mostyn and Millward (1989:11), in reviewing the progress of urban wildlife groups go further than Elkin and McLaren (1991) in arguing that "any analysis of the aims of the plethora of new urban ecology organisations, and urban wildlife groups, that have been springing up all around the

country in the last 10 years, indicates that a high priority is placed on educational, recreational and aesthetic concerns". It is interesting to note that they place education first. Whether this is significant or not is conjectural. However, it must be noted that once established, UWGs (eg London Wildlife Trust) tended to appoint, after director and conservation officer, an education officer or (community) development officer, emphasising the role ascribed to education by UWGs (see Chapter 4 Research methodology, methods and results (Phase I) and Appendix 4 Results-Urban Wildlife Groups).

Local authority inputs to urban ecology and urban nature conservation have come largely through planning and landscape design departments. Gordon (1983:411) notes that "1972 saw the appointment of the first ecologist per se in a county council, and by early 1973 there were about ten to twenty ecologists at work in local authorities in England and Wales" although he does not state whether any of these were based in predominantly urban authorities. But, as Smyth (1987:26) points out "the role of council planning departments in urban nature conservation has been as double-edged as that of landscape architects. Planners have had considerable power to encourage protection of the natural environment, but more often have chosen to be judged by their efficiency in facilitating housing, road or commercial development of open space".

Tyldesley (1986) is more generous in noting that whilst many authorities now take nature conservation seriously in terms of planning and land management, others do leave room for improvement. More recently, Goode (1994:190) has argued that "for many local authorities this is an area of work which has developed rapidly in recent years and has become a central component of environmental policy. By its very nature, such work crosses departmental boundaries, involving planning, leisure services, land management and education". He continues that "local authorities have, in fact, been at the forefront in developing new approaches and practices...this is particularly true in the case of urban local authorities" (190).

Landscape designers were early entrants into the field of urban ecology. The concept of the 'Garden City' (Howard (1898:1965 edn)) was a recognition of the need for green space in cities, but with the emphasis on recreation and

aesthetic charm rather than nature conservation. McHarg (1969) and Porteous (1971) advocated not only designing with nature, but designing with people. From 1973 onwards, the Landscape Research Group and the Landscape Institute began to endorse what became known as the 'ecological approach' to landscape design.

However, metropolitan authorities such as the West Midlands in 1984, the Greater London Council in 1984, the Greater Manchester Council in 1986 and Tyne and Wear Council in 1988 pushed ahead with ambitious nature conservation strategies linked to their statutory duties to develop Structure Plans. Since the abolition of such councils in 1986, the drive towards ecological awareness has become suffused with the popular environmental awareness boom of the late 1980's, to create pressure on local authorities to preserve existing habitats, and to sensitively create new ones. More recently, the importance of nature, expressed fashionably as 'biodiversity' has become a feature of post-Rio, Local Agenda 21 consultations.

The coalescence of the relatively new urban ecology/nature conservation movement, with the long standing city farming movement, and more recently, the permaculturalists, has given rise to the term 'urban greening'. Davidson (1988:6/7), whilst not revealing the true breadth of 'urban greening', notes that it "involves both protection and creation. It includes conserving many of the remaining wild spaces that may be threatened. But there is also work to create new habitats for educational and community use". Goode (1990:202) argues that "the term 'greening the city' means different things to different people. At a fundamental level, it may mean reversing the trends by which urban dwellers have become progressively divorced from nature. It can involve everything from window boxes and roof gardens to extensive tracts of community forest. Many local authorities in Britain have been involved in such initiatives".

3 Urban ecology and environmental education-an introduction.

The development of environmental education from its rural roots has been well documented by Goodson (1987), Martin and Wheeler (1975), Watts (1969) and Carson (1978) amongst others. No small part in redressing the 'rural-urban study imbalance' (which, as Storm (1995) argues still exists) was played by the 'urban studies sub group' promoted by Ward and Fyson (1973).

In addition to the focus on planning/social issues within urban studies, the development of urban ecology, and its practical arm, urban nature conservation have greatly influenced environmental education, and vice versa (Mostyn and Millward (1989), Elkin and McLaren (1991), Goode (1989), Johnston (1990) and Goode (1994)).

Sames (1982:1) in one of the then NCC's earliest urban wildlife books for teachers is, in a sense 'selling' urban nature to sceptical teachers when he notes that "urban areas are not usually associated with wild flora and fauna but this teachers guide shows how wildlife in such areas can be a rich source of enjoyment as well as of educational value for both teacher and pupil".

Many secondary schools now do urban ecological fieldwork in geography or science/biology (Harris and Tomlins (1992)), whilst primary schools do it as part of topics or themes such as 'the local environment', or 'nature in the city' (see Collins (1984:1/2) and Chapter 4 Research methodology, methods and results (Phase I)). They undertake such work either at a centre staffed by environmental professionals and teachers such as the now defunct, but pioneering Trust for Urban Ecology's William Curtis Ecological Park or London Wildlife Trust's Camley Street Natural Park, Birmingham's Martineau Centre, at a local woodland, park or other urban site (see Appendix 3 Results-schools (question 8) and Chapter 4 Research methodology, methods and results (Phase I)). In terms of throughput at such centres, Johnston (1990:6) notes that "several nature parks in London of about one hectare receive at least 10,000 visitors each year - an average of 30 per day each day of the year! Many of these visitors are children on organised outings from local schools".

This usage of urban sites for educational purposes, together with the meteoric rise in the development of school nature gardens and their use in the curriculum (Harris and Tomlins (1992)), has quite literally, brought nature to the (school) doorstep. Emery (1986:20) argues that "inner city nature, being so much more accessible, allows teachers and children to visit sites more regularly, at less expense. The children then have the time gradually to learn about and become familiar with the natural environment and to observe its important seasonal changes throughout the year".

Whilst the opportunity to "observe its important seasonal changes throughout the year" (Emery (1986:20)) is an obvious educational benefit of 'inner city nature' over 'rural nature' for urban children and reflects Cole's (1983) and Bos's (1981) comments mentioned earlier, it is hard to believe that schools' comparatively new found love affair with urban nature has not been more than a little influenced, from the late 1980s, by Local Management of Schools (LMS) and declining financial and other resources, such that residential field trips are today much less common (Hale (1990/91)).

However, in tandem with the 'discovery' of the potential role of urban nature within the curriculum, primary teachers in particular have been actively developing school nature gardens as curriculum resources. In the National Foundation for Educational Research (NFER) study of English Nature's school grants scheme, which has operated since 1986, Harris and Tomlins (1992:26) note that "primary and secondary teachers emphasised the value of having a nature area close to the school" and that "seventy seven per cent of primary schools surveyed felt that their nature area had made a significant contribution to environmental education" (43), but, significantly, that "only 53% felt that they had significantly contributed to cross-curricular work" (44). This corroborates research findings in this thesis (see Chapter 5 Research methodology, methods and results (Phase II) and Chapter 7 Conclusions) in that many teachers, even at primary level, see environmental education through the traditional 'environmental' subjects (geography and science primarily), and miss out on opportunities in other curriculum areas.

A wide variety of learning resources devoted to urban nature are now common (see Appendix 5 People, Plants and Places (Agyeman (1995))). Linked to the National Curriculum, and with a variety of enquiry based projects, study packs are available from organisations such as WWF, Association for Science Education, British Ecological Society, the UWGs, Learning Through Landscapes, The Groundwork Trusts, the Tree Council, Landlife, the Tidy Britain Group, Royal Society for the Protection of Birds and the British Trust for Conservation Volunteers (BTCV) amongst others.

Collins (1984:1) utilises similar arguments in support of educational uses of nature in the city to Ward and Fyson's (1973) arguments in support of urban

studies in that "the study of ecology requires the study of organisms in the field, but 80% of the population of Britain is urban and hence it is in urban conurbations that most schools are situated.....'Nature' conjures up a vision of woodlands and leafy glades, not polluted city centres. It is therefore not surprising that on asking teachers in urban schools what fieldwork in ecology is undertaken by their classes, common replies are: 'None', 'We have a one day field trip to...', or 'the pupils go on a residential field course to.....'" A key point made by Collins (1984:2) however, and one which will be returned to in Chapter 7 (Conclusions), is that "the failure of many teachers to use urban sites to teach.....appears to be due to a lack of guidance as to how it can be done".

Although Collins made this statement in 1984, before the wide range of presently available learning resources was on the market, it will be argued that the requisite advice and guidance is there, from wildlife, ecological and conservation organisations, such as those above, who often have education officers and will send out resource packs and specific information, but that such organisations, quite rightly, have their own (traditional) agenda in giving that advice which schools may be unaware of, and which may not provide the broadest learning experiences possible for pupils in multiracial inner city areas.

4 Urban ecology: rural roots.

Devoting scarce resources to conserving the ecology of urban environments has not come easily to many ecologists. Gordon (1983:420) notes that "the urban environment is equivalent to Siberia to most ecologists and conservationists; it is sad and salutary that we probably care for and know more about the moon than about the structure, function and processes of urban areas". This frank and telling admission, which, admittedly is now 12 years old, is given a values perspective by Harrison et al (1987:347) who argue that "the conservation movement in Britain is underpinned by a plurality of values and confusion of purpose that is well exemplified by the new urban conservation movement".

Whilst this statement is intended to highlight the schism between the 'old/traditional' rural conservation values based on 'key sites' and preserving rarity, and the 'new' urban conservation values (see Gaines and

Micklewright (1988)) based on the personal and social satisfactions of contact with 'common' nature (Mostyn (1979) and others), it could be equally applied to one of the focal points in this thesis: the reluctance of many urban ecologists and conservationists to modify their thinking and concepts, based as they almost exclusively are, on a rurally-biased training (Gilbert (1989), Barker (1991)).

For, just as environmental studies was, and still is according to Storm (1995), traditionally dominated by the 'rural paradigm', the traditional wildlife/ecologist/conservationist agenda, adopted with few modifications by urban ecologists and conservationists, "has tended to concentrate on the countryside, creating nature reserves and protecting rare species and disappearing habitats" (Emery (1986:21)). By countryside, Emery (1986) is here talking about Cole's (1983:270) notion of "encapsulated countryside" ie the little bits of countryside which have become trapped by urban development, and are now, because of their ecological value, the focus of many urban conservationists energies.

Whilst urban ecology is now accepted as a study in its own right (Douglas (1992), Barlow and Pugh Thomas (1975)), many urban ecologists have not yet succeeded in shaking off their rural inheritance, in developing an alternative theoretical explanation, a new 'urban ecological paradigm' (see Williams (1992)) despite the manifest differences in environmental parameters between city and country (Barker and Graf (1989), Barker (1991), Barker (1994), Horbert (1978), Gilbert (1989)). This reluctance to change has been rather politely attributed to "latent conservatism" by Niemann (1992:10). This is not unusual, as Kuhn (1962:37) states: "a paradigm can..... even insulate the community from those socially important problems that are not reducible to the puzzle form, because they cannot be stated in terms of the conceptual and instrumental tools the paradigm supplies".

The net result of this reluctance of urban ecologists and conservationists to break away from their rural roots and modify their thinking by developing new concepts to fit the manifestly different environmental and other parameters of the urban ecosystem, is that the campaign agenda and educational agendas of most UWGs still contain many traditional concepts and ideas, which are being passed on to teachers and were discussed briefly

in the Introduction, and are discussed further in Chapter 4 Research methodology, methods and results (Phase I)). One, and perhaps the most deeply seated prejudice, is against so called 'alien' plant species (see Figure 3 page 88). The other is the dominance, in urban site assessment criteria, of scientific and ecological (ie rural) criteria over social, access, aesthetic and community support (ie urban) criteria. However, the latter is now changing.

Natives and aliens.

Nicholson (1987/88:4) notes that "conservationists are by tradition prejudiced against non-native plants. With few exceptions aliens are seen as detrimental to the wildlife interest of an area". But just what are 'alien' plants? In addition to the discussion which began in the Introduction, Gilbert (1989) introduces the classification of aliens in Figure 3 (below).

Figure 3

A classification of plants according to their origin and degree of persistence in the flora (from Gilbert (1989)).

Native	Species that have arrived in the studied area by natural means without intervention, even unintentional, by man, from a source where the plant is native.
Alien	Species believed to have been introduced by the intentional or unintentional agency of man.
	1) Naturalized aliens (neophytes-new citizens). Introduced species which are naturalized in natural or seminatural habitats.
	2) Established aliens (epoekophytes). Introduced species which are established only in man-made habitats.
	3) Casuals (ephemerophytes). Introduced species which are uncertain in place or persistence.

Clement and Foster (1994:ix), whilst not attempting a classification, note that "the word 'alien' is used in a broad sense: it denotes all plants, whether

established or not, that are thought to have arrived as a result of human activities, and includes plants referred to by other authors as 'adventives', 'casuals', 'ephemerals', 'exotics', 'introductions' and 'volunteers'".

The "traditional dogma" (Nicholson (1987/88:4)) and antipathy towards aliens is fully supported by Baines and Smart (1984:6) who argue that, in nature conservation, "one of the basic principles is to reintroduce native species of British wildlife to towns and cities. Native plants tend to support a much greater variety of animal life than species introduced from other countries. Plants native to Britain are preferable to cultivars and varieties of exotic plants and trees so often used in urban landscaping".

This philosophy stems from work done on shrubs and trees by Southwood (1961) and Kennedy and Southwood (1984). It showed that native species, such as English Oak, supported a greater diversity of insect species at 284, than non-native species such as Sycamore with 43. The 'reanalysis' (Kennedy and Southwood (1984)) however, showed that the number supported by Sycamore was close to other natives such as Field Maple with 51, Hornbeam with 51, Lime with 57 and Rowan with 58.

However, assessing 'wildlife value' solely on the total number of species supported is not reliable, particularly in urban areas. Sycamore supports an enormous biomass of its primary phytophagous (plant eating) insect, the Sycamore aphid, which has at least nine different predators and parasites, which are in turn devoured by other insects and birds. Morton-Boyd (1992) points out that it has bole cavities, a rich leaf litter, is a substrate for lichens and produces abundant seed. It is also a prolific producer of early nectar which attracts bees. However, because of its ability to attract only a limited range of wildlife, it is castigated by many urban conservationists as being of little value and is subject to "syccie-bashing" (Barker (1994:16)), or removal from sites by zealous urban conservation managers and volunteers. However, this offensively named practice ignores the huge biomass that Sycamores can support. Indeed, Barker (1994:15) rightly argues that "it may not be the numbers of species which is significant but the biomass which is supported. Sycamore for instance, supports a larger biomass of invertebrates than Oak or Alder do and to a bird it matters less that the insect it has eaten is common or rare than that it has eaten the thing at all".

Unthinking actions by urban conservation managers and volunteers, which are part of the urban conservationist ethos, and of some UWGs and which is based as Barker (1994) has shown, on factually incorrect information, do not end with the Sycamore. Gilbert (1994:1) notes that "Japanese Knotweed suffers from a poor image. Knotweed bashing is taking over from scrub clearance as the standard task for conservation volunteers. It has a bad press, it must be one of the most hated plants in Britain with Giant Hogweed and Sycamore. But hang on a minute, are there 'good guys' and 'bad guys' in nature? Don't we just have communities of plants and animals interacting in a neutral manner which in trading countries like the UK are necessarily going to contain introduced species?" He continues by adding that Japanese Knotweed "is a bit of a whizz. It flowers late.....(and)...it provides an abundant and easily accessible source of nectar and pollen for all manner of insects" (1).

Clearly, the native/alien debate within ecology and conservation is not as simple as assigning the label 'good' to native and 'bad' to alien, especially in urban areas, as was noted in the Introduction. Of the several thousand species in Britain which today fall into one of Gilbert's (1989) or Clement and Foster's (1994) categories of alien, relatively few present a 'problem' to the native flora, especially in urban areas. Even some of those that apparently do (see Morton Boyd (1992), Gilbert (1994) and Barker (1994) above), may be more related to conservationist's camp fire myth, than good ecological science. Yet even enthusiasts, such as Clement and Foster (1994:iii) who "began studying alien plants some thirty five years ago" and began cataloguing them twenty years ago, are not immune to the use of strong conservationist language (such as the 'syccie, and knotweed-bashing' of Barker (1994) and Gilbert (1994) respectively), which, if related to humans, would be deemed offensive (Niemann (1992), Yarrow (1994)). Clement and Foster (1994:v) argue that "the flora of the British Isles is ever changing. While alterations in land use have, over many years, contributed to the decline, or even loss, of native species, trade with other countries has encouraged the slow and insidious infiltration of the indigenous flora by species of foreign origin". Trade is what made Britain great. It seems petty and disingenuous to use such language to describe human-assisted vegetational processes which are a direct result of the amassing of wealth on an unprecedented scale over the past six centuries or so.

Journalists, such as Schoon (1992:7) in the Independent on Sunday, have attempted to popularise the debate by appealing to peoples' xenophobia. His choice of archaic and pejorative phrases is wide ranging and unguarded. One can only assume that his sources fed him their own prejudices, which he then adapted into emotional populism.

He talks of "encroaching foreigners", "running riot", "ferocious, fast growing foreign plants", "the villainous and the benign", "acceptable aliens", "staggering penetration", "ruthlessly ousting the natives", "pink and green Japanese terror" and plants which "brutalise the native flora". This undisguised xenophobia, including sexual metaphor ("staggering penetration") is an indication of the depth of feeling (and fear) which the issue raises.

More recently, Scotland on Sunday ran an article entitled "Ethnic cleansing in woods roots out non-Scots pines" in which the Forestry Authority were cutting down trees because it was deemed that they were not "sufficiently Scottish in origin" (Davidson (1994)). Similarly, the Independent on Sunday ran a headline "Hitler law used against UK Oaks" in which it was argued that an EU Directive on Forest Reproductive Material, derived largely from the German Forest Race Law of 1934 ensured that nurseries could "breed only from perfect and pure-bred examples of a species" (North (1994:7)). Not to be outdone, the Daily Mail ran a title "Beast of the moor is hacked to death" about efforts to halt Rhododendron encroachment on British moorlands (Daily Mail (1995)).

The depth of fear surrounding the alien is perhaps sensationalised, even by the quality press. However, it is well documented by Doughty (1978), who, like Fenton (1986), takes the argument to its logical conclusion, by noting the popular comparison in the nineteenth century US, between alien plants or animals and human immigrants. He discusses the feelings of Americans to the immigration of the English house sparrow into the United States in the Nineteenth Century and notes that "sparrows and immigrants had 'low morals', reproduced at amazing rates, and appeared to be plotting and conspiring to exploit the United States at the expense of native-born Americans. In contrast, native birds were clean, tidy and hardworking who preferred country living and fulfilled the 'yeoman myth' " (28).

This fear amongst Doughty's Americans is viewed from 'the other side' by Agyeman (1989a) who investigated the forces at work in alienating people from ethnic minority groups from the British countryside, including the popular perceptions of people from ethnic minority groups (see Chapter 2 The development of environmental education). He quotes black photographer Ingrid Pollard (Pollard, quoted in Agyeman (1989a:336)) who said that "it's as if the black experience is only lived in an urban environment. I thought I liked the Lake District, where I wandered lonely as a black face in a sea of white. But a visit to the countryside is always accompanied by a feeling of unease, of dread..."

Doughty (1978) continues by noting that, according to Berrey's American Thesaurus of Slang, "Irishmen were also nicknamed sparrows because they were so numerous and prolific" (28).

Pioneering urban ecologists, the then GLCs 'Ecology Section' (GLC (1984:6)) are only slightly less disdainful than Schoon (1992), when they note, somewhat wistfully: "as one moves towards the centre of the city the native British plants... drop out one by one. The first to go are ..." Niemann (1992:10) summarises the prevalence of xenophobia in "environment-speak" when he states that "properly controlled elsewhere in society, overt racism runs unfettered throughout environment-speak, as we are taught about the need to promote native species and remove aliens which are bad for wildlife". Yarrow (1994:21) agrees: "am I the only person to think this is a nonsense, reflecting our island mentality and a politically correct form of xenophobia? Racial and religious discrimination is no longer acceptable, yet substitute 'people' for plants in a sentence such as 'plants of non-local, and especially foreign, origin are no longer acceptable' and you see what I mean."

Clearly, fear of the 'alien', be it human, animal or plant (or extra terrestrial), is firmly entrenched in the collective psyche and this fear, and the feelings it engenders, can be readily accessed, as Schoon (1992) has shown. The 'native-alien' debate, far from being an academic and practitioner debate amongst ecologists and conservationists, is entering the public realm as journalists Schoon (1992), P Wright (1992b), North (1994) and Davidson (1994), amongst others, have shown. To trivialise its language as 'hot air', or to question its validity, one runs the risk of being labelled

'PC'. This belittles its centrality to present day ecological and conservation thought in both rural and urban areas, as has been shown above.

The fears of biological impurity engendered amongst some ecologists and UWGs by such thinking are the ecological equivalent to those promulgated by organisations on the far right of the political spectrum, with their liberal use of terms such as 'alien culture', 'alien minority' and 'swamping'. Are teachers aware of these connotations, and their potentially damaging effects, when, or if using such concepts in the classroom? (see Chapter 4 Research methodology, methods and results (Phase I), Chapter 7 Conclusions and Agyeman (1991a)).

Site assessment criteria.

Also influential in the traditional conservationists' agenda are Ratcliffe's (1977) ten criteria for assessing the ecological value of a site. These are: size, diversity, naturalness, rarity, typicalness, fragility, recorded history, position in an ecological/geographical unit, potential value and intrinsic appeal.

Closer scrutiny of these traditional criteria reveal that they are purely concerned with the specialist scientific and intrinsic ecological values of a site - indeed they were developed to identify National Nature Reserves (NNRs) and Sites of Special Scientific Interest (SSSIs). There are none indicative of "popular values" (Harrison et al (1987:347) and Mabey (1973)) such as access, aesthetic appeal, level of human interest or community support. The criteria favour 'special' (and invariably old and/or native dominated) sites in cities and are not concerned with people and 'common' nature per se.

Urban conservationists such as Gaines and Micklewright (1988:37), argue that despite radical intentions to the contrary, the urban nature conservationists have merely 'transplanted' the old values based purely on ecological worth "and have not taken into account social criteria" when assessing urban sites, in what was supposed to have been an "innovative, dynamic and free thinking" (37) movement.

This is a view shared by Harrison et al (1987:352) who note that "the values which have underpinned the site selection process do not include even

those tangible aspects of the natural world which reflect the attributes of urban wildlife habitats-the commonplace and the usual, the artificial and the alien, the small and the accessible".

Goode and Barker (1986) however, have argued that social criteria should be included in the assessment of urban sites. This is not proposed as a modification to Ratcliffe's (1977) criteria, rather, it is proposed as part of a new set of criteria for sites, which could be modified and adapted to the scale required. Goode (1994:199), in discussing ecological planning in London, notes that "criteria relating to intrinsic biological features (eg ancient character, richness of species, or rarity of species) tend to be of greater significance at the metropolitan level, whilst criteria related to social factors (eg value for educational use or local amenity) tend to be most important at the borough or local level".

In 1988, the Dundee Urban Wildlife Project utilised social as well as ecological criteria. Other examples of this enlightened approach include Aberdeen Council in 1989 and Peterborough Council in 1991. In 1992, Bristol City Council in conjunction with English Nature used modified criteria including community/amenity value, accessibility to the public, visual access, educational value, landscape/aesthetic value, location in areas lacking in natural habitats, and recorded history (Bristol City Council (1992)). With growing awareness of the importance of community involvement, especially through Local Agenda 21, changes to purely scientific site assessment criteria in cities are now gaining in momentum.

Challenging the traditional agenda.

Whilst attitudes are not changing as fast as those in relation to site assessment criteria, several authors have challenged the implications of the divisive traditional ecologist and conservationist agenda, in terms of the native-alien debate.

Egler (1961:1342) notes that the native-alien debate is "eminently emotional, rather than serenely scientific" whilst Lugo (1992:6), like Gilbert (1994), and similar to arguments in the Introduction to this thesis, argues that "the eradication of species is not as simple as assigning evil qualities to exotic species and benevolent qualities to natives". He continues that "responsible

ecological stewardship requires an open mind to all species and the roles they play. It is a mistake to judge a species by its origin (exotic or native). We no longer live in a pristine world, if such a world ever existed. We are moving towards a landscape where human influence will be pervasive. All species have a role to play" (Lugo 1992:6).

Barker (1994:14) goes further than Lugo (1992): "in Britain we often qualify the term 'wildlife', whatever we understand by it, by distinguishing 'native wildlife' from 'alien wildlife'. I would contend that this particular distinction in Britain is not only indefensible to an ecologist but also lies at the root of an unhelpful nature conservation mythology which encourages activity without any thought about why that activity is taking place".

Pratt (1983:29), in a similar way to Barker (1994) investigates the link between conservationist *thinking*, and conservationist *actions* by looking at conservation management techniques in relation to alien species. She argues against unthinking activity as Barker (1994) does. She notes that "certain operations in conservation management are still carried out according to received wisdom which is not necessarily based on a thorough understanding of the ecosystem involved". She is referring to the different nature of rural and urban ecosystems (see Figure 6 and Agyeman (1991a) and (1995), Gilbert (1989), Gordon (1983), Barker (1991), Barker and Graf (1989)), a point which many ecologists are either unaware of, or wish to ignore.

Hare (1988: 180) continues the line of thinking of Pratt (1983) in discussing ancient, and modern woods. He notes that "there are many reasons to challenge the application of the conventional dogma on native and supposedly non-native species in ancient and non-ancient woodland". He continues that "the established ideas - like many easily grasped and generally accurate ideas - have tended to become dogma. It is fitting to question them, especially when they are applied without thought in situations where they are not really appropriate" (180).

Marren (1992:321), continues the arboricultural challenge to traditional ideas in discussing the native English Oak. He notes that "it is easy to forget that from the mists of time, visitors to our shores have always made a practice of planting oak trees here as a reminder of their native lands.

'Scenery's a bit bare' wrote Hengist to Ethelbrute, 'better bring a few oaks when you come'. Later the Viking hordes brought their own wild northern oaks, with cute little curly horns attached to the acorns".

In terms of urban areas, and whilst not mentioning native nor alien species, Deelstra (1988:107) criticises the lack of process-based, static views of many urban ecologists and makes a plea for a more dynamic vision of the flora and fauna of cities in that "there ought to be a dynamic process in which the vegetation grows together with the inhabitants. After all, population groups do not remain constant. People move away, and others take their place, fashions change and with them people's expectations regarding vegetation. By putting people in charge, vegetation can adapt to these changing expectations".

Common Ground, who link arts and culture to conservation also challenge the traditional ecologist and conservationist agenda. They rightly argue that it is 'local distinctiveness' (ie what makes a place special), in this case in terms of plants, irrespective of their origins, which is important. They note that "you can still tell that you are in Bournemouth and Poole from the legacy of the Victorians who started planting Scots and Maritime Pines in the 1800s. Later, Rhododendrons (*R. ponticum*) were introduced and spread quickly on the poor sand and gravel. In one year, in the late 1920s, over ten thousand pines were planted in Bournemouth by the local authority. As a result, Bournemouth looks as if it has grown up in a pine wood. It has a unique identity" (Common Ground (1995:3)). They continue that "it is the predominant plants, the locally typical that characterise places, seldom the rare. These may be native or introduced - aubretia, campanula, snow in summer, valerian in the walls, the daffodils that grow in the fields and verges around Dymock or the hardy fuschia hedges in Cornwall" (Common Ground (1995:9)). This is a challenge to both the native-alien debate, and to the dominance of scientific and rarity criteria in assessing the importance of sites.

These challenges to the 'traditional' ecologist and conservationist agenda, built around an "unhelpful nature conservation mythology" (Barker (1994:14)) and "received wisdom" (Pratt (1983:29)) are growing in momentum, but old ways die hard. In addition, the 'lag effect' of changing attitudes within the conservation establishment, and these changes being

transmitted to teachers and taught, will ensure that, for some time to come, the 'traditional' agenda will rule supreme. Revisiting Lawton's (1987) point about rational rather than idiosyncratic selection, makes one realise that, as regards the concept of 'nature' within the curriculum at KS2, we have a long, long way to go, as the discussion in Chapter 4 Research methodology, methods and results (Phase I) and Chapter 7 (Conclusions) show.

4 Environmental education and the traditional ecologists' agenda.

It is clear from the foregoing arguments in this chapter, that there is a whole body of ecological and conservation thought, which owes more to ideology than good science which, if used in schools (see Chapter 4 Research methodology, methods and results (Phase I) and Lawton (1987)) by teachers, could cause considerable problems. The effect of this thinking, despite some challenges outlined above, and the advice promulgated to curriculum planners and teachers by UWGs and others, have, until now, not been investigated in schools.

Even the left-wing GLC (see Baines and Smart (1984), GLC (1984)) and the ILEA, who ran the Schools Nature Service from a base in Eltham (Greenwich), on behalf of the 13 inner London boroughs, never investigated the effects of their (and other) advice as regards the native/alien debate in terms of school nature gardens, and nature studies generally. This oversight is all the more disturbing given the ILEAs well publicised multicultural and anti-racist policies, including advice to the Inspectorate (ILEA (1981)).

Similarly, the Geographical Association (1985) has a multicultural and anti-racist policy statement. Yet even though geography has long been a delivery vehicle for environmental education (Goodson (1987)), researchers involved in geographical education and cognate areas (such as multicultural education), for example Hicks (1981a) and (1981b) and Gill (1981), have not assessed the concepts of 'nature' and 'conservation' for possible racist overtones, unlike their assessment for possible racist overtones in other areas of geography. Nor can scientists absolve themselves from this omission. Science, like geography is a delivery vehicle for environmental education. Ditchfield (1987), on behalf of the Association for Science Education, simply ignores the concepts of 'nature' and

'conservation' in considering multicultural approaches to science. One can only assume that he felt that 'nature' and 'conservation' are value free concepts which are exempt from potential bias.

The NCC (1989:A10) note that "different ethnic groups will have different interpretations of the view of science presented in the science Order and the sections of non-statutory guidance. It is at the school and teacher level that such interpretations need to be taken into account, in order to deliver the most effective curriculum. A pupil who has difficulties with the language of instruction will find access to many scientific activities blocked". This non-statutory guidance again highlights Lawton's (1987) points about rational, rather than idiosyncratic selection from culture, and places responsibility at the school and teacher level. In addition, the NCCs (1989) point about language, whilst it implies that bilingual pupils may have problems, it could equally be applied to any pupil from an ethnic minority group who is unfortunate enough to encounter the kind of xenophobic language outlined in this chapter. This may not be as unlikely as it seems, given the results in Chapter 5 (Research results (Phase I)). Given the attitudes towards alien plants discussed above, and more outlined below, this hiatus in multicultural and anti-racist approaches to certain concepts in nature and conservation by both the Geographical Association and the Association for Science Education, must become a cause for concern amongst curriculum planners, teachers and other educationalists.

Nicholson (1987/88:4), notes of alien plants that: "sometimes they are disliked simply because they are 'foreign' and therefore out of place in native plant communities". P Wright (1992b:6), in discussing conifers in the British landscape notes that "they are...alien imports, plainly lacking the cultural credentials of the native broadleaf" and "like other immigrants these fir trees all look the same to the affronted native eye". Fenton (1986:21) is even more direct: "dislike of alien species is indeed similar to racial discrimination-wanting to preserve the culture and genetic integrity of one's own stock (a natural human failing). Alien species are welcome in strictly defined areas (gardens) but must not be allowed to pollute the native culture (the wider countryside)".

Consider the implications of an education officer at an UWG passing on such deeply offensive advice and information, coded or uncoded, to a group of

teachers at an INSET session. Quite apart from the offensive nature of the sentiments, and the language surrounding the supposed 'inferiority' of alien species (Agyeman (1991a), Niemann (1992), Yarrow (1994) and Barker (1992)), such advice and information may result in schools developing 'natives only' nature gardens (see Harris and Tomlins (1992)), and taking part in urban nature studies and practical learning activities which are qualitatively biased towards using areas in the urban environment where native species dominate such as "encapsulated countryside" (Cole (1983:270)), and specialist urban ecology parks, and away from areas where alien species predominate, or are co-dominant, such urban wasteland, dockland areas, canal towpaths etc. Agyeman (1994c below) calls the former "typical" and the latter "atypical" nature, and expands on the curriculum significance of the latter. Such xenophobia and bias surrounding nature and conservation is clearly in direct opposition to some of the NCC's knowledge, skill and attitudinal objectives suggested for environmental education in Curriculum Guidance 7 Environmental Education, its non-statutory guidance.

Curriculum Guidance 7 Environmental Education (NCC (1990a:4/5)) states that "as a basis for making informed judgements about the environment pupils should develop knowledge and understanding of: the impact of human activities on the environment"; "different environments, both past and present"; "how the environment has been affected by past decisions and actions" and "the environmental interdependence of individuals, groups, communities and nations...". In terms of skill-based objectives, it states that pupils should develop study skills such as "retrieving, analysing, interpreting and evaluating information about the environment from a variety of sources". Two attitudinal objectives which are severely weakened by this xenophobia and bias are "a respect for evidence and rational argument" and "tolerance and open mindedness".

Clearly, the traditional ecologist and conservationist agenda has major implications for curriculum planners and for teachers delivering an environmental education within the National Curriculum in the context not only of the NCCs (1990a) own objectives, but also in terms of the xenophobic 'baggage' carried by that agenda. Chapter 4 (Research methodology, methods and results (Phase I) outlines the contemporary status amongst teachers at KS2 of such ideas.

A more informed approach in education "based on a thorough understanding of the ecosystem involved" (Pratt (1983:29)) and a deconstructed "unhelpful nature conservation mythology" (Barker 1994:14) has been developed as the alternative approach put forward in this thesis (see People, Plants and Places Agyeman (1995) in Appendix 5). It represents ideas for teachers at KS2 who wish to utilise and further develop enquiry based learning material which links urban nature to the impact of human activities on the prehistoric, historic and contemporary environment, and especially to the origins of alien plants within the urban flora.

Whilst he does not link the impact of human activities, Wurzell (1992:unpaginated), after surveying an Islington school garden, notes that "it is by no means unusual to find foreign trees carrying much more 'wildlife' than native ones in urban habitats" (see Southwood (1961)) and that "the school offers an internationally diversified resource of 200-250 plant species.....this gives great scope for field projects both outside and inside the National Curriculum".

Mitchell (1992:159) agrees with Wurzell in relation to urban trees. He notes that Britain has no "attractive native tree particularly well suited to city life" and that "a great number of splendid trees grow better here than they do in their native areas-a general rule in exotic plants-and our basic 35 species can be augmented to 2,500 at least" (159).

Agyeman (1994c:VIII) notes that "when looking for places to study nature, it is often tempting to go to the places where you know 'typical' nature is, such as parts of the countryside. If your school is in a town or city, the temptation is to go to an urban nature reserve, an ecological park or an ancient woodland. Whilst there are tremendous curriculum (and mental health!) benefits in certainty, there is an unmatched excitement in ecological uncertainty, in 'atypical' nature. The wastelands, walls and walkways; the railways, canals, rivers and other 'wildlife corridors' of our towns and cities yield a wealth of plants, many from overseas, which harbour peculiar stories linking ecological science to history, geography, religion and technology, amongst others.....Studying 'atypical' nature is more demanding of the teacher, but it gives pupils a great sense of the influence of humans on past and present ecosystems, and the amazing role

of chance, adaptability and dynamism in nature. It leads to fascinating research and project opportunities, and offers insights into the local area, its human history, its past and present industries and its past and present geographical links. Local libraries, colleges or universities, the local wildlife trust and natural history society, the Botanical Society of the British Isles and the local authority ecologist are all resources waiting to be tapped for support, information, advice and, if you're lucky, a guided walk".

A radical focus for enquiry-based urban ecological learning, as Agyeman (1994c) has intimated, could therefore be not what ecologists say should be there, but the human-environment interactions which have resulted in the appearance of 'international', introduced, exotic or alien species, such as trade, industry, mercantilism, transport, war, colonialism and plant collecting and gardening (see People, Plants and Places Agyeman (1995)) in Appendix 5).

Challenging the 'experts'

A busy teacher at KS2, teaching a new and perhaps confusing area such as urban nature may ponder the educational and equalities implications of the 'native/alien debate' if he or she is aware of them (see Chapter 4 Research methodology, methods and results (Phase I) and Chapter 5 Research methodology, methods and results (Phase II)), but who is he or she to challenge the 'experts' in wildlife organisations?

This is a point made well by Williams (1992:57) who notes that "the green movement is very fashionable at the moment. Many people do not have the confidence to challenge it. On a broad scale it is doing immensely useful work. Unfortunately, it has developed an ideology which is often romantic, sentimental and only partly scientific". This echoes Egler's (1961) argument about emotion rather than science informing the native-alien debate and leads into the question of why should this particular aspect of environmental education be unlike nearly every other curriculum area, in not having gone through the 'filter' of anti-racism, anti-sexism, multiculturalism and equal opportunities? Is it because people active in such fields (like those mentioned above) lack the technical confidence to challenge the 'experts'? Is it because they have assumed that a study of 'the environment' to be free of such prejudices?

It is interesting to note that Williams is a biologist/horticulturalist. It is not uncommon for experts in this, and other areas, such as landscape design, to criticise ecologists for their 'romantic', 'sentimental' and 'traditional' views. Indeed, Paterson (1974:1430), a horticulturalist, extols the virtues of London's mild climate and advocates that gardeners "use this metropolitan microclimate consciously and to see what might grow...to extend the range" (see also Yarrow (1994)). Landscape designers Percifull, Thomas and Kendle (1993) note that "with regard to native species selection, any obsession with the concept 'alien bad - native good' has unwelcome overtones when viewed within the framework of a multi-cultural society. These ideas may be defensible if they were true, but on ecological grounds they have limited substance in urban areas" (1993:10).

However, despite the growth in certain quarters of enlightened views toward the native/alien debate amongst both ecologists (see Prime (1993)) and teachers, there is evidence that the traditional advice is being freely accepted by schools (see Chapter 4 Research methodology, methods and results (Phase I)). Harris and Tomlins (1992:32), whose English Nature-sponsored survey took in 1274 primary and secondary schools, in discussing support for the planning of school nature gardens by bodies such as the BTCV and the UWGs, note that "several teachers valued the guidance they had been given concerning the selection of the tree species which are native to the British Isles, as they did not have this knowledge themselves" (see Mitchell (1992)). There is, in Harris and Tomlin's (1992) work, no querying or criticism of such views.

Some reasons for the acceptance of traditional ecological and conservationist advice by teachers have already been advanced, including lack of confidence, childhood experiences of nature (Palmer (1992)) and lack of technical knowledge. Dorion and Gayford's (1990/91:28) survey of teacher's understanding of the nature and aims of environmental education in primary schools in Hertfordshire, Berkshire and Avon carried out between January 1987 and January 1990 noted that "the majority interpreted the scope of environmental education as the investigation of the 'natural' environment in the local area. 92% understood the environment as wildlife and 77% defined it as the countryside". This mindset regarding environmental education provides fertile ground for the

acceptance, by urban teachers, of traditional ecological and conservationist advice (see Chapter 4 Research methodology, methods and results (Phase I)). Also, Dorion and Gayford (1990/91) note teachers' reluctance to engage their pupils in political debate in relation to the environment. Perhaps the teachers see the ideological implications of the native-alien debate (if they understand, or even know of them) as being 'political' and therefore irrelevant.

In order to fully understand the "received wisdom" (Pratt (1983:29)), the "confusion of values" (Harrison et al (1987:347)) and the "unhelpful nature conservation mythology" (Barker (1994:14)) relating to urban ecology and its rural heritage, and the effect of this on the advice given to teachers, a knowledge of the urban ecosystem and the environmental parameters therein is required.

5 The urban ecosystem.

Our starting point must be that of Gordon (1983:420) who argues that "the urban environment is equivalent to Siberia to most ecologists and conservationists; it is sad and salutary that we probably care for and know more about the moon than about the structure, function and processes of urban areas". That being the case, the 'urban ecosystem' as a *concept*, can work on many different yet interrelated levels. Deelstra (1988:106) identifies three:

the city as an (eco)system and/or economy: urban organisation, like natural biotic communities, can be organised in a fairly efficient fashion;

nature functioning in and around the city: plant and animal life, the quality of the climate soil and water, and so on;

the human ecology of the city: the urban environment at the service of human development.

Similarly, Douglas (1983:7) identifies different yet interrelated levels when he notes that "as ecosystems.....cities can be viewed in terms of flows of energy, water and chemical elements, or, alternatively, as a habitat for organisms, especially human beings" .

Whilst Deelstras (1988) approach is more thorough in its classification of the functioning of cities, both he and Douglas (1983) identify the notions of 'nature' and 'habitat' as being integral to the urban ecosystem. It is obvious that Deelstra (1988) and Douglas's (1983) other characteristics of the 'total' urban ecosystem affect nature and habitat, and vice versa, but, because this thesis is about an alternative approach to urban nature at KS2, it is with nature and habitat that our immediate interest lies.

There are many different 'natures' and habitats within the urban ecosystem. Two classifications of the variety of urban habitats within the overall urban ecosystem are shown in Figures 4 (below) and 5 (overleaf) as useful potential frameworks for analysis.

Figure 4

Generalised habitats within the urban ecosystem (after Douglas (1983:128-138)).

i)	The completely built up urban complex (Central Business District)
ii)	The mature suburban mosaic (mixed artificial/natural areas)
iii)	The corridor zones (transport routes)
iv)	The landscaped parks and gardens (city parks/gardens)
v)	The derelict land and construction sites
vi)	The new suburbs (often on former farmland)
vii)	The grassland on reclaimed soil
viii)	The small woodland/rural area within the city
ix)	The water spaces.
x)	urban wetlands

Figure 5

Cole's (1983:270) "six broad and overlapping categories" of urban habitat.

i)	The built and street environment
ii)	The domestic system (includes private gardens and allotments)
iii)	The urban servicing complex (includes transport routes, sewage works, reservoirs)
iv)	Recreation grounds (including parks, golf courses and sports pitches)
v)	The areas of encapsulated countryside (rural habitats caught in the city)
vi)	The large areas of vacant and derelict land

Whilst both classifications are useful, Cole's (1983) simpler system (which was developed specifically for cities in the UK, unlike Douglas's (1983) international classification) will be used, with one modification; her term "vacant and derelict land" (Cole (1983:270)) will be replaced by Gilbert's (1989:68) term "urban commons". This is because the term 'urban commons' more accurately describes a *vegetation type* which is typically urban (see Gilbert (1989:68)) than the more vague terms 'vacant and derelict' land, which are redolent of town planners, not ecologists.

The detailed physical and species characteristics of the different ecological zones within cities are complex and are detailed elsewhere Gilbert (1989); Collins (1984); Cole (1983); Sukopp and Werner (1982); Sukopp and Werner (1987), and Owen and Owen (1975). However, some understanding of the ecological differences between zones is required.

The built and street environment.

Cole (1983:270) notes that this environment is the "home of the ruderal weeds and the opportunist species such as the house sparrow, feral pigeon and brown rat". Ruderal plants were, according to Pennington (1974) the result of early forest clearances, which created sufficient light for ruderal contaminants in cropseed and animal fur to germinate and grow in Neolithic and later times. They have thus successfully colonised the urban equivalent of the forest clearing, the disturbance-laden streets where

trampling and irregular inputs of nutrients and water, due to run-off and evaporation, dominate. Walls, depending on whether they have a soil base, their age, material, aspect and dampness are home to a wide range of plants and animals from mosses, algae, ferns and flowering plants to protozoans, woodlice and spiders.

The domestic system.

Private gardens in England and Wales, according to Gilbert (1989:239) "cover 400, 000 hectares or 3% of the land surface. In towns, residential areas may extend over 60-70% of the total built up area". Gardens can be an incredibly rich ecological resource, with a wide variety of mini habitats such as lawns, rockeries, old orchards, vegetable gardens, ponds, walls and flower beds (Owen and Owen (1975)), yet, as Gilbert (1989:5) notes, they have not received the attention of ecologists "because they have never been considered to fall within the remit of pukka ecologists". This is probably because of the well documented prejudice of ecologists and conservationists against the many alien or introduced species which have been planted in gardens, and alien species in general (see Hare (1988); Hare and Nicholson (1986); Nicholson, (1987/8); Barker (1991) and (1994); Gilbert (1989), Fenton (1986) and Agyeman (1991a)).

Some private gardens are poor habitats. Bedding plants, monocultural lawns, herbicides and pesticides all militate against wildlife. Allotments, for similar reasons to those of private gardens, have largely been ignored by ecologists

The urban servicing complex.

Transport networks in cities may represent 'linear habitats' and 'corridor zones'; migration channels along which plants and animals can move with or without human help (see People, Plants and Places Agyeman (1995) in Appendix 5). These can be domestic garden, or botanic garden escapes such as Antirrhinum and Oxford Ragwort respectively, or they can be urban weeds whose seeds are sucked along in the slipstream of trains or cars. Motorway verges can have salt marsh plants as a result of road salting.

Abandoned rail routes in urban areas go through stages of colonisation from pioneer ruderal communities into willow, hawthorn and blackthorn scrub. Animals such as foxes also use such routes for foraging.

Reservoirs tend not to be part of the urban ecosystem, except where they occur directly in cities. Here they can be home to large numbers of aquatic overwintering birds but, because of management, tend to be devoid of larger plants.

Sewage farms are a rich source of nutrients for a wide range of birds and other urban, or urbanised animals. Excepting defunct ones, plantlife in them is largely microscopic due to their constant activity. Sewage works harbour a wide range of invertebrates and birds.

Recreation grounds.

Dominated by close-cut grasses maintained by regular mowing regimes, species diversity tends to be low in recreational areas. Only those low growing and rosette plants can cope with the regular management. Where there are woodlands, copses or thickets, a more diverse flora occurs, together with a wider range of birds and animals.

Encapsulated countryside

Cole (1983:270) notes that "the charm of areas of encapsulated countryside rests not just in their natural history value per se but in the obvious link with the rural past". This urban habitat, with its rural inheritance, is the one most frequently studied and protected by urban ecologists. Cole (1983) includes in encapsulated countryside older urban parks such as London's Regent's and Holland Park, heathland such as Wimbledon Common, ancient woodland such as Sydenham Hill, and Oxleas Woods and older urban churchyards and cemeteries such as Nunhead, Huyton and Tower Hamlets.

Encapsulated countryside is therefore a very rich and varied habitat. Its age often indicates a long period of relative stability during which a wide range of plants and animals have found a home.

The urban commons.

Gilbert (1989:68) argues that "ecologically one of the most significant recent events in towns has been the expansion of wasteland" . He continues that "urban commons are rich in types of wildlife that do not occur in the countryside; they support true urban communities" (69). Evans (1992:27) calls this "resurgent vegetation". It is a cosmopolitan mixture of native and self sown alien species.

According to Nicholson (1987/88:4), urban communities "are often conspicuously successful at attracting wildlife: they frequently combine showy flowers with a rich nectar source which prove irresistible to bees, hoverflies, butterflies and other flying insects".

Gilbert (1989) describes the stages in succession of such, predominantly inner city, sites from brick rubble, through the 'Oxford Ragwort', 'tall herb', 'grassland' and finally, 'scrub woodland' stages. He shows his great affection for this habitat and its uniqueness when compared with encapsulated countryside, by making an important point about urban commons in that "the idea of urban wildlife groups and local authority ecologists devoting scarce resources to promoting slivers of countryside at the edge of towns is alarming. They would do better to concentrate, as a priority, on the special culture-flavoured communities that occur in heavily built up areas" (4).

In the continuum of most UWG, urban ecologist and conservationist interest, the most 'valuable' (ie native-dominated) sites are those of "encapsulated countryside" of which Cole (1983:270) notes that "the charm of areas of encapsulated countryside rests not just in their natural history value per se but in the obvious link with the rural past", and the least, those of "urban commons" which "support true urban communities" (ie lots of aliens) (Gilbert (1989:69)). In part as a result of this, many teachers do not use wasteland sites in urban nature studies (see Chapter 4 Research methodology, methods and results (Phase I) and Agyeman (1994c)).

This bias in favour of rurality amongst many urban ecologists and conservationists, even if it is a watered down, 'encapsulated rurality', again reflects Lowe (1983:349), who notes that "from the turn of the century period comes an aesthetic and spiritual identity with the wild, strong anti-urban and anti-industrial sentiments, and a sense of stewardship, associated

on the one hand with an appreciation of the web of life and its fragile balance, and on the other hand with a patriotic attachment to the indigenous flora and fauna".

6 Environmental parameters an the urban ecosystem

Whilst a detailed account of both the environmental parameters and atmospheric characteristics of the 'wider' urban ecosystem, as described by Douglas (1983), is out of the scope of this study, and is fully detailed elsewhere (Lowry (1967); Chandler (1965); Changnon (1976); Oke (1973) and Landsberg (1981), and given Gordon's (1983 p420) point that "it is sad and salutary that we probably care for and know more about the moon than about the structure, function and processes of urban areas", a basic introduction to such parameters is useful. Figure 6 below shows Horbert's (1978) summary of climatic parameters in urban areas.

Barker and Graf (1989:3) note that "urban areas have a range of environmental characteristics which distinguish them from rural areas. These characteristics are generally at their most pronounced in city centres and grade down towards the conditions which characterise rural areas as the peripheral parts of the city are reached".

There are several environmental gradients within urban areas, which have a bearing on the ecology of such areas. However, by far the most important factor is the urban climate, more especially heat.

Figure 6

Horbert's (1978) summary of climatic parameters in urban areas:

Climatic parameters	Characteristics	In comparison to the surrounding area
Air pollution	Gaseous pollution	5-25 times more
Solar radiation	Global solar radiation Ultraviolet radiation Duration of bright sunshine	15-20 % less 15-20 % less 5-15 % less
Air temperature	Annual mean average On clean days	0.5-1.5° C higher 2-6° C higher
Wind speed	Annual mean average Calm days	10-20 % less 5-20 % more
Relative humidity	Winter Summer	2 % less 8-10 % less
Clouds	Overcast	5-10 % more
Precipitation	Total rainfall	5-10 % more

The higher urban temperature recordings, compared to surrounding areas, is called 'the urban heat island'. Douglas (1983:39) observes that "the intensity, size and shape of any urban heat island varies with the topography of the city, land uses within the city, patterns of artificial heat generation and the weather". In practice, this means that building walls and roofs, inter-building spaces, open spaces, pollutant sources, urban geomorphological and hydrological characteristics, industry, traffic, the generation of heat from buildings and all urban processes, all affect the urban climate markedly.

The net ecological effect of this increased urban heat, according to Gilbert (1989:26) is "that the active growing season for plants, defined as the period during which the mean temperature exceeds 5.6 oC, is almost three weeks longer in central London and other large cities than in nearby open areas.....These fairly substantial, if intermittent, temperature differences have an effect on the plants and animals inhabiting towns".

So great is this effect that Paterson (1974:1430), in discussing the potential of London's microclimate, for gardeners, notes that: "if this theory is true a next move is to use this metropolitan microclimate consciously and to see what might grow. This is not to advocate neglect of well known and well tried favourites, but to extend the range". In his exhortation towards "extending the range", Patterson (1974) is signalling a major difference in attitude to alien species between gardeners and urban ecologists (see also Williams (1992)).

The urban heat island, together with the countless other anthropogenic (ie cultural) influences, result in cities attracting a diverse flora with a high proportion of botanic garden and domestic garden escapes together with other plants which are not native to Britain (Sukopp et al (1979), Falinski (1971), Barker (1991)). Gilbert (1989:5) puts this quite succinctly: "(plant) communities are as much a product of the cultural environment as they are part of the physical landscape." This is only just, as yet, beginning to filter through to many UWGs.

One particular anthropogenic factor which has a marked influence on the composition of the urban flora is disturbance. Grime (1979:77) has defined disturbance as "the mechanisms which limit plant biomass by causing partial or total destruction". Whatever its cause, be it demolition, building, traffic, human feet, storm water etc, Gilbert (1989:13) notes that "high levels of disturbance facilitate the survival of aliens through reducing competition".

7 The origins of the urban flora

Gilbert (1989:24) notes that "pollen analysis has established that many of the native plant genera and species that are abundant in towns today were widespread in the open park-tundra that covered Britain at the end of the Pleistocene" . However, this takes no account of the paucity of truly native species in Britain today, when compared with the floras of other north west European countries.

Pennington (1974:54) argues that "the poverty of species within the British flora, as compared with that of continental Europe, is explicable at least in part as due to the failure of many species to migrate into Britain by natural

dispersal from their southerly refuges before the land connection between Britain and the continent was severed". This happened between 7, 500 and 5, 000 BP during the postglacial 'Atlantic' period.

Godwin (1956) and Salisbury (1961) argue that a considerable proportion of the British flora has been brought in since Neolithic times, which started around 5000 BP. According to Green (1980) around 32, 000 plant species have been introduced. This compares with the 1908 native species reported by Barker and Graf (1989) which includes agriophytes.

Most work on introduced species in the urban flora has been done in Germany where, in Berlin, up to 50% of plant species are alien (Sukopp et al (1979)). In Poland, some cities show up to 70% aliens (Falinski (1971)). However, Walters (1970) showed that in Cambridge, the urban area supports a higher number of species than the surrounding countryside, despite there being a lower level of total vegetation cover. Supporting Walters, Gilbert (1989:11) argues that this conclusion "could equally well be shown for London if the data in Burton's Flora of the London Area (1983) was fully analysed". He also notes that "urban areas can be described as showing enhanced permeability to immigrants due to the increased opportunities for dispersal coupled with the open nature of the habitat" (Gilbert (1989:15)). Smith (1994), in making a plea for cities to be taken seriously in terms of the post-UNCED agenda relating to biodiversity, outlines the work of Pysek, a Czech ecologist. Smith (1994:10) notes that "Europe's cities are hearth and home to a vast number of wild plants. The bigger the city-in area or in human population-the more wild plants it supports. Some are so rich, they hold more species than the surrounding countryside".

Given the upheavals in the British flora since the 'Neolithic Revolution' of wildwood destruction and its replacement with settled agriculture (and many of Britain's Mediterranean weeds and other agriophytes); the disturbance involved in, and the development of urban areas, railways, tracks, roads and canals, along which species could spread rapidly; the popularity of gardening and research into cosmopolitan urban floras in continental Europe and Britain, it is difficult to understand why urban ecologists hanker after an arcadian, ancient and, to a certain extent ecologically mythologised countryside and urge local authorities and schools to 'do their bit' by 'bringing the countryside to the city' when, as

Barker and Graf (1989:3) have intelligently argued: "an objective (of nature conservation) should be to create an improved urban environment based on urban habitats rather than to attempt to reproduce impoverished examples of rural habitats in urban areas". Agyeman (1991a:24) has called the practice of bringing the countryside to the city the "rural transplant" method of creating urban greenspace.

Gilbert (1991) has his own criticism of the 'rural transplant' school of urban ecology. He notes that "they would do better to concentrate, as a priority, on the special culture-flavoured communities that occur in heavily built-up areas" (5). By 'culture-flavoured communities' he means the unique natural/anthropogenic communities which have arisen in the urban commons which vary according to past land uses, the local population and factors such as trade and mercantilism, where appropriate. He continues that "too often naturalistic wildlife areas are created by destroying perfectly good existing communities of self-sown native and alien plants" (Gilbert (1989:5)).

Nicholson-Lord (1987:97) avoids making a judgement on the issue of native and alien plants, preferring instead to leave a question. He notes that in Trimmen and Dyer's Flora of Middlessex (1869), there were 78 more native plant species than today "yet the county gained about 100 other plant species...85 of them garden escapes, like goat's rue, slender speedwell, the striking large flowered evening primrose and the better known buddleia, daisies and goldenrod. Is it richer or poorer in consequence?"

Why do these cosmopolitan communities occur in urban areas? Gilbert (1989:110) argues that industrial areas in cities and towns are a major source of introduced species: "the industrial cycle normally starts with the acquisition of raw materials, frequently from abroad, and these are a well known source of alien species". Gilbert (1989:10), in acknowledging the role of gardeners, also argues that such areas "nearly match the suburbs as points of introduction". He cites the woollen, paper, oil milling, iron ore, brewing, tanning and flour milling industries as being of special importance. Clearly, the industrial and horticultural legacies of a given city will affect its present and future floral composition.

Barker (1991:8) agrees in that "it is to the cities that overseas goods are taken and therefore it is in the cities that deliberate or accidental introductions are made" and, because of the heat island effect, and the high range of niches available, "this favours species from drier, warmer climates such as the Mediterranean" (8). He concludes by stating that "taken together, the effects of urbanisation bring about an overall decline in the plant species previously established in an area and an increase in those more recently arrived. The same is true of most animal groups studied" (8).

UNESCO-UNEP-IEEP (1983:153) are in agreement in that "the type of vegetation and wildlife changes dramatically when a city is constructed on a land site". This echoes Deelstra's (1988) statement about vegetational change in cities being caused by humans, and Gilbert's (1989:5) observations on "culture-flavoured communities".

And this process of urban vegetational change will continue according to Graham (1988:393) who, in discussing the implications of climate change on the design of biological reserves notes that "it is futile to assume that the species associations (communities) that we observe today and that we are trying to capture in our reserves will be the same over long spans of time, perhaps less than hundreds of years". In addition, Gates (1990:13) who, in describing the probable effects of Global Warming on ecosystems notes that "alien plants and animals should do rather well in a warmer Britain".

Against this background of a naturally impoverished national flora (Pennington (1974)), different urban climatic conditions (Douglas (1983)), heterogenous ecological niches in cities (Barker (1991)), trade, industry and other anthropogenic factors (Gilbert (1989), Barker (1991)), including disturbance (Gilbert (1989)), and the widely predicted onslaught of Global Warming (Gates (1990)), why is Gilbert's (1989:5) statement about ecologists prejudices against gardens ("they have never been considered to fall within the remit of pukka ecologists"), and by deduction, alien plants wherever they may occur, so true?

8 Explaining the prejudice.

Trepl (1990), whilst writing from a central European perspective, provides a useful insight into attitudes to aliens, or 'neophytes' (see Figure 3 page 88).

He differentiates between two approaches to research into this area. One was through natural science, with "botany or plant geography as a biological discipline" (75) and the other "in which botany was a part of geography" (75) was a cultural science approach. In German, the latter approach is the 'Cultur-Ecological' (Kulturwissenschaften) approach to the study of the anthropogenic migration of plants (hemerochory).

This approach, he argues, was developed in the 19th Century. It was linked "not with general natural laws but with individualities (eg 'folk', 'spirits' of nations, state, country)" (81). It is thus an ideological, patriotic and nationalistic approach, offering similar sentiments to those made by Lowe ((1983:349) "from the turn of the century period comes an aesthetic and spiritual identity with the wild, strong anti-urban and anti-industrial sentiments, and a sense of stewardship, associated on the one hand with an appreciation of the web of life and its fragile balance, and on the other hand with a patriotic attachment to the indigenous flora and fauna").

Trepl (1990) notes that, in an extension of Fenton (1986) and Doughty's (1978) arguments, that "perhaps the emphasis on the 'aggressiveness' of successful alien species (usually seen as being genetically determined) also has such an ideological background" (88) and that "the real problem is the conservative bias inherent in 'cultural-science' approaches, which is structural and by no means merely the result of the private opinions of individual researchers.....the question is whether this problem of structural conservatism has a different weight now compared to the period of historic 'Kulturwissenschaften' in the late 19th century and the beginnings of the 20th ie whether these, or their surviving elements, have also altered their political, social and cultural position" (93). The writings reviewed earlier in this chapter, and those of Kohn (1995) The Race Gallery: The Return of Racial Science suggest that they have not.

Rodman (1993), writing on the native-alien debate from a US political science perspective, locates the 'problem' as being more recent than does Trepl (1990). He notes that "our preoccupation with aggressive and invasive behaviour leading to impoverished and unstable monocultures seems to reflect a more recent, twentieth century way of regarding the world - a world characterised by "world wars" and by "totalitarian" movements that periodically arise and spread, eliminating or repressing (for a time at least)

some basic form of human diversity (eg ethnic, socioeconomic, or religious) in order to create the precarious utopia of a racially pure *reich* " (151/2). Rodman (1993), however, disagrees with Fenton (1986) and Trepl (1990). He notes that "the deeper political meaning of the native plant movement is not, I think, a nativistic fear and dislike of immigrants, but a commitment to the defense, preservation, and restoration of indigenous, balanced communities" (152). Evans (1996:15) questions who should make such decisions about 'balanced communities': "whatever our reaction to 'problem' or alien species is, it must involve moral decisions. And who should make such decisions and to what degree they are accountable must also be up for review. The conclusions of scientists and other sections of society may differ vastly about what to do about the introduced plants and animals that have become a common feature of everyday life".

Barker (1991:8), like Trepl (1990), could be addressing the issue of 'structural conservatism' in discussing urban ecology and some ecologists' reactions to it. He notes that, in support of Evans' (1996) views above, "it is with ecologists that some of the biggest conceptual difficulties have been experienced. Ecologists have generally learnt their trade amongst rural habitats. The primary woodland, the chalk downlands, the Pennine moorlands and so on become the standards against which other sites are judged. Any survey of an urban area done for planning or ecological purposes will first identify those areas of countryside encapsulated by urban development. These will be evaluated as important relics-as indeed they are. They will also be looked upon as degraded in comparison with their rural counterparts. However, while their plant and animal communities may be different from their near equivalents in rural areas, are they any worse?". This illustrates both the contrast between Cole's (1983:270) description of "encapsulated countryside", and 'real rural environments' and Gilbert's (1989:69) description of "urban commons...which support true urban communities". The effect on teachers of ecologists (and UWGs) seeing "encapsulated countryside" (Cole (1983:270)) as being the premier urban habitat is discussed in Chapter 4 Research methodology, methods and results (Phase I).

Lugo (1992:6) intelligently implores his fellow ecologists as follows: "let us not allow our personal prejudice against some members of the biota influence our science on our recommendations to society".

"Conceptual difficulties" (Barker (1991:8)), "personal prejudice" (Lugo (1992:6)) "received wisdom" (Pratt (1983:29)) and "structural conservatism" (Trepl (1990:93)), amongst ecologists, together with an "unhelpful nature conservation mythology" (Barker (1994:14)), seem to be part and parcel of the same thing: an unwillingness amongst many urban ecologists, and, by deduction many UWGs where the majority of urban ecologists are employed, to accept a paradigm shift in relation to the concepts of 'native' and 'alien' in urban ecology. Given Dorion and Gayford's (1990/91) results, and the empirical evidence presented in Chapter 4 (Research methodology, methods and results (Phase I)), it is now clear that the effects of the traditional ecologist and conservationist agenda have implications for curriculum planners and teachers engaged in environmental education, especially urban nature.

9 A new theoretical and contextual framework: *the entity of the Multicultural City Ecosystem and the process of multicultural ecology*

How should environmental educators react to the "eminently emotional rather than serenely scientific" (Egler (1961:1342)) debate in urban ecology, itself a powerful lever within environmental education? Or, are environmental educators part of the debate? If, as Millward (1990:17) has argued in a paper on the history and future of urban conservation that "the ecologists and environmental educators focussed on the need to raise awareness of urban wildlife" then environmental educators are part of the development of urban ecology and part of the debate.

Agyeman (1991a:21) discusses the issues above in relation to environmental education in multiracial urban areas: "imagine you are an Asian or African-Caribbean pupil at an inner city school. The lesson today is urban ecology. The teacher has been talking about the planned school nature garden. Your design-a-garden pack talks about the different types of plants that 'should' be encouraged. It says that 'native' British plants should be used in preference to 'alien' or foreign ones, implying that they are 'better'. What are your feelings?"

The debate surrounding the very terms 'native' and 'alien' and the usefulness of such concepts is now underway in both ecology and

environmental education. B Gilbert (1992) notes that "London's flora, like its human population, is international and gives the lie to the conservationists cliché, that 'native' is good and 'alien' is doubtful". In addition, Barker quoted in Deedes (1992) puts forward English Nature's revised position on such terms: "the old jargon is lazy and inexact. Guidance to schools or local authorities is better expressed by phrases such as 'appropriate to particular areas' or 'best suited for the site'.

However, despite English Nature's 'official' position as the governmental body responsible for nature conservation, inertia, prejudice and xenophobia still exert a strong influence in the advice given to schools as regards urban ecology. The 1992 edition of English Nature's advice to schools (School Nature Area Action File) advocates "that you use local native plant species where possible-although some non-native species such as Buddleia may be introduced for scientific purposes" (Sheet 4).

In an attempt to overcome some of the ecologists' "conceptual difficulties" (Barker (1991)) and their "structural conservatism" (Trepl (1990)), Agyeman (1991a) has proposed the 'Multicultural City Ecosystem' as an *entity*: a potential new theoretical and contextual model for use by teachers of urban nature within environmental education. It has a radical, process-based, futures orientation whilst acknowledging historical and prehistoric, physical and cultural processes, and does not utilise the outmoded, outdated traditional native-alien concept offered by many urban ecologists and UWGs (see Chapter 4 (Research methodology, methods and results (Phase I)). Taking a global, rather than a parochial and nationalistic view of ecology (Trepl (1990), Lowe (1983)), he argues that *the process* of "multicultural city ecology recognises that just as human populations are in a state of flux, with inputs and outputs of people from diverse backgrounds and ethnic, cultural or religious groups, plants and animals from around the world form a significant element of the ecology of cities" (21) .

He continues that cities are "dynamic open systems involving inputs of energy and different forms of matter, and outputs such as manufactured products and waste.....moreover, improved global communications mean that urban areas are increasingly heterogenous and cosmopolitan; they now receive inputs from all over the planet. This means greater diversity, not only in human, but in ecological terms. Viewed in this way the town or city

becomes becomes an ecological system comprising a wide range of life forms and cultures, a multicultural ecosystem" (21).

The curriculum possibilities of this approach to contextualising urban areas, their changing human and natural populations, native or alien are many, and are developed in People, Plants and Places (Agyeman (1995)) which is found in Appendix 5 of this thesis. Both the contextual framework of the Multicultural City Ecosystem as *the entity*, and multicultural ecology as *the process*, and the alternative curriculum approach offered in People, Plants and Places (Agyeman (1995)) are firmly linked, and the rationale (ie aims and objectives) for the latter, and how it relates to the former, are developed and clearly set out in Chapter 5 (Research methodology, methods and results (Phase II)).

People, Plants and Places (Agyeman (1995)) aims to provide both an alternative curriculum approach which would provide KS2 teachers with evidence that the distinction between native and alien plants in cities overshadows more interesting historical and ecological issues, and a much needed link between the cross-curricular theme of environmental education and the cross-curricular dimension of multicultural education (see Shah (1985/86)), in addition to contributing to single subjects within the National Curriculum.

For example, at KS2, teachers wanting to develop geographical, historical, scientific and linguistic skills through the relevant Programmes of Study could utilise the distribution of alien species in a given area as a 'window on past culture' ie to investigate past and present industry, land use and custom: 'where is that plant from, how did it get here and what was it used for?'. This kind of investigation is not without precedent. Rural fieldwork in history and geography utilises relict woodland, coppices, pollards, meadows, heathland, field ponds, field patterns eg lynchets, hedgerows and other indicators of past and present industry, land use and custom.

Such detective work in urban areas could reveal that, for example, near the Bass and Worthington brewery in Burton on Trent, 267 species of 'grain' alien are to be found (Curtis (1931)) and that 350 or so 'shoddy' aliens, whose fruits were hooked, spined or adhesive attach readily to sheep which were subsequently imported from Australasia, Africa, South America and the

Mediterranean, are to be found on the banks of the River Tweed at Galashiels (Hayward and Druce (1919)). Subsequent research at other mills has found such plants around Bradford and all areas in close proximity to a mill. This kind of research has obvious links with colonialism and Empire and other KS2 historical periods such as the Tudors.

An illustration of the links between economic and industrial change can be found through plants in the city. On the banks of the River Don in Sheffield, Gilbert (1990) found fig trees. This is unusual in Britain. The trees originated in sewage silt which overflows the drains in heavy rain into the river. Together with the water at 20 oC from the now defunct steel mills, the trees thrived. The decline in steel production has now left only the mature trees, no young seedlings can survive. There are innumerable other examples of these ecological oddities awaiting the teacher who is prepared to investigate.

Teachers could also base lessons on tracing the routes of migration of introduced plants from ports, storage areas and botanic gardens. For example, Oxford Ragwort, which escaped from the Oxford Botanic Gardens in the eighteenth century and travelled around Britain using rail corridors, is one of many examples of plants using transport routes as 'wildlife corridors'. Its date of escape from Oxford is known, as are its dates of arrival in other towns and cities. These dates follow the development of the railways across the country. These factors mean that pupils can develop mathematical skills by working out the speed of travel of Oxford Ragwort (see activity 'Oxford Ragwort: An Inter City Traveller' in People, Plants and Places (Agyeman (1995) in Appendix 5).

Lessons with a PSE theme could focus on human movements into Britain and the cultures from which any following alien plants or animals came. They could also look at the role of botanic gardens and stately homes in relation to plant collecting and its association with colonialism. RE lessons could look at the symbolic significance of known plants in religious ritual and ceremony (see activity 'Religious and Biblical Gardens' in People, Plants and Places (Agyeman (1995) in Appendix 5). Technology lessons could look at past industry in terms of its design, environmental impacts, needs and the origin of its raw materials. Lessons with a broader environmental theme could look at the conditions required for growth of, for example, Buddleia, a Himalayan

plant that thrived on post-war brick rubble. Today it is a common urban plant (see Activity 'Where Won't Buddleia Grow?' in People, Plants and Places (Agyeman (1995) in Appendix 5).

The information and support for such work on the Multicultural City Ecosystem is readily available in local botanic gardens (especially Edinburgh, the Chelsea Physic or Kew), from local natural history societies, the Botanical Society of the British Isles, local museums, from sympathetic UWGs and in libraries. This research would only need to be carried out once for any given locality, and could then represent a resource for the whole school. It could be carried out by the teacher, perhaps helped by a student, a botanic garden, a local expert or the like. It could then be presented as an information box to pupils.

The study of urban nature at KS2 must not be allowed to become an area where intensely xenophobic and emotional thinking informs curriculum approaches and teaching practice. Instead, urban nature studies could utilise the contextual framework of the Multicultural City Ecosystem (with its process of multicultural ecology) through the curricular approach and activities in People, Plants and Places (Agyeman (1995)), and be based on reality, on rationality and on enquiry based projects which link processes which operated locally in the past, to those operating today, and into the future, both locally and globally.

CHAPTER 4

RESEARCH METHODOLOGY, METHODS AND RESULTS (PHASE I)

Introduction

The foregoing chapters provide some of the background information necessary to begin to understand:

some of the theoretical and ideological issues in which environmental education is currently engaged (Fien (1993), Sterling (1992) and (1990), Huckle (1993), Stapp (1969), Disinger and Opie (1986) and Hines, Hungerford and Tomera (1986), Milbrath (1984) and (1989) and the Schools Council (1974));

the growing convergence of environmental education with other adjectival educations (Agyeman (1994a) and (1994b), Tilbury (1995), UNEP-UK (1991) and Fien (1995));

the contested development of environmental education in terms of competition with other curriculum areas (Goodson (1987));

the dominance of the concepts of 'nature' and 'conservation', both historically (Carson (1978), Mercer (1978), Watts (1969), Goodson (1987) and Ward and Fyson (1973)) and presently (Agyeman (1991a), Dorion and Gayford (1990/91) and Storm (1995)) within environmental education;

the 'traditional' ecologist and conservationist approaches to urban wildlife (Nicholson (1987/88), Baines and Smart (1984), Southwood (1961), Kennedy and Southwood (1984), Percifull, Thomas and Kendle (1993) and Emery (1986)) which are promulgated to curriculum planners and teachers at KS2 by UWGs and others, despite the manifest differences in environmental parameters between the urban and rural environments (Gordon (1983), Barker and Graf (1989), Barker (1991), Barker (1994), Horbert (1978) and Gilbert (1989));

the issues of the language surrounding the native-alien debate (Agyeman (1991a), Niemann (1992), Yarrow (1994) and Schoon (1992));

and the ideological issues of patriotism and nationhood which suffuse the native-alien debate (Lowe (1983), Trepl (1990), Rodman (1993) and Egler (1961).

It was argued in Chapter 3 (Urban ecology and environmental education) that teachers may not be aware of some of these issues, because, generally, at KS2 they are not experts in ecology or conservation. Use was made of Lawton's (1987) notion surrounding the selection and transmission of ideas from culture to curriculum, and it has been argued in this thesis that the selection and transmission of ideas from ecology and conservation (ie culture), to the curriculum at KS2, is both arbitrary and idiosyncratic.

In terms of teachers' usage of sites for the study of urban wildlife, it was postulated that teachers were more likely to utilise sites which are more reminiscent of rural areas ie Cole's (1983:270) "encapsulated countryside", where "typical" nature is found (Agyeman (1994c:VIII)), than wasteland or "urban commons" (Gilbert 1989:69), where "atypical" nature is found (Agyeman (1994c:VIII)). Indeed, the notion of 'atypical' nature means semi-natural areas where alien plant species are either dominant or co-dominant. The point was also made, from Harris and Tomlin's (1992) research into the English Nature School Grants Scheme, that teachers wanted technical advice from experts in order to know which native plants to buy for their school nature gardens.

Collins (1984:2) made the point that "the failure of many teachers to use urban sites to teach.....appears to be due to a lack of guidance as to how it can be done". It was argued that, whilst this statement was made in 1984, before the presently available resources were on the market, and prior to Millward's (1990:17) statement that "the rapid expansion in the urban wildlife movement occurred between 1985 and 1987 by which time some 50 towns and cities around the country had acquired an urban wildlife group of some description", the requisite advice and guidance for teachers is there, from UWGs and other wildlife, ecological and conservation organisations, including botanic gardens.

Most, if not all UWGs, now have education officers (or their equivalent) who will work with teachers and their pupils, send out information and

offer a variety of services to schools (and the public generally). However, it was argued that charitable organisations such as these *quite rightly* have their own agenda in giving advice, information and support, but that curriculum planners and teachers *may be unaware of this agenda*.

Such advice, information and support, based on the factual evidence presented in Chapter 3 (Urban ecology and environmental education) indicates that UWGs may be part of an 'information system' ie a part of culture, in Lawton's (1987) terms, which assists in influencing teachers towards the KS2 curricular usage of the notion of native and alien plants (in itself a contested concept). It was finally argued that, in accepting such advice from, amongst others UWGs, and in the absence (until now), of an alternative curricular approach, teachers at KS2 may not be providing their pupils in multiracial urban areas with the broadest possible learning experiences in urban nature, or "the most effective curriculum" (NCC (1989:A10)). This is because the current learning experiences in urban nature are based, according to the factual evidence presented in Chapter 3 (Urban ecology and environmental education), on an assessment of what ecologists say should be there rather than what is there and why it is there. This, in Lawton's (1987) terms represents arbitrary and idiosyncratic, rather than systematic and justified selection.

It is for these reasons that the phased research in this thesis was carried out.

1 Research aims in all Phases

The primary focus of Phase I, but which is a common thread linking all phases, centred around the promotion by UWGs (amongst others) of the ecological and conservationist concepts of 'native' and 'alien', with reference to plants, and its curricular usage by teachers in urban areas at KS2.

Far from being a minor, uninfluential academic, professional ecologist and conservationist discourse, the primary research focus is acknowledged by some to inform an "unhelpful nature conservation mythology which encourages activity without any thought about why that activity is taking place" (Barker (1994:14)). Some of the relevant literature surrounding the

concept was explored in Chapter 3 (Urban ecology and environmental education), both in terms of its use by urban ecologists and conservationists, and in terms of its use within urban nature by teachers.

The research also focused, in Phase IIa (Chapter 5), on both the rationale, research, development and writing of an alternative opportunity and approach to the study of urban nature and wildlife ('People, Plants and Places' (Agyeman (1995))), and, in Iib, on its initial evaluation by teachers and an independent expert by questionnaire.

Phase III (Chapter 6) consisted of a further evaluation (through evaluative interviews) in order to investigate the *effectiveness* of 'People, Plants and Places' (Agyeman (1995)) in informing teacher attitudes and consequent curriculum practice at KS2.

Phases I and IIa overlapped in that research towards the book was taking place whilst the Phase I questionnaire was being undertaken. The final rationale, ie the aims and objectives for the book, were not defined until the results of Phase I were known.

Each phase was intended to generate different, but complementary types of data. Phase I was intended to produce quantitative data. Phases IIa and Iib were intended, in addition to curriculum development research, to produce both quantitative and qualitative data, and Phase III was intended to produce entirely qualitative data. Each of the Phases and (different) data sets were closely linked, and form a coherent whole. According to Mason (1994:90/91), this phased research represents the "conventional model of using a survey to provide a broad picture of a phenomenon, and a qualitative study to cover a more limited area of the same ground but in more depth".

The "broad picture" (Mason (1994:90/91)) is represented here by Phase I. Phase II developed the issues raised by Phase I, and, through the curriculum development research of Phase IIa, lead to the production of the alternative approach to urban nature at KS2. Phase III built upon the outputs of both Phase I and Phase II in order to: "cover a more limited area of the same ground but in more depth" (Mason (1994:90/91)). It did this through evaluative interviews with teachers.

Phase I specifically sought answers to the following research questions:

1 What advice are urban wildlife groups (UWGs) giving to teachers at KS2 in relation to native and alien plants?

2 Are teachers at KS2 utilising this advice regarding native and alien plants in their programmes of study in relation to ecology and environment?

Phase II in part depended upon the results of Phase I in that Phase IIa consisted of researching, developing, and, based on the results of Phase I, clarifying the rationale, and writing an alternative approach to urban nature for teachers at KS2 in People, Plants and Places' (Agyeman (1995)). Phase IIb consisted of an initial evaluation of its use by teachers, and an independent expert. In effect the research question was:

3 How does the book, its concepts and activities fit into the curriculum approaches, plans and Programmes of Study of teachers at KS2?

Phase III extrapolated the rationale (ie the aims and objectives) of the alternative approach developed in Phase IIa into a series of questions for use in evaluative interviews with teachers at KS2 in order to answer the question:

4 How effective is 'People, Plants and Places' (Agyeman (1995)) in informing teacher attitudes and consequent curriculum practice?

Figure 7 'Research phases, dates, methods and data' (overleaf) shows in tabular form, the relationship between the different Phases of this research:

Figure 7

Research phases, dates, methods, questions and data

RESEARCH			
DATE	Phase	Method/question(s)	Data
October '91 January '93	I/IIa	I Postal questionnaire to ascertain: what advice are UWGs giving to teachers at KS2 in relation to native and alien plants? Are teachers utilising this advice in their programmes of study in relation to ecology and environment? IIa Curriculum development research towards book. Rationale for final text developed after Phase I results analysed. Book published in January 1995.	I Quantitative IIa Qualitative
February '95	IIb	IIb Initial evaluation of book by postal questionnaire. How does the book, its concepts and activities fit into the curriculum approaches, plans and Programmes of Study of teachers? Initial evaluation by independent expert.	IIb Quantitative and qualitative
May '95 February '96	III	III Extrapolation of the rationale developed in Phase IIa into a series of questions for use in evaluative interviews with teachers. How effective is 'People, Plants and Places' (Agyeman (1995)) in informing teacher attitudes and consequent curriculum practice?	III Qualitative
May '96			

The rest of this chapter deals mainly with Phase I research methodology and methods. However, because of the consequent, and, in the case of Phase I and IIa, overlapping nature of the Phases, some of the methodological statements made are common to all Phases. Chapter 5 deals specifically with the research aims and methods, and the research results of Phase II. Chapter 6 deals specifically with the research aims and methods, and research results of Phase III.

2 Research methodology and methods (Phase I)

The methodology ie the *process* and *position* adopted for research, and consequent methods ie the *techniques* and *tools* utilised in this thesis are conditioned by many factors, including:

the range of experiences, interests and the author's own unique set of circumstances and chances, personal development and growth;

the ideology/worldview of the author, which, in Fien's (1993) environmental and educational typology is 'ecosocialist-socially critical';

the relationship between the quantitative data collected in Phase I, the quantitative-qualitative data in Phase II and the qualitative data in Phase III, and its analysis;

the delicacy of the native-alien issue for UWGs since the work of Agyeman (1991a) and Barker ((1991) and (1994)), which has revealed both the inconsistencies of the UWG position on natives and aliens, and the potential offence that both the ideological underpinnings and associated language could cause (Agyeman (1991a), Niemann (1992), Barker (1994) and Yarrow (1994)).

The danger for some UWGs, as they saw it, was that, being in urban areas, which are largely multiracial, they could be branded as racist, because of their use of the native-alien concept. This is obviously not direct racism, which UWGs would have to have undertaken consciously, but it is indirect racism; that is racism which occurs as a result of ideas, actions, or practices which are carried out. Proper caution ensured that no inference

making such links to direct racism were made, either verbally, or through the questionnaire.

However, as the work of Agyeman (1991a), Schoon (1992), Fenton (1986), Lowe (1983), Trepl (1990), Yarrow (1994), Niemann (1992), Doughty (1978) and others show, this contested area of ecology is littered with opportunities for those who so wish, to make capital out of the anthropomorphism of ecology (see for instance Kohn (1995) The Race Gallery: The Return of Racial Science).

Each of these issues (and there are other issues such as time, expense etc) has a major effect on development of the author's research paradigm, which, Bassey (1990:40) defines as "a network of coherent ideas about the nature of the world and of the functions of researchers". Utilising his tripartite scheme of educational research paradigms, which includes the *positivist*, the *interpretive* and the *action research*, the research paradigm adopted in this thesis is positivist.

The positivist research paradigm.

Cohen and Manion (1989:12) note: "the term positivism has been used in such different ways by philosophers and social scientists that it is difficult to assign it a precise and consistent meaning". The meaning of positivism adopted in the discussion below, and throughout this thesis is that of Bassey (1990:40) who notes that "to the positivist, the world is rational, it makes sense, and, given sufficient time and effort, it should be possible for it to be understood through patient research. The researcher can then explain the reality he/she has discovered to others, because language is an agreed symbolic system for describing reality". This is a clear, and concise expression of the positivist research paradigm.

However, Bassey (1990) then proceeds to blur his description of positivism, which reflects Cohen and Manion's (1989:12) comments above, that "it is difficult to assign it a precise and consistent meaning". He notes that "positivists *usually* seek to express their understandings in the form of generalisations", and that "their methodology is *often* described as quantitative" (Bassey (1990:40) with my emphases in italic). The words

'usually' and 'often', indicate the leeway which researchers within a given research paradigm may assume.

Bell (1987) continues this blurring of the 'division' between research paradigms. She notes that "classifying an approach as quantitative or qualitative, ethnographic, survey, action research or whatever, does not mean that once an approach has been selected, the researcher may not move from the methods usually associated with that style. The approach adopted and the methods of data collection selected will depend upon the nature of the inquiry and the type of information required" (4).

Following the arguments of Bassey (1990), and Bell (1987) above, a substantive issue relating to both the methodology, and the methods used in this research, was the relationship between the quantitative data collected in Phase I, the mixed quantitative-qualitative data in Phase II, and the qualitative data sought in Phase III, and its analysis. Could the three be incorporated into a positivist research paradigm, as Bell (1987), and Bassey (1990) have indicated? Mason (1994) appears to think so. In discussing the integration of quantitative (positivist), and qualitative (interpretive) approaches, he notes that it "involves developing mechanisms to ensure that you are asking sensible, meaningful and appropriately limited questions of your data sets" (Mason (1994:108)). These mechanisms, which include fair questionnaire design and bias avoidance in interviews are addressed in the 'justifications' in this chapter, and in Chapters 5 (Research methodology, methods and results (Phase II)) and 6 (Research methodology, methods and results (Phase III)).

Mason's (1994) advice has proved invaluable, in that the aim of Phase I was not to provide *statistically valid* quantitative data, and no such claims are made; rather it was, in the positivist tradition of seeking generalisations, to "allow the quantitative component to map out general patterns" (Bryman and Burgess (1994:216)) which would then form a research platform for Phases II and III.

Clearly, the aim of this thesis, as stated in its title "An alternative approach to urban nature in environmental education at KS2", is to provide both a critique of the current reality of urban nature, that is the 'traditional

approach' of ecologists (Nicholson (1987/88), Baines and Smart (1984), Southwood (1961), Kennedy and Southwood (1984) and Emery (1986)) and teachers (Agyeman (1991a)), and to develop an alternative curricular approach through People, Plants and Places (Agyeman (1995)). This can be considered as *purely* positivist research, in Bassey's (1990) sense. However, the initial evaluation, and the evaluative interviews which make up the second part of Phase II, and Phase III respectively, can be considered *broadly* positivist, in Bell's (1987) sense.

The methods selected for Phase I are outlined below. They have been used because of the need for a pluralistic approach and because of their deemed fitness for the purpose intended. Phase I utilised two postal questionnaire surveys to ascertain the answers to the first two research questions:

1 What advice are UWGs giving to teachers at KS2 in relation to native and alien plants?

2 Are teachers at KS2 utilising this advice regarding native and alien plants in their programmes of study in relation to ecology and environment?

The aim of the Phase I research was to provide an insight into, or an indication of the type (and extent) of advice being given to teachers at KS2 by UWGs, and an *indication* of teacher usage of the native/alien concept in the programmes of study, which is at the heart of ecological thinking and is currently being challenged within conservationist, wildlife, and now, educational debates

Phase I

An initial pilot of Phase I was carried out in January 1993. This involved scrutiny of the two questionnaires by a primary school (Winton Primary, London), an UWG (London Wildlife Trust), Dr Carolyn Harrison (UCL) and George Barker (English Nature). Follow up interviews, by telephone, or face-to-face were then carried out with each piloting body. Any comments were integrated, where applicable, into the final format of the questionnaires which are in Appendices 1 (Schools questionnaire) and 2 (UWG questionnaire).

Phase I proper was carried out between February and March 1993. In order to complete Phase I of the research, two separate self completion postal questionnaire surveys were undertaken. One survey was sent to a systematic sample of schools, the other to all 60 UWGs in operation at the time of sampling.

One set of questionnaires, together with an explanatory covering letter (see Appendix 1 Schools questionnaire) were sent to the headteachers of 464 urban primary schools in England. 50% of the sample schools were obtained at random from the DfE database in Darlington (IS Branch DD2), the remaining 50% were obtained from the English Nature database. The schools contacted from the English Nature database were systematically selected on the basis of one in every five. These represent urban primary schools who have applied to the English Nature School Grants Scheme for grant of up to £500 to create nature areas in their grounds since 1986 when the Scheme started (see Harris and Tomlins (1992) for a detailed account of the Scheme).

The schools' sample was deliberately selected to be made up of 50% who were known to be aware of urban nature and conservation issues. This was deduced by their being drawn from the EN database. Whilst this is obviously not a failsafe indicator of nature conservation awareness, it was the most accessible method and was deemed to be fit for the purpose. The need for half the schools to be aware of conservation issues was, in part, due to early uncertainties about the likelihood of getting responses to what is, despite considerable effort, quite a technically demanding questionnaire. It was felt that such schools should be included, yet balanced by the remaining 50%, who were not known to be aware of conservation issues to the same extent as the EN sample. A visual check was made to ensure that no school was included in both samples.

The second set of postal questionnaires with an explanatory covering letter (Appendix 2 UWG questionnaire) were sent to the directors of UWGs. The sample survey of UWGs was much more easy to identify and define as UWGs are a discrete coalition of organisations. At the time of sampling (between February and March 1993), there were 60 UWGs. Their names and addresses were obtained from English Nature, and checked against the Wildlife Trusts database in Lincoln.

3 A justification of the methodology and methods

The intention in Phase I of this research was to obtain some quantitative data on the use of the native-alien concept, from two discrete samples ie schools and UWGs, which would give an indication of its *use*, (or otherwise) by KS2 teachers in their programmes of study, and the extent to which UWGs are promulgating the concept to teachers. From this, tentative inferences about the extent of the use of the native-alien concept in the curriculum could be made. Developing from this platform, an assessment of the form of the two parts of the Phase II research was made.

The Phase I methodology employed experience (both personal and authoritative), reasoning (inductive and deductive) and quantitative research (stratified sampling) (Cohen and Manion (1989)). Questionnaire design avoided wherever possible highbrow, leading, complex, irritating and open ended questions (Cohen and Manion (1989) and Bell (1987)). Covering letters, bearing the University of London Institute of Education and English Nature logos, were also sent. These explained the purpose of the research to teachers and to UWGs. The use of logos was seen as a way of increasing the 'official' nature of this research amongst both the receiving teachers and UWGs. A pre-paid envelope was supplied with each individual questionnaire.

Both the title of this thesis 'An alternative approach to urban nature in environmental education at KS2' and the title of the questionnaire to schools 'Urban wildlife and environmental education' (Appendix 1), show that the clear research focus was on urban wildlife and urban nature as a part of, but *not* the totality of environmental education per se. Therefore, the potential criticism that the questionnaire respondents definition of environmental education may differ from that of the author (see Agyeman (1991b)) does not stand given the focus on urban wildlife and nature, *not* environmental education.

As such, questions 1-4 of the teacher questionnaire, relating to environmental education generally, should be seen as 'warm up' or "throw away" questions (Moser and Kalton (1983:264)), which are thought to "act as

an incentive to completion" of postal questionnaires (Moser and Kalton (1983:264)). They are a prelude to the focal, and more sensitive questions on urban nature, especially the native-alien debate. This follows the advice of Bell (1987:64) who notes that one should "leave sensitive issues to later in the questionnaire". As such, questions 1-4 were included for interest only; to let respondents decide what *they* consider to be environmental education. This is justified on the basis that the focus of interest throughout this thesis is clearly *urban nature*, and the curricular use by teachers at KS2 of the ecologist and conservationist concepts of native and alien with regard to plants, not whether teachers share similar views on environmental education to those of the author. An additional justification is that it would be surprising, given Dorion and Gayford's (1990/91) results, that nature (or even urban nature) did not feature in the majority, if not all teacher's considerations of what environmental education means to them. For these reasons, no attempt was made to ask teachers to define environmental education.

Questions 6 and 9 in the teacher questionnaire were clearly not 'warm up' questions and were added to assess both the coordination of environmental education in the respondent's school, and the extent of LEA advisory services in 1993. As such, they were not focal, but were intended to assess the framework of environmental education at school and LEA level for interest only. Questions 5, 7, 8, 10, 11, 12, 13, 14 and 15 ie 60% of the questions in the teacher questionnaire were directly focussed on urban nature and the native-alien debate.

In the UWG questionnaire, the 'warm up' questions 1-3 regarded reserve usage. This again follows the advice of Bell (1987) regarding sensitive issues. Questions relating to nature reserves, of all the questions asked, were deemed to be the least sensitive questions and were positioned in the questionnaire in recognition of this. Questions 4-7 were clearly focal questions, relating as they did, to the native-alien debate. Questions 8-16 were included to assess the level of educational commitment of UWGs, and to assess the communication of ideas about native and alien plants.

The questionnaire method adopted for Phase I, bearing in mind that the aim was to arrive at an indication of a trend ie use of the native-alien concept in the curriculum, and the potential UWG role in communicating

the concept, rather than a statistically tested set of data, was deemed to be fit for the purpose intended. In terms of the reliability of the data sets, it is most unlikely that they are unreliable ie "repeat measurements made by it under constant conditions will give the same result (assuming no changes in the basic characteristic-eg attitude-being measured)" Moser and Kalton (1983:353). Again, because of the intention to produce an indication of a trend, no test-retest, alternative forms method nor split-half method was employed (Moser and Kalton (1983)).

In terms of the validity of the data sets, personal experience in both schools and an UWG, reading and observation over the past ten years indicate that they are likely to be a reasonably accurate reflection of both UWG and teacher attitudes to urban nature at KS2 in 1993. The questionnaires are therefore deemed to have measured what they set out to measure (Moser and Kalton (1983)), that is the use of the native-alien concept by KS2 teachers in their programmes of study, and the extent to which UWGs are promulgating the concept to teachers.

4 Research results (Phase I)

Introduction

As was stated in sections 1, 2 and 3 of this chapter, the aim of Phase I was not to provide statistically valid quantitative data, and no such claims are made; rather it was to "allow the quantitative component to map out general patterns" (Bryman and Burgess (1994:216) which would then form a research platform for Phases II and III.

Following the pilot questionnaire which was sent to a primary school, an UWG, and two urban ecologists, the schools questionnaire was sent to 464 schools of which 50% were schools from the English Nature database, and 50% from the DfE database in Darlington. 110 questionnaires were returned giving a return rate of 24%. One response was returned with a note to the effect that it was not filled in due to 'pressure of work' and 6 were not filled in due to them being non-KS2 schools, which were included in error.

The UWG questionnaire was sent to all 60 groups. Fifty five questionnaires were returned, giving a return rate of 92%. Five responses were not filled

in due to the voluntary status of the group concerned and/or the group concerned not undertaking educational work.

Each of the two questionnaires had space for comment in appropriate places. Sections 1, 2 and 3 of this chapter contain such comments, which are attributed to "a respondent" for reasons of confidentiality. In the results of both questionnaires below, the arguments made in section 3 'A justification of the methodology and methods' in Chapter 5 (Research aims, methodology and methods (Phase I)) apply. That is that the clear research focus in this thesis was on urban wildlife and urban nature as a part of, but *not* the totality of environmental education per se. Therefore, the potential criticism that the questionnaire respondents definition of environmental education may differ from that of the author (see Agyeman (1991b)) is irrelevant given the focus on urban wildlife and nature, *not* environmental education.

Analysis of schools' results

Question 1 Does your school have a policy on environmental education?

Just over one third of schools (34%) stated that they had a policy on what they consider to be environmental education, although only 3.75% submitted copies. Of these, one was an inspection report on 'Environmental education in primary schools' which contained a section on 'the characteristics of good practice', which could be said to be the basis of a policy. Of the other two, one was broadly based, mentioning attitudinal, as well as purely cognitive objectives, yet showed in table form, only environmental education opportunities in the science curriculum. The final policy was submitted in draft format, mentioning a rationale, aims, application and assessment. Of those submitted, this policy closely approximates to the views of the author (see Agyeman (1991b)).

The poor response to the request to submit a policy, is partially explained by the variety of those submitted. 'Policy' means different things to different people, as does environmental education; some will have thought that they have a policy, whilst others may have 'mental' policies, as yet unwritten.

However, 34% is higher than the 20% reported by Harris and Tomlins (1992) in their survey of school nature areas for English Nature, which surveyed both primary and secondary schools. Having, or not having a policy is unlikely to have a direct bearing on the use of the ecologist and conservationist concepts of native and alien, and was included to roughly ascertain the level of institutional recognition of the curricular importance of environmental education as defined by the respondent, not the author, although, admittedly, it is a crude measure. As was stated in Chapter 2 (Theories and ideologies in environmental education) in relation to secondary schools, but is applicable at the primary level, environmental education happens as a result of a keen teacher, headteacher, governor, parent or the like, rather than the mere possession of a policy.

Statement as Question 2 Our governors are supportive of environmental education

A high level of support from governors for what respondents felt to be environmental education was forthcoming, with 42% in agreement with the questionnaire statement and 45% in strong agreement. This bodes well as governor level support is critical for the present and future development of concept of environmental education and the intent of a given school to provide an entitlement to what it considers to be environmental education at KS2. However, if the same question had been asked in relation to either finance and environmental education, or environmental education in competition for resources against other areas of the curriculum, the result would probably have been different.

Statement as Question 3 Staff in this school are supportive of environmental education.

With 44% of respondents in agreement with the questionnaire statement above, and 53% in strong agreement, this is particularly welcome given the cross curricular (ie non-statutory) nature of environmental education, howsoever defined, within the National Curriculum (see Ebbutt (1992:4) and Huckle (1993:65)).

Statement as Question 4 Environmental education is well resourced within your school

The level of resourcing of environmental education, in response to question 4, was generally seen to be good, with 49% in agreement. However, 23% disagreed, and 19.5% strongly agreed. The total disagreement was 32.5%.

Statement as Question 5 Our staff feel confident teaching about urban nature.

This represented the first question, after the 'warm up', or interest only questions above, which addressed the focus of this thesis: teacher usage of concepts and practices in urban nature. Because of the simplicity of the term (urban = town or city, nature = wildlife, plants, animals), it was not felt necessary to ask teachers to define it.

The level of confidence was high, with 50.5% in agreement with the statement, or very high, with 13.5% in strong agreement. But, as Collins (1984) has intimated, total disagreement with the questionnaire statement was also high at 36%.

Question 6 The responsibility for environmental education coordination.

This question shows that by far the greatest percentage of schools (71.5%) had a person who shared responsibility for environmental education and another curriculum area. Only 11% had a dedicated environmental education coordinator, and 17.5% didn't have a coordinator (or person with joint responsibility).

Question 7 Do you undertake nature/ecological studies in your school's locality?

This question reveals that a majority of schools undertake local (ie urban) nature/ecological studies (98%).

Question 8 Please tick the two most common habitats used for nature study: A school nature garden, B local nature reserve, C local park, D wasteland, E local woods

The majority of schools use their school nature garden in combination with the local park (31%), local woods (28%) or the local nature reserve (26%). Only 8% used the school nature garden and wasteland, which supports arguments made by Agyeman (1994c) regarding potential study locations ie fewer teachers use the school grounds and wasteland, where most aliens, or "atypical nature" (Agyeman 1994c:VIII) occurs.

This may be because they are not so familiar with the ecology of wasteland areas as they are parks, woods or Local Nature Reserves (which often have a ranger/education officer), or because they do not have the confidence (Collins (1984)) about being able to name the many unfamiliar species on wasteland.

Whilst it cannot be said categorically that this is due, even in part, to the widespread prejudices mentioned in Chapter 3 (Urban ecology and environmental education), it is clear that wasteland sites are not used by many teachers. Other factors, such as the very name 'wasteland', may imply danger, anti-social behaviour, or restricted access. Some evidence for these arguments is also developed in relation to the answers to questions specifically related to the native-alien concept (below).

Question 9 Do you have an LEA adviser/inspector for environmental education?.

The majority of schools do not know if they have, or do not have, an environmental education adviser/inspector (76%), yet 24% do have one.

Question 10 Have you used the local wildlife trust for advice?

This question shows that most teachers (67%) do not use the services of the local wildlife trust (ie UWG), but 33% do. This is a rather lower score than might be expected, given the keenness of UWGs to be involved in educational work (Millward (1990)), and could be the result of teachers getting advice from a wide range of sources (eg local authority ecologist, BTCV, Groundwork Trust etc), and not being able to differentiate between them.

Question 11 Have you used any urban nature resource packs such as those from WWF or BTCV?

This question shows that most teachers do not use urban nature resource packs (59%), but 41% do. Among the resources listed were the EN School Nature Area Action File; WWF Environmental Enterprise; BTCV's Wildlife Heritage; BTCV's Practical Conservation Pack; BTCV Conservation in the School Grounds and LTL Esso School Watch. In a similar way to the lower than expected percentage using their UWG for advice, the notion of an 'urban nature resource pack' may be confusing to teachers; some may be using them without knowing.

Question 12 Is the division between 'native' and 'alien' plants useful in educational terms?

The biggest single category (43%) feel that the division is useful, but 57% either don't think so, or don't know.

Question 13 Do you make the distinction between native and alien plants in your ecological/nature studies?

The distinction between native and alien plants is made in ecological/nature studies by just under half of teachers (42%), and not, by 58% of teachers. One respondent added the comment "not in a multicultural school" in the comment space. This question is also asked in the interviews in Chapter 6 (Research methodology, methods and results (Phase III)).

Question 14 Have you read, or been advised that native plants are more attractive to wildlife than alien plants?

This question reveals that 60% of teachers have read, or been advised that native plant species are better for wildlife than aliens.

This 60% response rate, and the answers to questions 12 and 13 above, reflects two points:

firstly, the prevalence of *awareness* of the concept amongst teachers whether they gain this awareness from educational or other 'non-

educational' materials. One respondent listed the sources of non-educational advice as being "many books, the wildlife trust, publications and TV";

secondly, a substantial number of teachers who have read, or been advised about the issue (18%) do *not* use it in their classroom practice. The reason for this, extrapolated from the response of one respondent, was "I'm a little worried about the use of these terms as they could easily be used in a negative way, a racist way". Another respondent said that it was "difficult in the light of anti racist policies".

Question 15 Teacher's feelings about the descriptions of alien plants as "villains", "barbarians" and "encroaching foreigners" in Schoon (1992)

The qualitative responses here were varied, reflecting both wider concerns at the anthropomorphism of ecology and the technical accuracy of the terms. Some teachers did not offer detailed comment, presumably, as one teacher stated "because I am not an expert". One teacher who was concerned at the anthropomorphism of ecology commented that "it would imply that all foreigners (plants and otherwise) are unwelcome and harmful. This is not the case!" Another commented that the "terms have to be used with great sensitivity because of obvious parallels which could cut across equal opportunity issues". Yet another teacher noted that "I do not agree personally with labelling any species in such emotive, almost racist terms".

In terms of technical accuracy, one teacher noted that it was "unscientific. Imported species will only survive if they can occupy a niche otherwise they will be selected out by environmental conditions". One teacher who was in agreement noted "I quite agree with these descriptions". The teacher concerned was in charge of the school nature area. Other comments include the fact that the terms "create an incorrect image of plants for both children and teachers"; are "rather a strong description but necessary in order to bring the problem to the attention of others"; and "they seem rather inflammatory. I would dispute the notion of a native species of anything. Are white male Caucasians the only natives of Britain?".

Clearly, for some teachers, their awareness of the native-alien issue extends to its possible parallels with human beings.

Analysis of UWG results

Question 1 Which age group is the most frequent user of your reserve(s)

Responses to this question suggests that the biggest single group of users are the 36-47 group. However, the 0-11 group, who are within the KS2 interest range of this study, represented 15% of users, higher than the 12-23 group at 11%.

Question 2 Do schools use the reserve(s)?

Responses here showed an extremely high percentage of UWGs (91%) registering that schools do use their reserves, which concurs with Johnson (1990:6) who notes that "several nature parks in London of about one hectare receive at least 10, 000 visitors each year - an average of 30 per day each day of the year! Many of these visitors are children on organised outings from local schools". This was also reflected by teachers in their questionnaire, with 26% in question 8 using the school nature garden in combination with the local nature reserve.

Question 3 If schools use your reserve(s), please indicate the frequency of school usage.

Most reserves (48%) are used less than once per week, with 26% being used once per week by schools.

Question 4 Either in the management of your reserve(s), or in general advice to the public, do you have a policy on alien plant species?

This question revealed that over half of UWGs do have a policy on alien plant species (53%), but none was appended, as requested. However, from personal experience as Chair of Education, Council member, and member of the Executive of London Wildlife Trust (1986-90), and the evidence presented in Chapter 3 (Urban ecology and environmental education), it is suggested that even more than this have "unwritten policies".

For example, one respondent, who replied 'no' to the question, added "not written anyway"; another 'no' respondent added "but actively try to reduce Japanese Knotweed etc"; another 'no' respondent wrote "apart from removal of unwanted species (Rhododendrons!)" and another 'no' respondent who added "we have *no stated* policy on aliens, but in general our approach is determined by the type of habitat (encapsulated countryside or truly urban) and the particular alien we are dealing with (my emphasis in italic)".

A 'yes' respondent wrote "not formal", and another 'yes' respondent wrote "avoidance of alien species on prime sites. Alien species OK if used in gardens or low quality sites, within reason".

In the experience of the author, and in the responses, both written and 'unwritten' above, what is meant by 'policy on alien plant species', is both clear and demonstrable to the author, even in the absence of appended policy statements, *and* to the ecologists concerned. Indeed, *none* of the respondents challenged the question, nor did they request clarification. This is because, to the majority of ecologists, the native-alien debate, whilst their individual views may differ, is a clearly understood and focal debate.

A 'policy on alien plant species' means that the UWG concerned will *actively seek to remove aliens which they consider to be deleterious to native plant communities on their reserves*. For instance, and in addition to the examples above, one respondent, who had a policy, but did not append it, noted that it "depends on the site. Clobber jap. knot. Alert to crassula. Remove beech and sycamore as appropriate". Similarly, another 'yes' respondent said "generally remove aliens"

The question, however, was asking about policies on alien plants in both reserve management, *and* in general advice to the public. It can therefore be deduced that *at least* half of all UWGs (given the arguments about 'unwritten' policies, and examples above) advise the public, *in some way*, against aliens.

Question 5 Do you receive many queries from the public or schools related to 'native' and 'alien' plants?

Only 15% of UWGs stated that they receive *queries* about native and alien plants from the public and schools. This contrasts with the 53% of UWGs who responded positively to question 4, but the word in question 4 was *advice*, (about alien species) which is different to a query which is externally generated. Advice from UWGs is offered in many contexts, and direct 'queries' from the public and schools about native and alien plants may be rare as they are so specialised.

Statement as question 6 "An objective of urban ecology should be to create an improved urban environment based on urban habitats rather than to reproduce impoverished examples of rural habitats in urban areas" (Barker and Graf (1989)).

This statement, although technical, and perhaps subject to some interpretation, was not queried by respondents, nor were requests for clarification made, largely because of its centrality as a debate, linked to the native-alien debate, within urban ecology. The response shows that a majority of UWGs agree (55%), or agree strongly (16%) that 'urban habitats', which, according to Gilbert (1989:69) are ones such as wasteland, or as he calls it, "urban commons" ie those in which aliens are dominant, or co-dominant (Gilbert (1989)), are preferable to impoverished versions of rural ones created in urban areas.

This high response rate is anomalous, given the 53% of UWGs who have policies on (the removal of) alien plants, and the 'traditional' arguments put forward in Chapter 3 (Urban ecology and environmental education) by Nicholson (1987/88), Baines and Smart (1984), Southwood (1961), Kennedy and Southwood (1984) and Emery (1986), amongst others.

Statement as question 7 "The debate surrounding the utility of native and alien plant species is eminently emotional rather than serenely scientific" (Egler (1961)).

In total, 53% disagreed (44% disagree and 9% strongly disagree) with Egler's (1961) statement that the debate surrounding natives and aliens is based on emotion rather than science. In effect, over half UWGs are saying that the science of the native-alien debate is sound. This contrasts with

evidence put forward in Chapter 3 (Urban ecology and environmental education), for example, that of Percifull, Thomas and Kendle (1993) who note that "these ideas may be defensible if they were true, but on ecological grounds they have limited substance in urban areas" (1993:10). However, 47% agreed with Egler (1961) in total.

When compared with the UWG answers to questions 4 (regarding policy on alien plants), and 6 (regarding true urban habitats), the answers to this question would appear to reflect the contention of Harrison et al (1987) and Gaines and Micklewright (1988) about the confusion of values in urban nature conservation.

Statement as question 8 "Educational work in schools (excluding WATCH) is not a priority for conservation organisations"

The responses to this question show that, in total, a majority of UWGs (71%) disagree that educational work in schools is *not* a priority.

Question 9 Do you currently have any primary school teachers on your Council or executive committees?

The responses show that a majority of UWGs have primary teachers on their Council and executive committees (53%).

Question 10 Do you currently have an education committee/group?

The majority of UWGs (51%) have educational committees or groups.

Question 11 Do you currently have an education policy?

It is interesting to note, bearing in mind Millward's (1990) assertions about the importance of environmental education to urban ecology, that more UWGs (53%) have a policy on alien plants, than have an education policy (37%). Indeed, 37% of UWGs having an education policy seems low, given the response to question 8, ie 71% denied that educational work in schools (excluding WATCH) is *not* a priority .

Question 12 Do you have a full time education officer?

Most UWGs do not have a full time education officer (71%), but 29% do, and some have another person who 'does' education.

Question 13 Does the education officer (or other) advise on incorporating urban ecology into the National Curriculum?

The responses show that, of the 29% of UWGs who do have education officers, over half (59%) do not advise on incorporating ecology into KS2, but 41% do.

Question 14 Are your organisations views on native and alien plant species communicated to teachers, either by request, or in any literature you may produce for schools?

Nearly half of UWGs (46%) do communicate their views on native and alien plant species to schools via request or literature. This can be contrasted with the answer given by UWGs to question 5 (do you receive many queries from the public or schools related to 'native' and 'alien' plants?) where only 15% received queries regarding native and alien plants from the public or schools. Clearly, there is more *communicating* by an UWG of its position on native and alien plants, than there is *querying* by the public or teachers on native and alien plants.

Question 15 Do teachers ever question these views?

Responses to this question show that 28% of respondents said teachers question UWG views on native and alien plants, but 72% do not. The 28% who do question UWG views on native and alien plants may be reflected in some of the teacher's concerns about the possible links to humans, of the use of the native-alien concept, which was mentioned in the results of question 15 in the teacher questionnaire above.

Question 16 Does the education officer (or other) run INSET (training) for primary school teachers?

Nearly two thirds of education officers (or other) ie 63% don't run INSET at KS2, but just over a third (37%) do.

5 Discussion

It is clear, from the teacher questionnaire that there is a fair level of *awareness* of what natives and aliens are (this is also evidenced in the interviews in Chapter 6 (Research methodology, methods and results (Phase III)). The evidence for this is that the question specifically about *awareness* of the issue ie question 14 (have you read, or been advised that native plants are more attractive to wildlife than alien plants), had the *highest* response rate of any question in the questionnaire aimed at schools at 98%. It is unlikely that such a high response would have been achieved if respondents were not *aware* of the issue, or felt that they could not make a meaningful response. In addition, the question is asking about *awareness* ie understanding in its use of the words 'read' and 'advised'.

From the results in sections 1 and 2 above, bearing in mind the purpose of the Phase I research, which was to "allow the quantitative component to map out general patterns" (Bryman and Burgess (1994:216)) which would then form a research platform for Phases II and III, the following inferences can be made:

i) it is clear that 'traditional' views, as outlined clearly in Chapter 3 (Urban ecology and environmental education), are fairly commonplace amongst teachers at KS2 with 60% having read, or been advised that native plants are more attractive to wildlife than alien plants, and 42% utilising the native-alien distinction in ecological/nature studies;

ii) in addition, 53% of UWGs in total disagreed with Egler's (1961) statement that the native-alien debate is emotional rather than scientific. This statement received no requests for clarification, so was assumed to have been understood by most of the respondents. In effect, 53% of the respondents are saying that they accept the 'traditional' ie 'scientific' rather than emotional stance with respect to the native-alien debate;

iii) 46% of UWGs communicate their views on alien plants to teachers, whereas only 15% of UWGs receive queries regarding native and alien plants from the public and schools.

Nearly two thirds of teachers at KS2 (60%) had read or been advised that native plants are more attractive to wildlife than alien plants. However, this was considerably higher than the 42% utilising the native-alien distinction in ecological/nature studies ie utilising it in their programmes of study. This may reflect, in response to the statement which formed question 15 of the schools questionnaire, *some* (if limited) awareness of the potentially damaging ideological basis of the native-alien debate and the potential harm it could cause in schools as one respondent noted: "I do not agree personally with labelling any species in such emotive, almost racist terms".

However, this awareness was a rarity rather than being the norm. The danger is, that in the present climate of anti-Political Correctness, the ideologies which underlie the 'native-alien' debate (see Schoon (1992), Lowe (1983), Trepl (1990) and Rodman (1993)), and which were clearly recognised in the teacher's comment above, may not receive the challenges, educational and ecological, that they deserve.

In terms of UWGs, from the results above, it is not possible to locate them as the *sole* source of teacher advice on natives and aliens, as only 33% of schools said that they use their local UWG. However, with 46% of UWGs saying that their views on native and alien plant species are communicated to teachers, *either* by request, or in their literature, and 41% of UWGs saying that they advise teachers on the incorporation of ecology into the KS2 curriculum, they are clearly part of the 'information system', including the media (see especially Schoon (1992)) which promulgates such advice, and aids its transmission from culture to the curriculum.

By way of a conclusion to Phase I, it would appear that teacher *awareness* of the native-alien debate is higher than those who actually *utilise* it in their ecological/nature studies ie in their programmes of study. In addition, UWGs are communicating with, and influencing teachers' views on native and alien plants in some way, with other advice coming from publications (according to respondents to question 11 of the teacher questionnaire), TV, and other organisations such as local authority ecologists and rangers, the BTCV and the Groundwork Trusts (according to respondents to question 10 of the teacher questionnaire).

From this research base, which clearly establishes a need, we now turn to the development of an alternative approach to urban nature at KS2.

CHAPTER 5

RESEARCH METHODOLOGY, METHODS AND RESULTS (PHASE II)

Introduction

Phase II of the research in this thesis consists of two parts:

Phase IIa

The first part ie the curriculum development research towards People, Plants and Places (Agyeman (1995)) was being undertaken in February-March 1993 when Phase I was being carried out. However, at this stage, the *rationale* (ie the aims and objectives of the book) was deliberately not developed because it awaited both the results of the Phase I research, and the fuller development of the ideas in Chapters 2 (The development of environmental education) and 3 (Urban ecology and environmental education) of this thesis.

The aims and objectives of 'People, Plants and Places' (Agyeman (1995)), which are a direct result of both the empirical research in Phase I, and the ideas in Chapters 2, and especially 3 of this thesis, relating to *the entity* of the Multicultural City Ecosystem and *the process* of multicultural ecology, are clearly set out below.

Phase IIb

The initial evaluation by questionnaire of 'People, Plants and Places' (Agyeman (1995)) was carried out between February and May 1995, shortly after the book became available. The results of the intial evaluations are in Appendix 7 (Evaluation results). The intial evaluations, which were undertaken by an evaluation proforma (Appendix 6) are labelled as TR1-4 (Teacher Response 1-4) in section 4 of this chapter and Chapter 7 (Conclusions). This initial evaluation was built upon by Phase III of the research which was carried out between February and May 1996, giving teachers a longer time between publication (January 1995) and

evaluative interview, to ponder its effectiveness. Phase III is found in Chapter 6.

1 Phase II research aims and methods

The research aims and methods for Phases IIa and IIb are detailed below, with the justification for Phase II as a whole, in section 2 of this chapter. The Phase II research aim was both to:

IIa clarify the rationale, research, develop and write 'People, Plants and Places' (Agyeman (1995));

IIb initially evaluate 'People, Plants and Places' (Agyeman (1995)), by following Scriven's (1991) definition of evaluation which is the "determination of the worth or value of something judged according to appropriate criteria, with those criteria explicated and justified".

Each of these parts of Phase II is addressed below:

Phase IIa: The rationale, research, development and writing of 'People, Plants and Places' (Agyeman (1995))

'People, Plants and Places' (Agyeman (1995)) forms the culmination of an idea which began in 1986-7. In 1987, European Year of the Environment (EYE), the Black Environment Network (BEN) received applications for funding of a variety of environmental projects from the public and schools (see Agyeman, Warburton and Ling Wong (1991)). These fell into three broad categories:

visits to the countryside (Agyeman (1989a));

the creation of gardens with hardy species familiar to the cultural group concerned (Agyeman (1992));

'general' projects, such as litter clearance, tree planting etc (Agyeman, Warburton and Ling Wong (1991)).

The second category, the creation of gardens with hardy species familiar to the cultural group concerned, resonated with the present author's developing realisation that, in line with arguments put forward in Chapter 3 (Urban ecology and environmental education) regarding the curricular use of the terms 'native' and 'alien' with reference to plants, an alternative approach was needed to offer teachers at KS2 a framework for studying nature in urban areas which was based on what is there and why it is there, not on what ecologists say should be there.

This realisation of the need for an alternative curriculum framework, following the author's traditional ecological training (BSc joint honours in botany and geography and MA conservation policy) and experiences of advising schools on urban nature (amongst other issues) in both the London Boroughs of Lambeth (1986-90) and Islington (1990-92), amounted to what might be termed a personal paradigm shift.

These developing ideas, which have been outlined in full in Chapter 3 (Urban ecology and environmental education), centred around the problem of ecologists' transposing the concept of native and alien plants from the rural environment, in which most ecologists were trained (Barker (1991)), and for which the ideas were *specifically* developed, to urban ecosystems, which are *patently different* (see Gordon (1983), Hare (1988), Barker and Graf (1989), Barker (1991), Agyeman (1991a), Barker (1994), Horbert (1978) and Gilbert (1989)). It is clear that 'traditional' views, as outlined clearly in Chapter 3 (Urban ecology and environmental education), are fairly commonplace amongst teachers at KS2 with 60% having read, or been advised that native plants are better for wildlife than alien plants, and 42% utilising the native-alien in their ecological/nature studies ie programmes of study (see Chapter 4 (Research methodology, methods and results (Phase I))).

Moving from the germ of an idea in 1986-7, to People, Plants and Places (Agyeman (1995)) took place in 4 sequential stages, the first two of which predate the start of this thesis. The final two stages however, are both integral to, and took place during the development of this thesis. The stages are:

Stage 1 The practical development of cultural gardens

Stage 1 in the development of ideas which eventually became People, Plants and Places (Agyeman (1995)), essentially focussed on the practical development of cultural gardens, following the need established in EYE through requests for funding by community groups and schools (see Agyeman, Warburton and Ling Wong (1991)). At this stage, there was no theory behind their development, other than the name (Agyeman and Hare (1988), which fitted their purpose. In 1987, Lambeth Council provided additional funding to that given by BEN as part of the EYE fund, to a Chinese community group, to create a 'cultural garden' at Walnut Tree Walk Primary School, Kennington, London. The planting and celebrational details of this garden, which received the full support of the headteacher, his staff and parents, form a case study in People, Plants and Places (Agyeman (1995)) which forms Appendix 5 of this thesis.

Stage 2 Collaboration with the London Ecology Unit

In 1988, collaboration with Dr Tony Hare, Senior Ecologist at the London Ecology Unit, over the problem of dealing with native and alien plants in urban areas, led to the co-authored paper Towards a cultural ecology (1988), in which some of these problems were spelt out (see also Hare (1988)).

Stage 3 Development of the concept of the Multicultural City Ecosystem

By 1991, following inspiration from the work of Deelstra (1988), on ecological and systems approaches to urban planning, and given the author's concerns regarding the utility of classifying native and alien plants in urban areas, the need for a unifying concept, which brought together plants, animals, the urban environment and humans together with their cultural perspectives, became clear. The concept of the Multicultural City Ecosystem was fully explained in Agyeman (1991a). This concept, which was visited fully in Chapter 3 (Urban ecology and environmental education), develops systems thinking, originally propounded by Von Bertalanffy (1951), into a contextual and theoretical framework for urban nature from which People, Plants and Places (Agyeman (1995)) eventually came.

For clarity, and because of its *centrality* to the development of People, Plants and Places (Agyeman (1995)) as a key part of the curriculum development

research in Phase II, the concept of the Multicultural City Ecosystem will be revisited briefly here.

The basis for Agyeman's (1991a) arguments in developing the concept of the Multicultural City Ecosystem is that its focus is the urban ecosystem (see Deelstra (1988) and Douglas (1983) for a discussion of the different levels of analysis of urban ecosystems) which should *not* be thought of as solely being about plants and animals, as some clearly do, but as including humans, their products and cultures too. This definition is used by Percifull, Thomas and Kendle (1993), and their usage of it, which follows that of Agyeman (1991a), is explored below.

Agyeman (1991a) notes that cities are "dynamic open systems involving inputs of energy and different forms of matter, and outputs such as manufactured products and waste.....moreover, improved global communications mean that urban areas are increasingly heterogenous and cosmopolitan; they now receive inputs from all over the planet. This means greater diversity, not only in human, but in ecological terms. Viewed in this way the town or city becomes an ecological system comprising a wide range of life forms and cultures, a multicultural ecosystem" (21).

Clearly differentiating *the entity* of the Multicultural City Ecosystem from what goes on in it ie *the process* of multicultural ecology, he continues that "multicultural city ecology recognises that just as human populations are in a state of flux, with inputs and outputs of people from diverse backgrounds and ethnic, cultural or religious groups, plants and animals from around the world form a significant element of the ecology of cities" (21). For educational purposes, and within the development of People, Plants and Places (Agyeman (1995)), the entity of the Multicultural City Ecosystem can be thought of as a contextual and theoretical framework, providing, as it does, an alternative way of envisioning cities, and the urban ecosystem generally.

Since Agyeman's (1991a) development of the concept of the Multicultural City Ecosystem *as entity*, and the notion of multicultural ecology *as process*, papers, resources and even a job have followed. In June 1993, the London Borough of Lewisham's Nature Conservation Section reflected both the cultural makeup of the Borough, and the thinking of Agyeman (1991a), in

producing a booklet for teachers, entitled 'Multicultural Gardening', an application of multicultural ecology. In its introduction, it notes that "multicultural gardening is based on using the many exciting educational and exotic looking plants from around the world that can be grown in British gardens, and which have cultural connections to Britain's ethnic communities" (Prime (1993:unpaginated)). This supports the observations of Agyeman, Warburton and Ling Wong (1991), regarding cultural affiliations to plants from around the world.

The journal Landscape Design (produced by the Landscape Design Trust) carried an article in September 1993 entitled 'Multicultural parks'. In it, Percifull, Thomas and Kendle (1993) note that "with regard to native species selection, any obsession with the concept 'alien bad - native good' has unwelcome overtones when viewed within the framework of a multi-cultural society. These ideas may be defensible if they were true, but on ecological grounds they have limited substance in urban areas" (1993:10). They continue that "the diverse range of people, plants and animals from around the world that make up multi-cultural city ecosystems presents many different ways of reflecting this dynamic picture" (1993:11). Unfortunately, the authors of this paper do not quote Agyeman (1991a), rather they credit the Black Environment Network generally.

The Winter 1995 edition of Growth Point, the newsletter of a Somerset based organisation called Horticultural Therapy, contained an article entitled Multi-Cultural Gardening, which notes that "probably the most useful and accessible references for the beginner are: Multicultural Gardening by Mike Prime and People, Plants and Places, by Julian Agyeman" (Gaskell (1995:unpaginated)).

In their Esso School Grounds Day 1996 poster, Learning Through Landscapes, under the sub-heading 'Events' ask schools to 'have a multicultural festival looking at where trees and plants came from' (LTL (1996:unpaginated)).

The London Borough of Southwark's development of Burgess Park, which received European Union support, and that of Dr Tony Kendle at the Department of Landscape Management at Reading University, provided the case study material for Percifull, Thomas and Kendle's (1993) article in

Landscape Design. It has recently completed Chumleigh Garden as part of the park, which has an African-Caribbean garden, an Oriental garden, an English garden and an Islamic garden. Both *The Guardian* (14/12/95), and *The Voice* (14/12/95), carried an advert for a new ranger post in the Borough: that of Multicultural Gardens Ranger.

These diverse uses, illustrative of the impact of an idea, from the academic ecologist (Dr Tony Kendle), the horticultural therapist (Jeff Gaskell), the London Boroughs of Southwark and Lewisham, including a conservationist (Mike Prime), would seem to indicate that *the entity* of the Multicultural City Ecosystem; *the process* of multicultural ecology and *its applications* ie multicultural, or cultural gardening, are beginning to receive some support.

Stage 4 Developing People, Plants and Places (Agyeman (1995))

Clearly, as evidenced by Prime (1993), Percifull, Thomas and Kendle (1993) and Gaskell (1995), both the entity, and contextual/theoretical framework offered by the Multicultural City Ecosystem, and the process of multicultural ecology have been of use in their articles and books. In the case of Percifull, Thomas and Kendle (1993), it has been of use in their critique of Victorian parks, and in their work with the London Borough of Southwark in particular.

The task facing the author, in 1993, after the results of Phase I were known, was to develop a rationale (ie aims and objectives) for converting the contextual and theoretical framework of the Multicultural City Ecosystem, and the process of multicultural ecology, into a full KS2 teacher text. It would need to challenge some of the teacher attitudes and subsequent curriculum practices revealed through the empirical research in Chapter 4 (Research methodology, methods and results (Phase I)), and other concerns outlined in Chapters 2 (The development of environmental education) and 3 (Urban ecology and environmental education).

The development of ideas, researching and collecting information for the concept which eventually became People, Plants and Places (Agyeman (1995)) was carried out between 1991-3. The development of the rationale, and writing took place between 1993-4, and it was published in January

1995. It is an integral part of this thesis, as was clearly stated in the Phase I covering letter to teachers sent out in February 1993 (see Appendix 1 School questionnaire).

People, Plants and Places (Agyeman (1995)) represents a curriculum approach which follows from the contextual and theoretical model of the Multicultural City Ecosystem and the process of multicultural ecology (Agyeman (1991a)). The links between the two are made explicit below. The book was supported, and given extra funding, by Learning Through Landscapes in recognition of the greater research which would be needed, in comparison with other books in the "In the School Grounds" series. The work is entirely that of the author, except for assistance with the Appendix ('Some Plants for a Cultural Garden'). It was deemed inappropriate by both the author and the Director of Learning Through Landscapes, to fill a small book for teachers at KS2, many of whom are not specialists, with too much of the contextual and theoretical underpinnings of the Multicultural City Ecosystem, as they appear in this thesis in this chapter, and Chapter 3 (Urban ecology and environmental education). However, both the concept of the Multicultural City Ecosystem, and the process of (multi) cultural ecology is explained in the book.

Based on both the empirical research in Chapter 4 (Research methodology, methods and results (Phase I)), and other concerns outlined in Chapters 2 (The development of environmental education), regarding the links between multicultural and environmental education, and 3 (Urban ecology and environmental education) regarding the Multicultural City Ecosystem, the overall aims of People, Plants and Places (Agyeman (1995)), which are both of equal status, were therefore:

a to develop an alternative curriculum approach which would provide KS2 teachers with evidence that the distinction between native and alien plants in cities, and their reasonably common usage of the concept in the curriculum (see Phase I, Question 13 which shows that the distinction is perceived as useful educationally by 42%, and not, by 58% of teachers), has a tendency to overshadow historical, ecological and multicultural realities and more systems and process-based thinking regarding urban nature, which could lead to countless new curriculum applications;

b to develop an alternative curriculum approach at KS2 which would provide teachers with a much needed link between the cross-curricular theme of environmental education and the cross-curricular dimension of multicultural education (see Shah (1985/86)), in addition to contributing to a wide range of single subjects within the National Curriculum.

The objectives which informed the development and writing of People, Plants and Places (Agyeman (1995), and which flow directly from the overall aims stated above, were:

a to provide a broad historical context to the development of the Multicultural City Ecosystem through showing both the accidental and deliberate human introductions of plants from the Neolithic onwards, but concentrating mainly on KS2 historical periods, especially the Romans, the Anglo Saxons, the Tudors, the Victorians and Britain since 1930;

b to outline some of the contemporary environmental and ecological differences between cities and the rural environment;

c to provide some guidance on the development and celebration of cultural gardens as 'windows on culture' and 'windows on the environment';

d to provide some insights into the potential for growing a range of economic and culturally relevant plants from around the world in order for teachers to be able to use them in the KS2 curriculum.

The overall aims and specific objectives are outlined in simplified form, for the reasons stated above, to teachers at KS2 in the introduction to the book. It notes that:

"this book is designed to give Key Stage 2 teachers new ideas and approaches and materials for detailed activities which will allow pupils to investigate and explore the historical, geographical, ecological and often multicultural origins of many 'British' plants in novel ways. Cultural ecology is a new approach to ecology. It is the study of the inter-relationships between plants and animals and their environments. Focussing on plants, it places much greater emphasis on the human and cultural aspects of plants than traditional ecology, and provides a multicultural focus for ecological work,

especially in urban areas. Cultural ecology works within the framework of the post-Dearing National Curriculum. It is cross curricular, linking the scientific aspects of ecology to history, geography, technology, maths, creative writing, storytelling, art, religion and drama. With its multicultural focus, it provides an especially relevant approach in inner city school" (Agyeman (1995:4))

Linking the aims, and especially the workable objectives a-d above into the the development and writing of the KS2 teacher text People, Plants and Places (Agyeman (1995)), took place with each objective forming, in effect, a chapter:

a to provide an historical context to the development of the Multicultural City Ecosystem

Too many KS2 teacher resources on nature (especially urban nature - see Chapter 3 Urban ecology and environmental education) omit an historical perspective to the development of urban ecosystems, and present day urban habitats in Britain. The objective here was to spell out to teachers the historical context to the development of the flora of Britain from post glacial times, through the Neolithic and other cultural periods, to the present Multicultural City Ecosystem(s) which are found in most of our towns and cities (see Chapter 3 Urban ecology and environmental education).

The historical focus on the KS2 historical periods, especially the Romans, the Anglo Saxons, the Tudors, the Victorians and Britain since 1930 was deliberate and was intended to both contribute to history as a single subject and to the multicultural aim of the book. The pre-Roman information was included to give teachers the full picture of both natural, and human-assisted vegetational processes, despite it not being required in KS2 history.

In spelling out these links in Chapter 1 of the book entitled 'Plants through the ages', it was hoped that teachers would see a direct continuity into Chapter 2, entitled 'Introduced plants in urban areas'. Put another way, the objective was to encourage teachers to see a vegetational time line from post glacial wilderness to present Multicultural City Ecosystem, and for them to begin to understand the myriad ecological influences of humans, in terms of land use, industry, trade, war, botanic gardens and domestication along this

line. In doing so, it was hoped that teachers would begin to see difficulties in the 'traditional' ecologist and conservationist position regarding native and alien plants, and the possibilities offered by both the theoretical stance of the book, and its practical activities.

b to outline the contemporary environmental and ecological differences between cities and the rural environment.

As one of the main criticisms of the 'traditional' approach in this thesis has been that the manifest differences between urban and rural ecosystems in terms of their floras has largely been ignored (see Gordon (1983), Pratt (1983), Hare (1988), Barker and Graf (1989), Agyeman (1991a), Barker (1991), Barker (1994), Horbert (1978) and Gilbert (1989) amongst others), this clearly had to be addressed in People, Plants and Places (Agyeman (1995).

The differences between urban and rural ecosystems in terms of their floras is addressed throughout the book, but especially, and focally, in Chapter 2 'Introduced plants in urban areas'. In addition to the text, which includes the reasons why cities could be called Multicultural City Ecosystems, is a pupil activity called 'Weather watch' which develops an activity around Gilbert's (1989) point that it is temperature which is the key factor in creating the longer growing season in cities, thereby creating an urban heat island, which attracts plants of southern European, or Mediterranean origin (Barker (1991).

Chapter 3 'Some introduced plants from around the world' provides teachers with detailed information, and related pupil activities, on the origins of three common introduced plants within the Multicultural City Ecosystem: Rosebay Willowherb, Buddleia and Oxford Ragwort. These were specifically chosen because of both their interesting histories, and their ease of recognition. In addition, and to further assist the teacher, colour pictures of each are shown.

c to provide guidance on the development and celebration of cultural gardens as 'windows on culture' and 'windows on the environment';

The concept of the cultural garden, is a practical, community or school based application of the process of multicultural, or more simply, cultural ecology. It is now an established concept (see Prime (1993), Gaskell (1995)) which attracts funding from official bodies such as English Nature, the government agency responsible for nature conservation (see English Nature (1991) 'Community action for wildlife') and the European Union (see Percifull, Thomas and Kendle (1993)).

Chapter 4 'Planning and designing your cultural garden' aimed to give teachers a 'checklist' for developing their gardens, including planning and involving the school community; a list of suitable plants (including their wildlife worthiness) and also an extension of the cultural garden concept: that of the religious, or biblical garden. The appendix to the book, which is linked to Chapter 4 'Planning and designing your cultural garden', provides teachers with an explanation of the use of the garden as a 'window on culture' and as a 'window on the environment'. The aim of this is to show teachers that cultural gardens are not just prettified areas of the school grounds but that they can have direct curriculum applications in terms of looking at plant usage in other cultures (where appropriate), and the environmental requirements of plants in the garden in their areas of origin.

In addition to the physical development of the garden, Chapter 6 'Celebrating your cultural garden' adds an artistic and spiritual dimension to the process of cultural ecology. This is seen as an important feature of the Multicultural City Ecosystem, focussing as it does, not only on plants and animals, but humans and their cultures, as part of the urban ecosystem. The book provides information, and an activity idea on tree dressing which takes place in many cultures and on teachers and pupils planning their own festival depending on the cultures present in their school.

d to provide insights into the potential for growing a range of economic and culturally relevant plants

Another facet of the idea of the Multicultural City Ecosystem, which builds on city farming and permacultural ideas (see Davidson (1988)), is that different cultural groups may want to grow foods locally, with which they

are familiar. Gaskell (1995:unpaginated) notes that at "Ashram Acres is a project in Sparkbrook, Birmingham, that has been serving the local Asian community for 14 years, using its limited growing space to produce exotic and not so exotic vegetables that are sold locally". At Norwood Hall Schools Environmental Education Centre in Southall, London, which supports teachers in west London Boroughs, where south Asian languages are common, food crops from around the world are labelled multilingually.

The focus of the approach in People, Plants and Places (Agyeman (1995)) is developed in Chapter 5 'Plants as food, cleaners, perfumes and medicines'. It begins by providing information on many common vegetables which many teachers might think of as being 'British', but which are in fact cosmopolitan. It gives information and activity ideas on growing these vegetables; on finding out about the usage of the vegetables in different cultures and on developing plant cures, cleaners and perfumes.

Phase IIb: The initial evaluation of 'People, Plants and Places' (Agyeman (1995))

Phase IIb of the research consisted of developing an initial evaluation, based on teachers reading the text, and *predicting* its usefulness as a new approach to urban nature. Four teachers at KS2 undertook the initial evaluation (see Appendices 6 (Evaluation form: People, Plants and Places) and 7 (Results of evaluation of People, Plants and Places)), together with an independent expert, Dr Ian Edwards, Head of Public Education at the Royal Botanic Gardens Edinburgh (see Appendix 8 (Independent evaluation of People, Plants and Places)). The results, and a discussion of the initial evaluation are in section 3 of this chapter.

Four teachers at KS2 in inner urban primary schools in Birmingham and London were asked to read the text carefully and to evaluate it in terms of the following question:

how could this book fit in to your curriculum approach, plans and programmes of study?

The use of the word 'could' is significant in that as the book had only been published for a month, the teachers were being asked to *predict* its *likely* or *potential* usage. The qualitative methodology adopted in Phase IIb is an evaluation which, according to Scriven (1991) is the "determination of the worth or value of something judged according to appropriate criteria, with those criteria explicated and justified".

The criteria for the initial evaluation of People, Plants and Places (Agyeman (1995)) which are explicated clearly below, were developed from its dual aims, stated above, of showing teachers at KS2:

a the historical, ecological and multicultural realities of urban nature, which could lead to countless new curriculum applications;

b the much needed link between the cross-curricular theme of environmental education and the cross-curricular dimension of multicultural education, in addition to contributing to a wide range of single subjects within the National Curriculum.

The first aim, *a*, above, relates to both the evaluative criterion of the *content*, of the book in the context of KS2, and to the evaluative criterion of the book's practical projects, that is, the *activities* necessary for teachers to offer their pupils such an approach. The second aim, *b*, above, relates to the Multicultural City Ecosystem as the contextual and theoretical framework of the book (ie the evaluative criterion of the *message*). The justification and explication of these evaluative criteria, in line with Scriven (1991), are found in section 2 of this chapter.

Based on the simplification of the stated aims of the book above, the three key evaluational criteria used in the initial evaluation were:

- i) the overall message for the teacher;*
- ii) the appropriateness of content in relation to KS2 Programmes of Study;*
- iii) the usefulness of the activities for the pupils.*

The evaluation proforma, which appears in full in Appendix 6 (Evaluation form: People, Plants and Places), and in abbreviated form below, was constructed to elucidate from teachers the key initial evaluational criteria above.

Scriven (1991) calls for both the *explication* of criteria (above) and their *justification*. It is to the latter that we now turn. Questions 1, 2 and 3 are shown below. Question 1 relates to a general concern, whilst questions 2 and three investigate teacher expressed preferences within environmental education, and urban nature resource usage respectively:

<p>1 What status do you give environmental education in your teaching? (Please tick)</p> <p style="text-align: center;"> Low Medium High </p>
<p>2 Which aspect of environmental education (eg buildings and architecture, transport, nature and wildlife, pollution, waste and litter or other) do you personally feel most comfortable with and why?</p>
<p>3 Name up to three written resources that you have used to assist you in developing teaching materials for urban nature</p>

Questions 4 and 8 overleaf relate to the teacher's understanding of the *message(s)* in the book:

4 The following statements are about the book 'People, Plants and Places':

- a It presents an alternative way of looking at nature in cities.
- b Its approach is particularly relevant in multicultural areas.
- c It links nature in cities to many other areas of the curriculum which teachers may not be aware of.
- d It shows how to create a 'cultural garden' in the school grounds.
- e It provides a broad range of practical activities, linked to key concepts in the text.
- f It shows how cities differ environmentally from rural areas

Please rank these statements starting with the one you believe to be the most important or significant, and finishing with the one you believe to be the least important or significant (eg d, c, e, f, a, b)

The statements in question 4 above all relate to the message(s) of the book ie what it aims to try to do. They were specifically selected as such from the aims and objectives of the book detailed above, therefore no 'negative' messages were selected. The issue here is for teachers to *rank* the statements, such that an assessment of what teachers consider the message to be can be undertaken. To guard against accusations of bias, question 8 below, allows teachers to describe the 'overall message or idea' of the book.

8 Is there an overall message or idea which has struck you on reading the book? Please describe it

Questions 5 and 6 overleaf are specifically *content-related* questions:

5 Is the content of the book: (Please tick one)

very appropriate	.....
appropriate	.....
inappropriate	.....
very inappropriate	.....

to your needs as a teacher at KS2? Please explain your response

6 In terms of content, identify up to 5 National Curriculum KS2 Programmes of Study (mentioning which Attainment Target they relate to) with which you think the book can help

Question 7, and to an extent, question 9, concerned the *activities* in the book:

7 Choose your favourite activity in the book. Below, please name it.

a What is attractive about the activity?

b How would you use the activity with pupils?

c What outcomes would you expect from your pupils?

9 Do you intend to use the ideas and activities in this book in your future curriculum planning? Please explain your answer, and if possible, give an example

The evaluational criteria of message, content and activities, as justified and explicated above, were deemed fit for the purpose intended.

2 A justification of the Phase IIa and IIb methodology and methods

The Phase II research aim was both to:

Ila clarify the rationale, research, develop and write 'People, Plants and Places' (Agyeman (1995));

Ilb initially evaluate 'People, Plants and Places' (Agyeman (1995), by following Scriven's (1991) definition of evaluation..

Phase Ila is an attempt, in Bassey's (1990:p40) methodological terms, "to describe and understand the phenomena of the world and to share this understanding with others". This 'understanding' is represented by the author's views, as expressed in People, Plants and Places (Agyeman (1995)). Its philosophical basis is that of realism. Barr Greenfield (1975, quoted in Cohen and Manion (1989:11)) notes of realism that "the world exists and is knowable as it really is". This realism is also reflected in the grounding of the book as stated throughout this thesis: the focus is on what is there and why it is there, not on what ecologists say should be there.

Phase I Ib is an initial evaluation of People, Plants and Places (Agyeman (1995)). The structure and contents of the questionnaire were discussed with a teacher at KS2, and a researcher at South Bank University. Four teachers were chosen to undertake the initial evaluation of the book. They were also selected in two different cities to try to minimise the potential problem of selecting teachers in one city who may, by whatever means, have a greater awareness of some of the issues under study than would be expected, given the results of Phase I, (and Dorion and Gayford's (1990/91) results).

Two teachers in Birmingham primary schools, and two in primary schools in the London Borough of Lewisham, who were selected by the Assistant Nature Conservation Officer for Birmingham City Council together with the Education Officer at Birmingham Botanical Gardens Base, and the Humanities Adviser for Lewisham, and who were unknown to the author, were asked to read and evaluate how the book, its messages, content and activities could fit into their curriculum approaches, plans and programmes of study. An independent expert evaluation was undertaken by Dr Ian Edwards, Head of Public Education at the Royal Botanic Gardens, Edinburgh, in July/August 1995 (see Appendix 8 Independent evaluation

of People, Plants and Places). A 100% response rate to the initial evaluation questionnaire was recorded.

The three key evaluational criteria, based on Scriven's (1991) definition of evaluation, as explicated and justified in section 1 above, were selected because they are directly based on the author's stated aims for the book. Each criterion ie *message*, *content* and *activities*, is judgeable and the questions selected to elucidate the teacher's initial evaluations were fair, and followed Bell's (1987) questionnaire checklist.

In a similar way to the schools and UWG questionnaires in Phase I, questions 1 and 2, relating to environmental education generally, should be seen as 'warm up' questions to which the same justifications apply. Question 3 is a focal question, asking about direct urban nature resource usage.

Questions 4 and 8, relate to the message of the book. Question 4 is justified on the basis that the author-selected statements were based *directly* on the aims and objectives of the book. The aim of the question was to test teacher identification with these statements in that their task was to *rank* them, not to agree or disagree with them. This therefore, does not qualify as a "leading question" in Bell's (1987:62) sense. Question 8 was included as a safeguard against possible accusations of bias.

Questions 5 and 6 were content-related. Again, these are clear, unbiased questions, asking for direct factual evaluations of content appropriateness, and the relationship between content and KS2 Programmes of Study. Questions 7 and, to an extent 9, related to the book's activities. They are clear and unbiased.

In terms of the reliability and validity of the initial evaluation, it was felt that the initial evaluation was reliable in that, according to Moser and Kalton (1983:353) "repeat measurements made by it under constant conditions will give the same result (assuming no change in the basic characteristic-eg attitude-being measured)". For this reason, no test-retest, alternate forms, nor split-half methods (Moser and Kalton (1983)) were undertaken. The validity of the test, ie did it measure what it set out to measure?, is indicated by the clear development of the evaluative criteria

(*message, content and activities*,) directly from the aims and objectives of the book itself, following Scriven's (1991) definition.

Whilst the results of the initial evaluation (see section 3 below) provided valid and reliable results, further investigation through evaluative interviews was deemed appropriate in order to evaluate the effectiveness of the book in informing teacher attitudes. The development of the interview questions (or interview guide), and the interviews themselves formed Phase III of the research, whose aims, methodology and methods are outlined in Chapter 6.

3 Research results (Phases IIa and IIb)

Phase IIa

The result of the curriculum development research which constituted Phase IIa is the book People, Plants and Places (Agyeman (1995)). This is to be found in Appendix 5.

Phase IIb

Phase IIb was organised around the following question:

How do the book, its concepts and activities fit into the curriculum approaches, plans and Programmes of Study of teachers at KS2?

The raw evaluation results appear in Appendix 7 (Results of evaluation of People, Plants and Places). In addition, the views of an independent expert, Dr Ian Edwards, Head of Public Education at the Royal Botanic Gardens, Edinburgh were sought. His evaluation is found in Appendix 8 (Independent evaluation of People, Plants and Places).

On two occasions, short interviews were conducted by telephone, to probe the teachers on points which either needed clarification, or needed expanding upon.

Analysis of results

Question 1 What status do you give environmental education in your teaching?

In a similar way to the response to question 1 in the Phase I teacher questionnaire, all the teachers (TR1-4), in response to this 'warm up' question gave environmental education, howsoever defined, 'high' status, as opposed to medium, or low.

Question 2 Which aspect of environmental education (eg buildings and architecture, transport, nature and wildlife, pollution, waste and litter or other) do you personally feel most comfortable with and why?

This question looked into teacher confidence (expressed as 'comfort') in teaching different aspects of environmental education, and why (see Collins (1984)). Two teachers had a "main hobby/interest" (TR2) or "personal interest" (TR4) in plants, one in "the built environment and pollution" (TR3) and one in "the natural world" (TR1). One teacher (TR1) noted, of children, that "they show as much interest in exploring the habitats of an inner city environment as they do of investigating ways to conserve rural environments". This backs up Ward and Fyson's (1973) assertions regarding interest in local issues.

Question 3 Name up to three written resources that you have used to assist you in developing teaching materials for urban nature.

The written resources used varied between teachers, but were most closely allied to their areas of confidence, as expressed in question 1 above. Oxford Clue Books were mentioned by two teachers (TR2 and 4), and the book in that series, entitled 'Flowers' was mentioned specifically by TR2. These are traditional, 'non-judgemental' books which present plants or animals without discussing their origins. Other texts mentioned included those from English Heritage (unspecified), Schools Council ('All Around Pack'), WWF ('Exploring My World: Plants and Animals') and a pack from Landlife ('Tree', 'Wall, 'Herb'), Arnold-Wheaton's 'Investigating grasslands, hedges and trees' and Two-Can Publishing's 'Make It Work! Plants' None of the above texts address the issues contained in People, Plants and Places (Agyeman (1995))

Question 4 The following statements are about the book 'People, Plants and Places' Please rank these statements starting with the one you believe to be the most important or significant, and finishing with the one you believe to be the least important or significant (eg d, c, e, f, a, b):

- 4 The following statements are about the book 'People, Plants and Places':
- a It presents an alternative way of looking at nature in cities.
 - b Its approach is particularly relevant in multicultural areas.
 - c It links nature in cities to many other areas of the curriculum which teachers may not be aware of.
 - d It shows how to create a 'cultural garden' in the school grounds.
 - e It provides a broad range of practical activities, linked to key concepts in the text.
 - f It shows how cities differ environmentally from rural areas

TR2, TR3 and TR4 ranked the following statement first: "it links nature in cities to many areas of the curriculum which teachers may not be aware of" whereas TR1 ranked "it presents an alternative way of looking at nature in cities" first. All teachers (TR1-4) ranked "it provides a broad range of practical activities, linked to key concepts in the text" second, and three teachers (TR1, TR2 and TR4) ranked "its approach is particularly relevant in multicultural areas" third. It is noteworthy that TR2-4 ranked "it links nature in cities to many areas of the curriculum which teachers may not be aware of" first. This indicates that for the three teachers concerned, they are expressing what amounts to surprise that there is a broad relevance of city/urban nature to 'many other areas of the curriculum'. This, however, should be qualified against question 6 (see below) where teachers identified very traditional 'environmental' areas of the curriculum in their selection of KS2 Programmes of Study with which they thought the book could help.

Question 5 Is the content of the book very appropriate, appropriate, inappropriate, very inappropriate to your needs as a teacher at KS2? Please explain your response.

Three teachers (TR1, TR2 and TR4) thought the book 'very appropriate', and one (TR3) 'appropriate'. In explaining this, teachers added that "the book offers a range of diverse cross curricular activities which can be ongoing throughout the year and be implemented over a range of KS2 years. The suggestions complement Programmes of Study in many areas and would help pupils to develop environmental awareness in a local and global context" (TR1); "the practical activities are genuinely do-able and flexible enough to be adapted. I like the cross curricular links especially with history" (TR4) and "the book covered a wide range of topics and subjects, most of which are relevant to topics we have covered, or will cover, during the course of the academic year" (TR2). One teacher commented "it's the first resource I've seen suggesting a multicultural garden" (TR3).

Question 6 In terms of content, identify up to 5 National Curriculum KS2 Programmes of Study (mentioning which Attainment Target they relate to) with which you think the book can help.

All teachers listed Programmes of Study in a combination of geography, history, English and science (see Figure 7 below). Surprisingly, no maths, technology, art or other Programmes of Study were mentioned, despite the fact that they were mentioned in the book's introduction. As was noted in response to question 4 above, the majority teacher response to that question ("it links nature in cities to many areas of the curriculum which teachers may not be aware of"), is at odds with the results of question 6, which shows no such broad links. This should be a cause of some concern to environmental educators who are interested in broadening teacher perceptions of the breadth of relevance of urban nature within environmental education in the national curriculum. However, it is possible that many teachers do realise the breadth of curriculum possibilities in urban nature in curricular terms, but, as the responses to question 6 show, they do not automatically relate these to different Programmes of Study.

Also, because of the changes proposed by Dearing, some teachers used the 'old' notation, or mixed Attainment Targets with Programmes of Study. Their actual responses have been transcribed, and have been included in Figure 7 below.

Figure 7

KS2 Teacher evaluations of Programmes of Study supported by 'People, Plants and Places' (Agyeman (1995)).

Subject :	Programme of Study:
Geography	Post-Dearing geography: (Programme of Study) Geographical questioning, collecting and recording evidence, use of geographical vocabulary, thematic studies (environmental change-how people affect the environment, how people manage and sustain their environment, weather, settlement, environmental change, places, quality and vulnerability of environments (AT5).
History	Romans, Tudors, Victorians, possibly local history, Britain since 1930, exploration and encounters, influence of imported plants and animals (PESC)(AT1/3)
Science	Experimental and investigative science, life processes, green plants, variation and classification, living things in their environment, identification of locally occurring species of animals and plants (AT2), exploring and investigating at least two different habitats, influence of environmental conditions on plants and animals that live there (AT2)
English	Language, reading for information

Question 7 Choose your favourite activity in the book. Below, please name it.

a What is attractive about the activity?

b How would you use the activity with pupils?

c What outcomes would you expect from pupils?

Two teachers (TR3 and TR4), noted that their favourite activity was 'Cures, cleaners and smells' because, said one (TR4) "it's easy to do, plants etc are

easy to get. It shows natural remedies, not items bought off a shelf. Memorable! Children would remember having their feet or hair washed in class". Both teachers (TR3 and TR4) placed this activity within history, and within the Tudors. One of the teachers (TR4) also mentioned its links with science. Both teachers, because of the safety implications, said that they would demonstrate most of the tasks within 'Cures, cleaners and smells'. The outcomes they would expect from their pupils were "a realisation that plants (are) farmed and still form (the) basis for many medicines" (TR3) and "I'd hope (that) they'd associate plants with cures, cleaners and smells, as well as supermarkets" (TR4).

The other two teachers (TR1 and TR2) liked the activity 'Can we grow it here?' One liked it because all her pupils were Asian and use some of the plants but "rarely grow them at home" (TR2). The other liked it because "it would be practical and fun for children to grow food plants they use at home. They could share existing knowledge and experience and develop new skills (geography and science)" (TR1). TR1 is probably, like the other teacher who chose this activity, in charge of a multiracial class. Indeed, she goes on to say that she would use the activity to "draw upon children's/parents knowledge re growing conditions. Investigate uses, any development issues. Cook recipes". (TR1). The other teacher (TR2) mentioned that the activity would "be used as part of a science topic and most of the seedlings transplanted and grown on in the school grounds". In terms of outcomes, TR1 said "hopefully some of them may persuade their parents to grow some of these plants in their gardens at home", and that there would be an "enhancement of self image through contributions to study, respect for other cultures increased. Raised motivation because of personal interest and improved learning".

Question 8 Is there an overall message or idea which has struck you on reading the book? Please describe it.

The overall message of the book was varied. For one teacher it was "to make better use of the land around the school-ie an extra resource" (TR3). One teacher (TR2) mentioned "the great diversity of plants we grow, and how many more we *could* grow. The value of all plants, including those dismissed by most people as 'weeds'. The importance of recognising the relevance of different plants in different cultures". Her first point, about

how many more plants we could grow, echoes Patterson's (1974) point about seeing what will grow, with reference to urban microclimates. For another teacher (TR4), the message was "plants are an easily available and cheap practical resource and their study is applicable across the curriculum". This recognition of the utility of plants across the curriculum, is not borne out by the results of question 6 which asked the teachers to identify the KS2 Programmes of Study which they felt were supported by the content of the book, with all teachers listing Programmes of Study in geography, history, English and science. One teacher (TR1) noted that "a cultural garden could be the focus for investigating plants from around the world, including global issues. The other activities would extend and develop the ideas of interdependence of people and plants locally and in a wider area". This statement reflects the notion of plants from around the world as 'windows on culture' and 'windows on the environment', where teachers could utilise a given plant to investigate cultural issues, and the environmental requirements of the plant concerned

Question 9 Do you intend to use the ideas and activities in this book in your future curriculum planning? Please explain your answer, and if possible, give an example.

Each of the teachers said that they would be using the ideas and activities in this book in future curriculum planning and classroom work. Their proposed uses varied. One mentioned that they would be participating in the Learning Through Landscapes 'School Grounds Day' and would be "decorating a tree as suggested in your book" (TR3). Another said that she "will certainly try all the activities in chapter 5 ('Plants as Food, Cleaners, Perfumes and Medicine'). We will use most of chapter 1 ('Plants Through the Ages')...We have been thinking of turning some of our school garden into a 'cultural garden', so the relevant chapters on this will also be very helpful" (TR2).

One teacher (TR4) mentioned possible uses at KS1 as well as KS2, because "(the) good advantage is that the activities are often ends in themselves, not requiring write ups (useful at KS1)" and that "we're just developing a planning system where we outline skills, content and activities. (The book) should be useful". Another teacher mentioned the usefulness of the Appendix ('Some Plants for a Cultural Garden') in that "although growing

space is very limited, we could use containers to create a variety of plant collections eg from Asia, W. Indies, sensory plants, herbs etc. The appendix in your book will be useful here!" (TR1).

Independent evaluation

Dr Ian Edward's evaluation of People, Plants and Places (Agyeman (1995)) is in Appendix 8 (Independent evaluation of People, Plants and Places). Clearly, on reading Edward's evaluation, the first point is the variance between the evaluations of TR1-4 and his own. Another independent expert, Bill Graham, Head of Education at the Birmingham Botanic Garden, and, unlike Dr Edwards, a qualified teacher, noted of People, Plants and Places (Agyeman (1995)) that "it is really good-simple no-nonsense activities and readable text. I will be waving your book at teachers to purchase" (Graham (1995) pers.comm.). It seems Dr Edwards feels that the difference between the author's presentations on the subject matter (in this case at the Botanic Gardens Education Network conference held at Birmingham Botanic Gardens on November 14th 1994) and the publication itself, do not do the topic the justice that it deserves.

He notes that "Julian Agyeman has established a niche and a reputation among environmental educators in the UK for his views on urban ecology, multiculturalism and education and this book was eagerly anticipated by many of his colleagues. What we sought was a publication that provided an alternative to the traditional approach to teaching urban ecology, one which would give British cities a global environmental context and offer an urban rather than a rural dweller's perspective on nature and conservation. I feel that People, Plants and Places only partly fills these needs and unfortunately the dynamic nature of Agyeman's personal presentations does not come across so powerfully in print".

Indeed, most of Edward's comments show his disappointment. However, in 48 pages, the inclusion of material, from what is potentially a wide ranging topic, is necessarily selective, and cannot please everyone. Indeed, it could be argued that Dr Edwards supports the book ("I welcome this publication, support wholeheartedly its objectives and will be active in promoting its use in schools"), and that his major problem ("the important and central issue of 'cultural ecology'.....does not come through clearly enough") merely

shows the importance of the concept of cultural ecology. The objectives which informed the development and writing of People, Plants and Places (Agyeman (1995), and which flow directly from the overall aims were:

a to provide a broad historical context to the development of the Multicultural City Ecosystem through showing both the accidental and deliberate human introductions of plants from the Neolithic onwards, but concentrating mainly on KS2 historical periods, especially the Romans, the Anglo Saxons, the Tudors, the Victorians and Britain since 1930;

b to outline some of the contemporary environmental and ecological differences between cities and the rural environment;

c to provide some guidance on the development and celebration of cultural gardens as 'windows on culture' and 'windows on the environment';

d to provide some insights into the potential for growing a range of economic and culturally relevant plants from around the world in order for teachers to be able to use them in the KS2 curriculum.

Objective a shows that the book was developed to *specifically* provide an historical perspective, a point which Dr Edwards criticises. He fails to see the relevance of KS2 historical periods to the development of the concept of the Multicultural City Ecosystem. Objective b, regarding contemporary urban/rural environmental/ecological issues, whilst not treated in as great detail as was desired, did focus on three common urban species, whose different histories are *reflective* of the urban flora generally, and which were selected as such. Objective c focuses on cultural gardens. Again, in a book of 48 pages, brevity is essential, and in the author's experience, which is greater in this area than Dr Edwards', the teacher is provided with *adequate* detail. Indeed, in the activity 'Planning and involving the school community', the suggested prior reading is the comprehensive LTL/Esso School Watch Initial Survey; a comprehensive school grounds planner.

Objective d, regarding the growth of a range of economic and culturally relevant plants from around the world, is an attempt to move schools towards being 'mini botanic gardens', although this is not directly stated in the book. The lack of recognition of botanic gardens in the book, according

to Dr Edwards is again unfounded. Two pages in the book refer to botanic gardens, plant hunters attached to botanic gardens, an activity ('Botanic gardens and arboreta') together with a full listing of the major UK botanic gardens in the 'Resources' section.

4 Discussion

For most of the teachers, the book "links nature in cities to many other areas of the curriculum which they were not aware of". For one teacher, "it presents an alternative way of looking at nature in cities". Both these statements are complimentary, and, whilst not proving that the book has achieved its stated aims and objectives (as there were, deliberately, no negative statements in question 4), they do indicate, as do the responses to question 5 regarding the appropriateness of the book's content, that the teachers appreciate that there are alternatives to the 'traditional' urban nature offered by many UWGs and the associated literature. Phase II of the research aimed to both develop an alternative approach to urban nature through People, Plants and Places (Agyeman (1995)), and to undertake an initial evaluation of its potential, or likely usage.

The book has given them practical activities related to key concepts in the text and it has given them an approach which is relevant in multicultural areas. This was especially so for the two teachers (TR1 and TR2) who emphasised their favourite activity 'Can we grow it here?' These were the same two teachers who mentioned the links between plants and culture in response to question 9 about the overall message of the book. This identification of plants and culture is the 'window on culture' idea ie through growing introduced plants in schools, teachers can help pupils to look at the cultural uses of the plants chosen within their countries of origin (and/or within pupils homes), and through the 'window on the environment' idea, their environmental requirements. This, as the teachers mentioned can both involve parents of children from ethnic minority groups, and raise the self esteem of pupils.

The book has given teachers a content (question 5), which is mostly 'very appropriate' or, in one case, 'appropriate' and is linked to KS2 Programmes of Study in geography, science, history and English (question 6). To this extent, the book has fulfilled the expectations of teachers and can be said to

have fulfilled its aim: to provide other opportunities and approaches to the study of urban nature and wildlife than those which teachers may have been aware of. Dr Edwards evaluation however, indicates more about what he would like to have seen included, rather than its message: "I welcome this publication, support wholeheartedly its objectives and will be active in promoting its use in schools".

However, whilst it is clear that, in the teacher's perceptions, the book contributes mainly to geography, history, science and English, it was rather surprising that they did not mention other single subject uses of the book, especially when both its introduction states that "cultural ecology works within the the framework of the post-Dearing National Curriculum. It is cross curricular, linking the scientific aspects of ecology to history, geography, technology, maths, creative writing, storytelling, art, religion and drama" (Agyeman (1995:4)) and 3 teacher responses to question 4 were that "it links nature in cities to many areas of the curriculum which teachers may not be aware of".

In telephone interviews to investigate these omissions, two teachers said that it was an oversight, and that, because of the wealth of single subject curriculum materials in the book, and pressures on their time, they had concentrated on what they perceived as the 'main' National Curriculum subjects which contribute to environmental education, namely geography, history, science and English.

When probed on activities in the book such as 'Scattering Seeds' (which contributes to maths through bar charts); 'Weather watch!' (maths through data gathering); 'Oxford Ragwort - An Inter City Traveller' (maths through measuring railway distances); 'Religious and Biblical Gardens' (religious education); 'Grow Your Own (technology through designing polytunnels); 'Dress Your Own Tree' (religious education, art and drama) and 'Plan a Festival' (drama and art), teachers agreed that they had overlooked these contributions to other subject areas. There are clear implications in these omissions for both pre-and in-service teacher education. These are discussed briefly in Chapter 7 (Conclusions).

Dr Edwards initial evaluation, whilst not as positive as the author might have hoped, in contrast to that of Bill Graham, Head of Education at Birmingham

Botanic Garden, was included because it clearly *supports* the notion of 'cultural ecology', albeit in an expanded form to that which it appears in the book. However, Dr Edwards clearly states that he sees the locus of the problem as being *editorship*, not *authorship*. When a new concept, or approach is being developed, even far sighted organisations like LTL do exercise a rigorous editing regime. They, and the author agreed on the structure of the book, and agreed on the need to present as clear a case as was possible to KS2 teachers, who are not experts.

CHAPTER 6

RESEARCH METHODOLOGY, METHODS AND RESULTS (PHASE III)

Introduction

The research which constituted Phase III was intended to provide qualitative data from the results of in depth, evaluative interviews with four teachers, and one pre-PGCE 'helper', regarding People, Plants and Places (Agyeman (1995)). Two teachers were the same as those who undertook the initial evaluation in Phase IIb, and were therefore deemed to have been more aware of the book's contents and intent. The five teachers were selected on the basis of their varied experiences and roles within their respective schools or services, as this was deemed to be the best way to assess the broad effectiveness of the book.

The teachers were Bill Dargue, a Deputy Head from Balsall Heath, Birmingham; Helen Knowles, a humanities coordinator from Sandhurst Junior School, Lewisham; Wendy Chaffe, a science coordinator from Winton Primary School, Islington; Nick Nickolaides, a pre-PGCE 'helper' at Winton Primary School, Islington and Dawn Sanders, a part time education officer at the Chelsea Physic Garden, and part time teacher at the Environmental Curriculum Service, Eltham (formerly the ILEA Nature Study Centre, and now run by the London Borough of Greenwich).

The interviews provided the opportunity to assess the effectiveness of the book in informing teacher attitudes and consequent curriculum practice. The interview transcripts, from interviews undertaken roughly one year on from the book's publication, are found in Appendix 9 (Book effectiveness interviews).

1 Research methodology and methods

The methodology adopted for Phase III was to extrapolate the rationale (ie the aims and objectives) of People, Plants and Places (Agyeman (1995)), which was clearly developed and justified in Phase IIa, into a series of questions for use in evaluative interviews with teachers at KS2.

The evaluation method employed was a set of interviews, which are, according to Moser and Kalton (1983:271) "a conversation between interviewer and respondent with the purpose of eliciting certain information from the respondent". The evaluative interview method used borrows from both the structured interview method (Cohen and Manion (1989)) and the focused interview method of Merton and Kendall ((1946) quoted in Cohen and Manion (1989:326)). The interviews were conducted with teachers, two of whom had undertaken the initial evaluation in order to seek answers and insights to the question:

How effective is 'People, Plants and Places' (Agyeman (1995)) in informing teacher attitudes and consequent curriculum practice?

The qualitative information to be elicited in this case should provide the author with sufficient data to make an assessment of the effectiveness of the book in informing teacher attitudes and subsequent curriculum practice.

Much thought was given to the type of interview needed. It was decided, in view of the aim of Phase III, to undertake an interview method *between* the structured interview, which Cohen and Manion (1989:309) describe as "one in which the content and procedures are organised in advance", and the *focused interview* method (Merton and Kendall (1946) quoted in Cohen and Manion (1989:326)) where there is "prior analysis by the researcher of the situation in which the subjects (ie interviewees) have been involved" (Cohen and Manion (1989:326) my addition in brackets)

A letter inviting teachers to take part in the interviews, and a confirming letter, was sent to each teacher. The only other information given to the teachers in the letter was the purpose of the interview, which, according to Bell (1987) should always be clear. It was phrased in the letter as:

How effective is 'People, Plants and Places' in informing your attitudes and consequent curriculum practice in urban nature?

Each interview was recorded, transcribed (see Appendix 9 Book effectiveness interviews) and analysed. The results of the analysis are in section 4 of this chapter. The questions in the interviews relate *directly* to

the rationale ie the aims and objectives of People, Plants and Places (Agyeman (1995)). The following blend of structured interview questions and 'interview guide' (in focused interview terminology) arose:

- 1 What do you understand by the terms native and alien plants?
- 2 Do you utilise the terms native and alien plants in your lessons?
- 3 The historical information in People Plants and Places covers the KS2 historical periods. Can you give me an example of how you might use it?
- 4 Before you had read the book, were you aware of the links between plants and history and how they could be used at KS2?
- 5 There are environmental (ie climatic) and ecological (ie plants and animals) differences between urban and rural areas. Can you tell me about these?
- 6 Before you had read the book, were you aware of the environmental and ecological differences between urban and rural areas?
- 7 People Plants and Places describes something called a 'cultural garden'. Can you tell me what you understand by this?
- 8 Had you heard of cultural gardens before you read the book?
- 9 Do you, or would you consider growing vegetables from different parts of the world, based on the ideas in the book?
- 10 Had you ever thought of growing vegetables from different parts of the world before you had read the book?
- 11 Do you think that the book has been effective in informing your attitudes and curriculum practice?
- 12 Are there any other points that you would like to raise about the book?

In line with focused interviewing techniques, according to Cohen and Manion (1989:327) "the interviewer must develop the ability to evaluate continuously the interview while it is in progress" in order to obtain significant data. The criteria for achieving this are that interviewer guidance should be minimal (although, because of the combined interviewing method used here, firm questions were set) and that full attention should be paid to the interviewee's definitions and responses and the interview should use evocative stimuli and should elicit value laden responses. Interviewees were allowed access to the book during the interview as an 'evocative stimulus'.

2 A justification of the Phase III methodology and methods.

The final Phase of this generally positivistic research is justified methodologically on the same overall terms as specified in Chapter 4 (Research methodology, methods and results (Phase I)). The method selected for Phase III is an interview as a "specific research tool" (Cohen and Manion (1989:307).

As was stated above, the interview technique selected is *between* the structured and the focused interview. This 'between' method is justified on the basis that structured interviews, whilst having the advantage of a structure, or framework of questions (as in the questions above), can be biased by the dominance of the interviewer. Focussed interviews, according to Cohen and Manion (1989:326):

take place with interviewees who "have been involved in a particular situation", in this case, they have read People, Plants and Places (Agyeman (1995);

are undertaken by researchers who have "a set of hypotheses relating to the meaning and effects of the specified elements", in this case the hypothesis is a reformatting of the Phase III research aim below;

are based around an interview guide and "the actual interview is focused on the subjective experiences of the persons who have been exposed to the situation".

The data collected through this method should facilitate testing the validity of the Phase III research question, reformatted as a hypothesis:

the book is effective in informing teacher attitudes and consequent curriculum practice.

Open ended, direct questions were chosen, as opposed to fixed alternatives and scale items (Kerlinger (1970)) because they offer flexibility; they offer the opportunity to probe both for depth and misunderstanding; they allow fuller testing of the interviewees knowledge/attitudes; they help establish rapport and they allow a truer assessment of what the interviewee believes (Cohen and Manion (1989:313)). Whilst, as Bell (1987:73) notes, in terms of bias, that "complete objectivity is the aim", she acknowledges that "it is easier to acknowledge the fact that bias can creep in than to eliminate it altogether" (73). However, as Bassey (1990:40) notes "positivist researchers do not expect that they themselves are significant variables in their research". The position adopted in the evaluative interviews, bearing in mind the author's statement on positionality, was that the potential for bias was recognised, but was minimised through the combined interview method above.

3 Research results (Phase III)

The data collected through interviews were intended to assist in proving or disproving the hypothesis:

the book is effective in informing teacher attitudes and consequent curriculum practice.

From the nature of the discussions in the transcriptions in Appendix 9 (Book effectiveness interview transcriptions), it is clear that the book has had some effect in different areas of teacher awareness and practice in urban nature. There were five main areas of discussion in the interviews:

- i) the native-alien question;
- ii) historical perspective and linkages;

iii) cultural gardens;

iv) growing vegetables from around the world

v) informing teacher attitude and consequent curriculum practice.

i) The native-alien question

All the teachers could offer a reasonably accurate impression of what they felt native and alien plants were (see also discussion in Chapter 4 Research methodology, methods and results (Phase I)). Bill Dargue's impression was perhaps most sophisticated. He was aware of the 'grey areas' in the debate: "Native plants to me, are ones that came here immediately after the ice-age, the one's that colonised first. And alien ones are the ones that grow here unnaturally if you like, since then. There are debates about this. To me, the conker tree for instance is clearly a native plant. They are so well established. I count conker trees and sycamores as natives. There's a grey area".

Wendy Chaffe said "Native plants are plants that are indigenous to this country and they have always been here, alien plants are plants that have come either from discoverers... or blown, airborne or whatever".

As regards usage of the terms in the classroom, the teachers varied. Bill Dargue would use the term native, but was wary of the term alien: "I'd use the term native. I think it is important to children to understand that this would be the natural cover if things were left to their own resources, without human intervention. But to me, it's not easy really, because in animal terms for instance there is clear evidence that people have brought alien animals, grey squirrels for instance, but the obvious problem is that they will whip out the red ones. Now occasionally that is true with plants. We've got Japanese Knotweed here. I wouldn't use the term alien, but there are problems with importing those kind of plants because they thrive, they haven't got the enemies they would have in their own native environment..."

The conversation then continued.

Julian:

"That's right".

Bill:

"But no, native is a term I would use. I don't know that I'd use a term as regards alien ones. Perhaps, I'm not sure..."

Julian:

"People use terms like introduced plants or exotic plants".

Bill:

"One thing that makes me a little uneasy is it does suggest a sort of xenophobia. We always refer to the Japanese Knotweed, and damn those Japs for sending their plants over here sort of thing, that I don't like really. It suggests that it is the Japanese fault. We brought the damn thing here. There are problems in presentation to children....."

Julian:

"Bill, the make-up of your ethnic mix in your school, what's that like?"

Bill:

"About 70 % of children from Pakistani background, with a sort of mix as regards the rest, Yemenis, a few Chinese....."

Julian:

"The use of the term alien, given what you said, would it...?"

Bill:

"You could say "Startrek", but to me it sounds something to do with passport control, which is perhaps why I wouldn't use the term. It is definitely not a term I would use. Introduced is perhaps a better one, is it?"

Helen Knowles took the opposite view. She would use the term alien, but not native. "Something like alien, they know what that is, for them it's the science-fiction type thing, but they know it's something that comes from another place. So, yes, I think, yes. Native, I'm not so sure, I think that's a more difficult concept, perhaps, it's not a word they are so familiar with"

The conversation continued.

Julian:

"Do you think there is a problem if, say, you know, I know the concept of the alien is a very real concept for kids, isn't it, space and all that you know, but if kids see something that shouldn't be there if you like, is there any danger with policies.....the school or the council has on..multiculturalism?"

Helen:

"Yes, absolutely, because you've got this idea, you know, that certain things or even people belong in places, and other people have come from outside. Yes, there could be problems, if it wasn't handled sensitively".

Julian:

"It's about the handling?"

Helen:

"It's about awareness, isn't it?"

Dawn Sanders had a stronger line on the curricular usage of the terms. The conversation was brief, but to the point.

Julian:

"OK. Do you use the terms native and alien plants in your lessons or with school groups?"

Dawn:

"No, I don't".

Julian:

"Any reason why you don't use the terms?"

Dawn:

"I'm not sure if they do any favours for either the plants or the people listening. So I just don't think they are valid terms really".

Julian:

"Could you see why some other teachers don't use them as well? What I'm trying to say is that: do you think there is a groundswell of opinion that maybe these are not appropriate terms?"

Dawn:

"I think there is quite a few of us who teach environmental education who think that the words 'native' and 'alien' are.....they have undercurrents of mis-interpretation, and in modern Britain I don't think they have a place".

ii) Historical perspective and linkages.

Each practising teacher (ie except Nick Nickolaides) thought that the historical perspective and wider linkages were very important in the book.

Bill Dargue argued that "Yes, one thing I find particularly helpful is clearly clear activities. I mean for a teacher that is brilliant. You've got the background information, the drawings are so clear, they are photocopyable. All the background information is there, but in the end as a hard pressed teacher, you will look to that bit where it says activity. It is in different colour so you can focus on it very quickly. The period that I most used was the Tudors and Stuarts, sorry Tudors, the Stuarts have been banned, they are only Tudors now, in the new national curriculum. Yes, these activities are practical activities you really can do and I have found them very useful, yes. The Victorian one was the one I was well aware of having been to botanical gardens, because they have notices now which inform you about the collectors and so on, whose 'fault' it is. So that one I knew well, and the pre-historic aspect. I was aware that in this area there was dense forest because of the very wet clay conditions, but in between I wouldn't make any particular links, I don't think. I would tend to do plants as a separate theme in a science or an environmental context rather than a historical context. And yet obviously plants were of vital importance before and during the industrial age as the raw material from which every thing was made. In Tudor times everything was made from trees and plants, with some exceptions, wool and leather and so on. But they were all natural materials weren't they".

Helen Knowles said that "Yes. Well, I specifically asked the teachers who have been doing the Tudors, would they, you know, find this book useful and they said yes...a lot of the work. I think you've got some examples, haven't you, in your activities, the herbal stuff especially, the alchemy... not alchemy, what's the word? Medicine. Yes, but certainly it has given me lots of more ideas. I like the idea of the reeds around the top of the columns,

the Egyptians, that was a nice thing to bring in arts...the Greeks used the lilies and the wall paintings and everything".

Wendy Chaffee said that "Yep, certainly. The Tudors and Stuarts...the book actually opened my eyes because I... in the book it tells you that it's a slight misnomer to say all the woods were gone. As you point out, it was a fear, but it wasn't actually happening because there was very good forestry and management going on. That opened my eyes, because I knew they'd used a lot of oak timber for ships and for buildings, and I often wondered whether we'd suffered deforestation then. Now I know different so that way I can inform the children about that, and that was very useful to me".

Dawn Sanders said that "Well, being a botanical garden and being a very historical place, and having a high profile Victorian aspect, I do use some of the stories in the book, especially the one about the fig trees and the steel works and changes, and that whole concept of historical change, and what happens to plants because of that, and the plant journeys, and also how Victorian culture again impacted on plants. So for me the book, the historical side of the book is actually very useful and very important".

This practitioner endorsement of the historical 'bias' in the book differs markedly from that of Dr Edwards who noted that "The emphasis on a historical perspective (approximately half the 33 pages of text) is possibly at the expense of detail on the current composition of the urban flora which I believe makes a significant contribution to our regional and national biodiversity and provides an excellent starting point for investigations at primary school level".

Indeed, Bill Dargue, when asked about the 'balance' of historical versus contemporary information noted that "I think current issues are very obvious, any informed teacher, if you listen to the news, or current issues programmes or nature programmes, you are aware of these issues, I think. And the information is easy to get, if you talk to an urban wildlife group or people who are in the business now. But the historical aspect is much, much more difficult to find out...and mind you the geographical aspect isn't so easy to find out either, but certainly the historical one...it isn't easy to find information on this and then to have it in a easy usable form is wonderful I think."

Similarly, Wendy Chaffee noted that "I do not agree. I think the history of the plants is as valid and as valuable as the history we do, whether we're doing history world wide, whether we are discussing Bangladesh or whether we are discussing the British Empire or the independence of America. Whatever we are discussing, where ever they were, they needed plants, either to survive, cure their ills...or to do their houses. No, I don't think that. The only criticism I would have is that, I would have liked a bit more about the Tudors, because there are lots of things I think I know...I can confirm them in other books, but when I saw this and got quite excited, and thought oh great, but it (the section on the Tudors) stopped fairly quickly and went on into the British Empire and the Victorians, and the only Tudor activity you've got, is the tree-trail. I know you've got some back here about plant gels and creams and things. It would have been really nice if, in here, in your activities you could have done some sort of Tudor remedial cure for the kids to test, to find out. But that's the only criticism I've got"

iii) Cultural gardens.

There was a good awareness of what cultural gardens are. Helen Knowles said "Well I would... assume that a cultural garden would be plants from all parts of the world that would obviously grow here, and that you could use as a resource for art or history or science or whatever or just to go and have a look and talk about and then you could use it to talk about habitat and that kind of thing". She was also positive about creating one: "So yes to me... I'm hoping that when.... we are supposed to be having our classroom knocked down in the playground, the old asbestos ones, and we are supposed to having a new two storey extension built over here, there will be some more room out here. We've got a garden, so I was thinking it would be nice, as part of our improvement we could have some kind of multicultural...".

Bill Dargue related the cultural garden concept to questions of native and alien plants: "I've been looking at your book because we've just been awarded £250 to take part in a police project. I don't know where they got it from..we ask no questions. And last year we had £500 from English Nature to plant a hedge all around our perimeter, a native hedge... Of course we had that dreadful summer, so we lost most of it, dreadful. But I thought,

instead on just replanting it, to leave what we've got, there must have been some hawthorns that survived, to replant with one or two more interesting species. We've got some buddleias around, but we haven't a wide range of species. So I've been looking through this section with plants for the cultural garden to use it. I haven't come up with a list yet, but certainly I have found it useful. Yes, to me, I suppose in a primary context you want as wide a range of plants from as wide a range of areas as possible, I think. You are looking for plants that will perform different functions, different sizes, different fruits, different kinds of flowers that will attract insects, some will attract birds. It is the variety that you are after. And similarly a variety of countries of origin, I suppose. If you're doing South America, you've got... come on...

Whilst talking earlier about the hedge, Bill Dargue mentioned its instigators, the British Trust for Conservation Volunteers (BTCV). He noted that "BTCV.. or is it BCTV, I never get it right! They were instrumental in putting it in (the hedge) and ordering and so on. And their bias was clearly towards native species".

Wendy Chaffe extended the concept of the cultural garden into the very ethos of the school ("it's what we are trying to achieve in this school"). She noted that "Erm...Yes, it is a very good idea. Because again, not only with plants but with everything, it's what we are trying to achieve in this school: knowledge, respect and care; so yes, with a bit of luck you know, after I have had a chat with Jane (the Head), we'll actually get children identifying where these plants come from and then linking them. It might even be a nice idea, if somewhere in the school had a world map where we could take photographs from around the school and link them to the countries.."

iv) Growing vegetables from around the world.

Opinions varied, not on the validity of growing vegetables from around the world, but on its practicality. Dawn Sanders drew both on her previous experiences, and on her current ones. The conversation went as follows.

Julian:

"Another aspect of the book, and some people may argue, that it's not strictly ecology, is about growing different vegetables in the school grounds. Now, if you were a teacher, and if you were a teacher in a school rather than being based at a resource like Chelsea Physic Garden, would you consider growing vegetables from different parts of the world, based on some of the ideas?"

Dawn:

"Oh yes, definitely. There are some very good books on that as well, like the Pip book, that looks at different things you can grow from pips, and lots of different vegetables are actually very easy to grow, for instance some Asian vegetables..."

Julian:

"Can you see that... would you think that schools in London, certainly in multi-cultural areas, would benefit from growing, rather than just growing carrots or whatever I used to grow when I was at school..."

Dawn:

"Oh yeah. I think it is really important to reaffirm different cultures and using plants to give people a sense of place, it's a mixture of things".

Julian:

"And, had you ever thought of growing these vegetables before you read the book?"

Dawn:

"Yes, I did, because I worked on a horticultural city farm whose brief was to grow a diverse range of vegetables that reflected the groups in the area".

Julian:

"Just going back to those days, it's 7 or 8 years ago, isn't it? Is there evidence that different cultures were interested in growing things that had cultural significance to them?"

Dawn:

"Yes, it was amazing actually, we had a guy whose roots were Bangladeshi, and he, actually we gave him an area, and he just grew loads of different

things. And then we grew lots of Vietnamese and Cypriot foods, and people would come and take them away and cook a meal and bring it back to share the meal with us, so it was very much a sense that ...of communication, and sharing, and affirmation about the plants.... they were very good facilitators for spreading different horticultural and cultural messages".

Julian:

"Do you think that, I know whilst the city farm movement has really pioneered...permaculture and whatever. Do you think we are anywhere near maximising the schools potentials for this kind of work, or do you think it is just the beginning?"

Dawn:

"I think it is just the beginning. Some of the problem is space. We have just come across some small glass-houses that are shaped like pyramids. They are accessible to children and they can be moved indoors, so if there is a risk of vandalism at night, they can actually...they're lightweight....you can take them indoors. So we are encouraging schools to get those to develop growing spaces. And because they set up an even warmer micro-climate than generally London has, it provides a environment to grow a diverse range of edibles and ornamentals from all around the world".

Vandalism is a problem identified by Bill Dargue: "No, we don't. One problem is our site does get used as a thoroughfare and we have done it, but it's been a disaster really, they've just been walked over or pulled up, and you need to keep it weeded and clear. If its obvious you are looking after it, teenagers will come... We abandoned it. I think it is a shame because not far from here there's an Asian allotment association, they grow lots of interesting vegetables".

For Helen Knowles, the idea of growing vegetables from around the world came as a surprise: "Yes, I mean, I never thought of it really, I guess you immediately think of plants, you know, adding flowering plants or shrubs, but thinking about it, vegetables are perhaps even more interesting, you know, especially as resources for drawing and art, we are always bringing in gourds or whatever to draw. And it would be quite nice to think that this is something we've grown and then we'll draw it and investigate what's inside. I mean, I suppose it has more implications for care, somebody has

got to be prepared to take care of the looking after bit. You could train the children to do it, but then.... and also you've got the element of people coming in destroying it, you know...which we do have a problem with".

Wendy Chaffe, whilst not commenting about growing vegetables, supports the linguistic and awareness issues raised in the table called 'cosmopolitan vegetables'. She said: "Yes. Well if you asked...I mean, if you asked anybody really about cauliflowers, carrots, cabbage, brussels sprouts, tomatoes, cucumbers, spinach, they are not actually going to see just how near some of the other languages are to our own, and how easy it is for us to actually pick up different languages...and use them with the children as a recognition of their language. And I like the 'typical English vegetables' question-mark, because...yes, because everybody would think well...yes, they're all English, but because of the book, I wasn't sure which was which. It is very useful and I like it. I like the religious and biblical gardens".

v) Informing teacher attitude and consequent curriculum practice.

In each case, teachers attested to the book's influence in informing their attitudes and consequent curriculum practice in urban nature. Their findings of usefulness fell into two categories. One category, which influenced Nick Nickolaides and Helen Knowles, was that it revealed facts or information which they were unaware of. Nick Nickolaides stated that "It has certainly helped, because I mean, it's one of these things where any more information helps. I mean, you just have something more to say. I think, had it been something we specifically were doing, it would have helped a lot. There's a lot of things you can do, that I hadn't thought about..."

Helen Knowles stated that "Erm, yes... yes, I think it has. Yes, I think though, certainly. I mean for me particularly, I've looked through it and thought that, yes, these are things that I have seen before and happening in practical situations, in the study centre I was in (Town Teacher, Newcastle), but never actually put down into an accessible form. I think that's the thing, it is quite easy to read and it is easy for the teachers to flick through and pick out what they think will be useful."

Dawn Sanders picked out stories as being important. She stated that "It has, 'cause it has given me some lovely stories that I can use, and I'm very into

using stories to teach children, so there are some, I mean particularly the fig story and the steel works I use quite a lot. And so in that respect it has given me more to build on."

The other category is that it revealed linkages which teachers may not have been aware of. Bill Dargue said "The great thing about it is that it links things together in a way that you have to work very hard as a teacher to link together. We all do a bit of nature, we all do some history, we all do some geography, but this (book) actually weaves them into each other. Now that I think is ideal. I mean the environment is one of the cross curricular areas isn't it? It is one we've always be very keen on doing, but because of the national curriculum it has tended to disappear. Because now we do English, maths, history and geography. We used to do topics. And it has tended to push out these words really. The cross-curricular themes booklet says they need to be built into everything; they tend to be excluded really. I think this (book) is an ideal because if you're doing some history, alright people do the Anglo-Saxons, spending perhaps a term on it, and there are three or four pages they can pick out from here which builds in the environmental aspects. The same with geography too, I think it is ideal, yes".

Wendy Chaffee stated "Yes, it has definitely". She continued that "...I've seen...again I can't remember where, this idea about dressing trees as an old tradition in other countries as well as in England. I don't know how well we will be able to do it, but it's something that I like the look of...This I like (leafing through book), plants and mythology, as well...it's...the things are in your head and and you know they're there and you just drop them in occasionally as you're doing another lesson, and it is frustrating, because you say something to a child and then you think oh, have I named the right plant, you know like deadly nightshade. I always thought that it looked like a particular plant. I've since discovered that what I thought was deadly nightshade is actually cow-parsley. But, in the book because you put all these different plants and related medicine and cures and myths and mythology to them, if I had this book when I said a particular thing to a child, I could say "hold on I'll go and find out", and I could have said: "Wait a minute. Hold on. I'll go and find out". And then I could have said "I got it wrong, or yes, I got it right. Here it is". So again, I intend to use this book a lot".

In terms of final comments on the book, Bill Dargue noted that "I wouldn't alter a single word or comma. I think it is splendid. I mean, really what you need is somebody with a two or three year project to actually go through the activities and do them. It is only in the end by people working on them, you find out whether they work or not. You know we all have books that look good, but when you actually use them, it doesn't work. But you know, in my judgement as a teacher, it is excellent. They (activities) look good and practical, and in the end, that's what counts, isn't it ? You need to make some judgement like yes, I'd use that with my kids. It's ideal I think. It's a super book".

Helen Knowles said "I like these activity sections. They were the bits I found particularly useful with these ideas. And it certainly sparks off other ideas, you know. I particularly like this idea of the trails. There's one I think you've got a habitat one. I think we could build that into our geography work, you know, rather than just going around just looking at the houses, we could actually look at the different habitats...We've got a park down there, gardens, a derelict site..."

Nick Nickolaides said "No, I can't think of anything...I think it is difficult to think in terms of it not being just read like an informative thing. I mean I'd...I mean this stuff we were talking about the change in urban ecology after bombing and stuff, it's things that hadn't occurred to me, but once you say it it's obvious...it releases land...yeah..."

Wendy Chaffe said "There are two things I like very much. I like the resources on cultural ecology. I like the way there's all these addresses..."

Dawn Sanders said "I think maybe if there had been something a bit more about how botanic gardens and wildlife trusts can work together. I still think there's a problem that we are not working together. I have networked with lots of organisations, but it is still very hard to get into the sort of wildlife trust section. As soon as you say "Botanic gardens" they tend to...it's a different field".

4 Analysis

After screening the transcripts, there are certain categories of response which recur. These are aggregated into positive comments in Figure 9, and critical comments in Figure 10.

Figure 9

Positive comments from evaluative interviews

The main categories of positive comment emerging from the interviews were:

1. regarding the activities

Commentary

The interviewees whose comments were placed in the 'activity' category were talking, as Bill pointed out, from their initial reading of the activities. None had yet carried any of them out. Where 'ideas' are mentioned, these relate to activities.

- One thing I find particularly helpful is clearly clear activities (Bill)
- It has given me lots of ideas. (Helen)
- The book gives you some really good ideas (Wendy)

2. Regarding the link with history

Commentary

Whilst this area of the book was criticised by Dr Edwards, the teachers clearly do not agree.

- It isn't easy to find information on this and then to have it in a easy, usable form is wonderful I think. (Bill)
- I think in terms of the book, the historical content works well and I see the need for it to be there, and I have found it very useful (Dawn)
- I specifically asked the teachers who have been doing the Tudors, would they, you know, find this book useful and they said yes (Helen)

3. Regarding its informational content

Commentary

There are different ways of interpreting teacher's praise of the information contained in the book. My interpretation is that, as it is a new approach, a lot of the information will be novel.

- I have been looking through this section with plants for the cultural garden. I haven't come up with a list yet, but certainly I have found it useful. (Bill)

- If I had this book when I said a particular thing to a child, I could say hold on I'll go and find out (Wendy)
- It has given me some lovely stories that I can use, and I'm very into using stories to teach children, so there are some, I mean particularly the fig story and the steel works I use quite a lot. (Dawn)

4. Regarding presentation

Commentary

Here, teachers were praising both the clarity of the text, and the production of the book, the latter of which the author has little to do with.

- You've got the background information, the drawings are so clear, they are photocopyable (Bill)
- It is quite easy to read and it is easy for the teachers to flick through and pick out what they think will be useful. (Helen)
- I think it is great. I think it is a really good idea, very useful. (Helen)

5. Regarding cross curricular links

Commentary

Particularly pleasing was Bill's comment about the subject linkages present in the book.

- The great thing about it is that you can link things together in a way you have to work very hard as a teacher to get; we all do some geography, we all do some history, but this actually weaves them into each other (Bill)

Figure 10

Critical comments from evaluative interviews

The main categories of critical comment emerging from the interviews were:

1. Regarding tree decoration

Commentary

Bill felt that 'prettyfying' trees was unnecessary, that they were intrinsically interesting in their own right. This therefore is not a criticism, rather it is an expression of personal preference.

- I'll tell you the only thing I don't like is the tree decorating (Bill)

2. Regarding more specific information

Commentary

These expressions of need for more information are fair comment. However, there is only so much that can be squeezed into a book of this size.

- I think maybe if there had been something a bit more about how botanic gardens and wildlife trusts can work together. (Dawn)
- The only criticism I would have is that I would have liked a bit more about the Tudors, because there are lots of things I think I know...I can confirm it in other books, but then I saw this and got quite excited (Wendy)
- It would be nice to have a few more colour pictures.(Wendy)

3. Regarding an unclear diagram

Commentary

Wendy sorted this one out herself.

- What confused me was...my own inadequacy. I didn't look at it properly (the generalised terrestrial succession diagram) and then I realised it was travelling a line of progression and once I'd understood that then it was fine. It is not a criticism of you, that was me...I can't fault it (Wendy)

5 Discussion

The research results in section 3 show that discussion in the interviews focussed around the 5 main areas outlined. This was to be expected as these were the key themes within the interview questions/interview guide. The analysis in section 4 showed groups of both the positive and critical comments received in the interviews.

The data collected through interviews were intended to assist in proving or disproving the hypothesis:

the book is effective in informing teacher attitudes and consequent curriculum practice.

The results, and subsequent analysis therefore need to be looked at in terms of evidence for both:

informing teacher attitude and consequent curriculum practice.

i) Informing teacher attitude.

Clearly, the book has influenced the teacher's attitudes in different ways, although the teachers were more demonstrative about their changed

practice, than their changed attitude. Bill Dargue didn't mention attitude either directly or indirectly, preferring instead to talk about his practice, which he agreed was informed by the book, especially in terms of the cross curricular linkages. Helen Knowles, Nick Nickolaides, Wendy Chaffe and Dawn Sanders all began their response to question 11 (Do you think that the book has been effective in informing your attitudes and consequent curriculum practice?) in the affirmative (eg "Erm, yes..yes;" "It has certainly helped"; "Yes, it has definitely"; "It has 'cause"). This is the only direct acknowledgement that the teachers made with regard to attitude.

ii) Consequent curriculum practice.

The teachers were very forthcoming in terms of the book's effectiveness in informing their curriculum practice. This was generally in terms of the presentation of new facts/information, the clarification of curriculum linkages or the use of story. Issues of linkage were a clear benefit of the book to teachers who undertook the initial evaluation as part of Phase IIb. What is interesting however, is that whereas in the Phase IIb initial evaluation, teachers only linked geography, history, science and English (see Figure 8), in the Phase III evaluative interviews, they saw broader links into art, religion etc.

CHAPTER 7

CONCLUSIONS

"In Britain we often qualify the term 'wildlife', whatever we understand by it, by distinguishing 'native wildlife' from 'alien wildlife'. I would contend that this particular distinction in Britain is not only indefensible to an ecologist but also lies at the root of an unhelpful nature conservation mythology which encourages activity without any thought about why that activity is taking place" (Barker (1994:14)).

Introduction

The empirical work outlined in Chapters 4 (Research methodology, methods and results (Phase I)), 5 (Research methodology, methods and results (Phase II)) and 6 (Research methodology, methods and results (Phase III)) has indicated that:

- UWGs (amongst others) are influencing the classroom practice, in urban nature, of many teachers (Phase I) ;
- a sizeable proportion of teachers utilise the (contested) native-alien concept in the classroom (Phase I);
- the teachers in the initial evaluation of People, Plants and Places (Agyeman (1995)) felt that it did provide an alternative approach to urban nature (Phase IIb);
- the evaluative interviews have shown that People, Plants and Places (Agyeman (1995)) is effective in informing teacher attitude and consequent curriculum practice (Phase III).

It has been noted in Chapter 1 (Theories and ideologies in environmental education), that schools have a statutory responsibility under section 1 of the Education Reform Act (1998) to "provide a broad and balanced curriculum which promotes spiritual, moral, cultural, mental, and physical development of pupils at the school and in the wider society; and prepares pupils for the opportunities, responsibilities and experiences of adulthood".

It has also been noted that part of this statutory responsibility must, by definition, and by the increasingly complex nature and realities of an interdependent world, include an environmental education. Environmental education in schools in Britain in the 1990s, as distinct from environmental studies, or environmental science, (or from environmental education in some other parts of the world), is not a separate curriculum subject. The National Curriculum Council (NCC (1990a:13)) note that "it is clear that there needs to be an overall plan for the whole curriculum: this should *incorporate* environmental education" (my emphasis).

This thesis has shown that a part of the content of environmental education, ie urban nature, has been influenced by 'experts' in UWGs (Chapter 4 (Research methodology, methods and results (Phase I)) and other organisations who have their own, legitimate agendas, and that teachers, in the absence of any other conceptual, theoretical or curriculum approach, have taught in accordance with this influence (Chapter 4 (Research methodology, methods and results (Phase I)). Harris and Tomlins (1992:70), in their report on the English Nature school grants scheme note, in their recommendations that English Nature could provide "information for schools concerning local experts who could offer advice". Given the findings in this thesis, what kind of advice would they give?

The thesis has demonstrated, in Chapters 2 (The Development of environmental education), and 3 (Urban ecology and environmental education), that a dominant feature of the environmental education offer in schools, both historically (Watts (1969), Goodson (1987), Carson (1978), Ward and Fyson (1973)) and presently (Dorion and Gayford (1990/91), Agyeman (1991a), Bishop, Adams and Kean (1995), Storm (1995)) has been its "traditional" content (Sterling (1992:2)), with the concepts of 'nature' and 'conservation' being central to both its theory and practice.

Chapter 4 (Research methodology, methods and results (Phase I)) showed how, in terms of urban nature, UWGs are promoting ecological concepts to teachers, and 46% of UWGs communicate their views on native and alien plants to teachers, partly in the form of urban nature and conservation information and activity packs, which 42% of responding teachers at KS2 are utilising in the classroom. More specifically, 53% of UWGs have a

written policy on 'native and alien' plants (although more have an 'unwritten' one), which is more than the 37% of UWGs who have an education policy.

This concept, according to Barker (1994:14) contributes to "an unhelpful nature conservation mythology". The distinction between 'native' and 'alien' plant species is made on the basis of both residence time within the UK and is used by ecologists and teachers in terms of assessing a species utility in attracting wildlife. Native is promoted, following the work of Southwood (1961), as being synonymous with 'good' (for wildlife) and alien as 'bad' (for wildlife). It was shown that not only is this a great generalisation, it is simply not true in all cases (Gilbert (1994), Morton-Boyd (1992)), yet the research in this thesis (Chapter 4 (Research methodology, methods and results (Phase I))) shows that, in addition to the 42% of teachers questioned who were utilising the concept in their curriculum approaches and plans and in their programmes of study, 60% of teachers at KS2 have read, or been advised of the supposed superiority in wildlife terms, of native, as opposed to alien plants .

It was also argued that the distinction between 'native' and 'alien' plants is informing the selection of species for the increasingly popular school nature gardens (see Harris and Tomlins (1992)) which are being promoted by such organisations as Learning Through Landscapes and English Nature. These gardens, in conjunction with local parks, are the two most popular study locations and are the focus of 31% of nature related work at KS2 in this study. The native-alien concept may also be influencing the other locations in urban areas in which nature study takes place. For instance, whilst 98% of schools undertake urban nature fieldwork, 31% use the school grounds and the local park, whereas only 8% use the school grounds and local wasteland, which are usually dominated by introduced species, or they are co-dominants (Gilbert (1989)).

These percentages cannot be taken as proof however, that sites such as wasteland sites are not utilised by teachers because they are dominated by aliens. It may just reflect a point made by Collins (1984:2) that "the failure of many teachers to use urban sites to teach.....appears to be due to a lack of guidance as to how it can be done". By 'urban site', Collins means a truly urban site such as a wasteland, on which there is far less curricular

information aimed at schools than, for instance, on utilising school nature gardens or municipal parks. In addition, as was noted in Chapter 4 (Research methodology, methods and results (Phase I)), matters of safety, access, the chance of encountering anti-social behaviour are perhaps associated in teachers minds with the concept of 'urban wasteland'.

In addition to such matters of theory and practice, the pejorative nature, and use of such terms (see Schoon (1992)) were questioned by Agyeman (1991a) in terms of the messages it gives to pupils in multiracial schools and more generally by Niemann (1992), Yarrow (1994) and Barker (1994).

Native, in many conservationists' minds is also synonymous with 'rural' and alien with 'urban', according to Lowe (1983). Lowe's (1983:349) comments on conservationists' ideologies help in our understanding of conservationists' antipathy towards aliens. They (conservationists) have "a patriotic attachment to the indigenous flora and fauna" and they express "strong anti-urban and anti-industrial sentiments". Trepl (1990), takes this a stage further, linking the dislike of aliens to notions of nationhood and purity. He pointed out that "perhaps the emphasis on the 'aggressiveness' of successful alien species (usually seen as being genetically determined) also has such an ideological background" (88) and that "the real problem is the conservative bias inherent in 'cultural-science' approaches, which is structural and by no means merely the result of the private opinions of individual researchers.....the question is whether this problem of structural conservatism has a different weight now compared to the period of historic 'Kulturwissenschaften' in the late 19th century and the beginnings of the 20th ie whether these, or their surviving elements, have also altered their political, social and cultural position" (93).

Whether they have, or not, is a matter of conjecture (see Kohn (1995)). However, what most teachers perhaps do not realise, or understand (see teacher comments in response to question 15 in Chapter 4 (Research methodology, methods and results (Phase I))), is that they are utilising this concept in the classroom, and that behind it lurks an ideological 'baggage' which is at best informing an "unhelpful nature conservation mythology" (Barker (1994:14)) and emotional rather than scientific (Egler (1961)), and at worst is linked to particularly problematical ideas surrounding nationhood (Trepl (1990)), patriotism (Lowe (1983)) and race (Fenton

(1986), Doughty (1978)). This is a point which needs addressing as a matter of urgency.

In addition, continued adherence to the rural/native and urban/alien distinction by UWGs, curriculum planners and teachers in urban areas, as has been shown in this thesis, and despite the recent growth of more enlightened attitudes amongst the UWGs and some teachers, not only ignores the work of a growing number of influential urban ecologists such as Gilbert (1989) and Barker ((1991), (1992), (1994)), but misses out on potentially exciting, original and innovative curriculum possibilities which have been outlined by Agyeman ((1991a), (1994c) and (1995)).

The alternative approach to urban nature whose rationale, research, development and writing (Phase IIa), as an integral part of this thesis can be found in Appendix 5 (People, Plants and Places Agyeman (1995)), was initially evaluated by questionnaire as Phase IIb.

The four teacher initial evaluations of this book can be found in Appendix 7 (Results of evaluation of People, Plants and Places), and that of the independent expert, Dr Ian Edwards, Head of Public Education at the Royal Botanic Gardens, Edinburgh in Appendix 8 (Independent evaluation of People, Plants and Places). A discussion of their key points can be found in Chapter 5 (Research methodology, methods and results (Phase II)). Chapter 6 (Research methodology, methods and results (Phase III) consisted of in depth evaluative interviews with five teachers in order to assess the book's effectiveness in informing their (teacher) attitude and consequent curriculum practice. The questions/interview guide were extrapolated from the book's rationale, as expounded in Phase IIa.

The alternative approach to urban nature being put forward in this thesis has two aspects:

- i) theoretical and contextual;
- ii) curricular.

Theoretical and contextual aspects

The theoretical and contextual basis for the 'alternative' approach is the Multicultural City Ecosystem (developed in Chapter 3 Urban ecology and environmental education). Agyeman (1991a) notes that "multicultural city ecology recognises that just as human populations are in a state of flux, with inputs and outputs of people from diverse backgrounds and ethnic, cultural or religious groups, plants and animals from around the world form a significant element of the ecology of cities" (21) . It is a simple, dynamic and process-oriented model.

The curricular approach

Whilst the theoretical and contextual basis for the 'alternative' approach is the Multicultural City Ecosystem, the curriculum approach and practical activities surrounding it are in People, Plants and Places (Agyeman (1995)), a text aimed at KS2 teachers.

The theoretical/contextual basis and curriculum approach put forward in this thesis do not totally negate all aspects of the 'dominant' or 'traditional' approach to nature (see Chapter 3 (Urban ecology and environmental education)); rather they are intended to provide a more coherent framework for thought and practical reflection amongst education officers in UWGs, curriculum planners and teachers, especially in urban areas. Rather than differentiating between 'natives' and 'aliens' purely on a UK residence time/wildlife basis, the alternative approach accepts dynamism in ecology, especially in cities. It accepts change over different scales of time and space in linking introduced species from overseas to prehistoric and historic cultural, social, economic and other human processes and agencies in urban areas (Agyeman (1991a), (1994c), (1995)).

In so doing, it provides curriculum planners and teachers with an approach to urban nature at KS2 which is based upon an analysis of real events, historical (and prehistoric), contemporary and future, rather than being an ideological straightjacket. In essence, it focusses on what is there and why it is there, not on what ecologists say should be there.

It was, in the Introduction, and still is, the contention of this thesis that, in doing their jobs, curriculum planners and teachers are merely 'going with the ecologists' flow' in what aspects of culture they have chosen to transmit

to the next generation from a set of ecological values which are deeply rooted in British culture (see Lowe (1983:349) and Fenton (1986:21)). These values are patently xenophobic (see Schoon (1992), Fenton (1986) and Doughty (1978)) and at best pseudoscientific (see Egler (1961), Williams (1992) and Barker (1994)).

In Lawton's (1987:17) discussion of cultural analysis, and the selection of facets of culture which should be transmitted to the next generation through the curriculum, he argues that "those responsible for making the selection have a duty to demonstrate that it is neither arbitrary nor idiosyncratic; it should be open to rational enquiry and justification." It is the contention of this thesis that curriculum planners and teachers have not selected material for their curricular work in urban nature at KS2 on a rational basis, as Lawton (1987) suggested, but on an idiosyncratic basis, fully influenced by those people (ie ecologists/conservationists) who they perceive as being 'the experts'.

1 Contribution to environmental education theory and ideology

In addition to the arguments in the introduction above, this thesis presents another direct challenge to what has been termed by Sterling (1992:2) "valid yet limited traditional approaches" to environmental education. These are approaches which shun personally and socially transformative ideas and practices in favour of content-based study, including the 'dominant' approach to urban nature.

In terms of the 'Challenges' mentioned in Chapter 1 (Theories and ideologies in environmental education), it was argued that those involved in environmental education in schools, both advisory and teaching should:

- 1 *clarify* their positions on the wide ranging definitions of what environmental education is (or should be);
- 2 *understand, develop and take action* in forming an ideological position in terms of education (see Kemmis, Cole and Suggett (1983), Skillbeck (1976) and Lawton (1987)) and environmentalism (see O'Riordan (1981)). This should inform both theory and practice;

- 3 *assert and justify* the position (or an interpretation of the position) of environmental education within the National Curriculum;

- 4 *review* the changing and convergent nature of environmental education as it has moved along a continuum from a narrow focus ('nature' or 'rural' studies) through a much broader focus (environmental education) towards convergence ('education for sustainability');

-5 *understand* the shaping of environmental education ideologies, theory and practice in schools through the considerable influence of 'narrow' focus environmental interest groups (eg UWGs), or 'broad' focus groups (eg Friends of the Earth) on teachers.

This thesis has stated its position on a definition of environmental education (Agyeman (1991b)); it has located itself within the radical, "socially critical" (Kemmis, Cole and Suggett (1983)/Fien (1993)) educational ideology and within the ecosocialist environmental ideology; it takes (especially through the book People, Plants and Places Agyeman (1995)) a fully cross-curricular position on environmental education whilst acknowledging the important single subject contributions it makes, and it accepts and welcomes the fact that environmental education is converging with other adjectival educations towards a broader 'education for sustainability' (Agyeman (1994b)).

Whilst mere adherence to the scheme above does not qualify the thesis to claim to represent an entirely new approach to environmental education, it can be argued that it has developed a new, or alternative curricular approach to urban nature at KS2, both in terms of its main theoretical and contextual advance (The Multicultural City Ecosystem), and in terms of an alternative curricular approach (People, Plants and Places Agyeman (1995)).

In terms of the curricular approach, the research in both Phases IIb, and III shows that teachers have identified many curricular uses for (People, Plants and Places Agyeman (1995)). However, a word of caution must be inserted here. The alternative curricular approach, presented as People, Plants and Places (Agyeman (1995)) is the beginning of the alternative approach. It does not claim to be the alternative, just an alternative. A 'next

stage' would be to develop this approach fully, as Dr Edwards has intimated, perhaps as part of a curriculum research project.

This broadly positivist study continues the work of the 'urban studies sub-group' initiated in Britain by Ward and Fyson as its focus is unashamedly urban and it celebrates the curriculum possibilities of the urban environment. It also has a strong relevance to the current cutting edge debates surrounding ES (UNEP-UK (1992)), "education for sustainable living" (Fien (1995:27)) and EEFS (Tilbury (1995)), given its internationalist and globalist perspectives. It also has a role to play in the development of global contexts and worldviews, which is a feature of both Futures and Global Education, through the notions of 'windows on culture' and 'windows on the environment'.

A non focal, but nevertheless interesting area, and one for future research, is that the thesis has also demonstrated, in Chapters 3 (Urban ecology and environmental education) and Chapter 4 (Research methodology, methods and results (Phase I)), the considerable influence of 'narrow' focus environmental interest groups (eg UWGs), in the shaping of environmental education ideologies, theory and, ultimately, practice in schools at KS2.

2 Contribution to urban ecology

It was noted in Chapter 3 (Urban ecology and environmental education) that the links between environmental education, and the growing urban wildlife and conservation movement were, and still are, strong. Barker and Graf (1989:2) note that "an important facet of nature conservation programmes has been the provision of nature study areas in city school grounds". It is easy to understand why schools want to develop their own nature areas, given Johnston's (1990:4) point that "visitor pressure on nature areas varies from site to site. Those with good facilities that have been widely publicised are fully booked for school visits up to a year in advance". Mostyn and Millward (1989:11), in reviewing the progress of urban wildlife groups argue that "any analysis of the aims of the plethora of new urban ecology organisations, and urban wildlife groups, that have been springing up all around the country in the last 10 years, indicates that a high priority is placed on educational, recreational and aesthetic concerns".

If the links between environmental education and urban ecology are strong, then the influence of ideas and practices in the latter on the former is, as has been demonstrated by Barker (1994), and in Chapter 4 (Research methodology, methods and results (Phase I)) of this thesis, strong. The influence of environmental education on urban ecology however, is more difficult to assess. Much of Barker's work in the 1990s has developed as a result of collaborations with the author of this thesis, and through Barker's interest in the ideas and opinions of the Black Environment Network (founded and chaired by the author 1988-1994). In addition, the work of Percifull, Thomas and Kendle (1993) on multicultural parks, especially that of Burgess Park in Southwark, has been influenced by the thinking behind cultural ecology. This being the case, it can be argued that, the concept of the multicultural city ecosystem and multicultural ecology, and the more pejorative aspects of the native-alien debate, have influenced urban ecology and urban ecologists.

Another influence on urban ecology and urban ecologists has been the concept of the 'cultural garden'. Cultural gardens are gardens which utilise plant species from different parts of the world. The London Borough of Southwark has recently created one at Chumleigh Gardens, Burgess Park (see LB Southwark (1995) and Percifull, Thomas and Kendle (1993)).

This is really no different to what horticulturalists do already (see Patterson (1974), and Williams (1992)), but if a school is multicultural, buying hardy plants originating in areas represented by the cultures and religions present in the school, could be seen as a statement of wholeness, of commitment to anti-racism, to multiculturalism. In addition, the theory surrounding cultural gardens specifies that teachers and children should ask for advice from parents from different cultures and religions on what schools might buy and plant. This will assist in drawing them into school activities (see teacher responses to the activity 'Can we grow it here?' in response to question 7 in the initial evaluation of People, Plants and Places (Agyeman (1995)) in Chapter 5 (Research methodology, methods and results (Phase IIa)).

The concept and practice of cultural gardening now has the title 'innovative projects' in English Nature's 'Community Action for Wildlife'

environmental grants scheme leaflets. That the body responsible to government for nature conservation, who are to an extent a lynch pin of 'traditional' approaches, can now accommodate the planting of non-native, introduced or alien species is no mean feat given the inherent conservatism within governmental agencies.

3 Contribution to multiculturalism and multicultural education

In addition to the contextual/theoretical advance of the Multicultural City Ecosystem, and the curricular approach of People, Plants and Places (Agyeman (1995)) which have a clear locus in both environmental and multicultural education, this thesis supports the comments on the necessity of linking environmental and multicultural education made by Shah (1985/86), who notes that "a core course in environmental education which does not acknowledge the multicultural or global aspects is unlikely to convince the students about its complete relevance". Shah (1985/86:23) continues by citing the works of Worrall (1981), Hicks (1981) and Richardson (1982), of which she notes "apart from the works referred, there are only limited instances whereby an attempt has been made to inter-relate the three elements (multicultural, environmental and development education) at the classroom level". Whilst Shah was writing 10 years ago, there has still been little 'strategic' or policy-related progress in linking environmental and multicultural education, most progress has been of a one-off or 'project' based type.

This thesis also criticises certain publications by the GLC (see Baines and Smart (1984), GLC (1984)); the practises of the ILEA, (who ran the Schools Nature Service from a base in Eltham (Greenwich)); Ditchfield (1987) (on behalf of the Association for Science Education) and the Geographical Association (1985) who all have multicultural and anti racist policy statements, for not assessing the concepts of 'nature' and 'conservation' within environmental education, for possible xenophobic (see Schoon (1992)) and racist overtones (see Fenton (1986), Yarrow (1994) and Niemann (1992)).

The thesis contributes directly to multicultural education in several ways. For instance, as was outlined in Chapter 3 (Urban ecology and environmental education), the NCC (1989:A10) note that "different ethnic

groups will have different interpretations of the view of science presented in the science Order and the sections of non-statutory guidance. It is at the school and teacher level that such interpretations need to be taken into account, in order to deliver the most effective curriculum. A pupil who has difficulties with the language of instruction will find access to many scientific activities blocked".

This non-statutory guidance highlights Lawton's (1987) points about rational, rather than idiosyncratic selection from culture, and places responsibility at the school and teacher level. This thesis, through its presentation of an alternative theoretical/contextual and curricular approach to urban nature at KS2, offers teachers the opportunity to "deliver the most effective curriculum" in schools which are urban and multicultural. (NCC (1989:A10)). Not only is it a contribution to the most effective curriculum, it is also the most relevant approach in urban areas, given the manifestly different environmental parameters in urban areas, compared with rural ones.

For instance, TR1 who evaluated the book People, Plants and Places (Agyeman (1995)), teaches mostly Asian pupils. She said of one of the activities which advocates growing Asian and African Caribbean food plants in school: "it would be practical and fun for children to grow food plants they use at home. They could share existing knowledge and experience and develop new skills (geography and science)". TR1 also said that the activity would "draw upon children's/parents knowledge re growing conditions. Investigate uses, any development issues. Cook recipes." In terms of outcomes, the same teacher (TR1) said "hopefully some of them may persuade their parents to grow some of these plants in their gardens at home", and that there would be an "enhancement of self image through contributions to study, respect for other cultures increased. Raised motivation because of personal interest and improved learning".

In addition, Wendy Chaffe, a science coordinator, recognises the importance of language in 'science'. She says: "Yes. Well if you asked...I mean, if you asked anybody really about cauliflowers, carrots, cabbage, brussels sprouts, tomatoes, cucumbers, spinach, they are not actually going to see just how near some of the other (Asian) languages are to our own, and how easy it is

for us to actually pick up different languages...and use them with the children as a recognition of their language".

The NCC's (1989) point above, about language, whilst implying that bilingual pupils may have linguistic problems (with science in this case), could equally be applied to any pupil from an ethnic minority group who is unfortunate enough to have to endure the kind of xenophobic, ideologically-laden language outlined in Chapter 3 (Urban ecology and environmental education). Indeed, one respondent to the schools questionnaire, in response to question 15 about the kind of language surrounding the native-alien concept, added the comment "not in a multicultural school". The alternative approach outlined as one of the outcomes of this study advocates changing the pejorative terms native and alien, if teachers really feel they must differentiate, to 'species long established' and 'species recently established'. However, it would also support the notion that such terms are probably unnecessary and indeed irrelevant in urban areas which represent centuries, even millenia of human interference with natural systems.

The importance of the language surrounding the native-alien concept has been explored in Chapter 3 (Urban ecology and environmental education) and in the in depth evaluative interviews in Phase III. The links between language and ideology in geography teaching have been explored by R Gilbert (1989). His work is of relevance here because of ideological basis of the native-alien concept outlined in Chapter 3 (Urban ecology and environmental education) through the work of Trepl (1990), Egler (1961), Barker (1994), Fenton (1986), Lowe (1983) and others.

R Gilbert (1989:152) notes that "race, ethnicity, gender, nationality and class are the major social conflicts around which ideological discourses assemble, and in each case dominant groups attempt to present their own interests as universal ones, especially by denying or disguising contradictions and by suggesting that the existing state of affairs is the only natural one". In this case, the 'dominant group' are ecologists and conservationists, who, it has been suggested throughout this thesis, are reluctant to change.

R. Gilbert (1989:152) continues that "if we are to avoid sustaining these relationships of domination, we shall need to raise questions about the way

explanations gloss over these divisions and inequalities; how they are made to seem natural or justified; how ideology can shut out the perspectives of the less powerful. In schools, this means adopting a critical attitude to curricular content, and pointing out the particular ways in which such manifestations of ideology operate. In mounting such a critique the concepts at our disposal must themselves be criticized in order to achieve the most comprehensive and accurate understanding of ideology in the curriculum: hence the need for constant scrutiny of the language we use". Both the findings in this thesis, and the alternative approach (see Appendix 5 People, Plants and Places Agyeman (1995)) highlight the crucial role of language, and are clearly the result of both "adopting a critical attitude to curricular content, and pointing out the particular ways in which such manifestations of ideology operate" (R Gilbert (1989:152)). Few teachers in the questionnaire research seemed to be aware of this manifestation (see Chapter 4 Research methodology, methods and results (Phase I)). However, in the in depth, evaluative interviews (Chapter 6 (Research methodology, methods and results (Phase III))), the teachers, when probed were more aware.

Slater (1989:5) summarises the role of the teacher in language and ideology: "the teacher as upholder of critical thinking needs to be conscious of this relationship between language, ideology and what is learned. It can seem obvious to state that language carries our cultural experience. We need to ask: whose cultural experience? And who benefits from a particular view?" The latter part of Slater's (1989:5) point ("whose cultural experience?") develops Lawton's (1987) ideas about teachers selecting facets of culture on a rational rather than idiosyncratic basis. Clearly, few teachers in this research (although there were some) were conscious of either the ideological connotations of the native-alien concept, the links between environmental ideologies and cultural experience or their role as the "upholder of critical thinking" (Slater (1989:5)).

As was pointed out in Chapter 3 (Urban ecology and environmental education), xenophobia and bias is clearly in direct opposition to some of the NCC's knowledge, skill and attitudinal objectives suggested for environmental education in Curriculum Guidance 7, its non-statutory guidance. CG7 (NCC (1990:4/5)) states that "as a basis for making informed judgements about the environment pupils should develop knowledge and

understanding of: the impact of human activities on the environment"; "different environments, both past and present"; "how the environment has been affected by past decisions and actions" and "the environmental interdependence of individuals, groups, communities and nations.....". In terms of skill-based objectives, it states that pupils should develop study skills such as "retrieving, analysing, interpreting and evaluating information about the environment from a variety of sources". Two attitudinal objectives which are severely weakened by this xenophobia and bias are "a respect for evidence and rational argument" and "tolerance and open mindedness". The alternative approach presented in this thesis goes some way to providing teachers with the theoretical/conceptual tools and curriculum approach and content necessary to begin addressing such issues.

4 Contribution to the subject curriculum

The teachers who initially evaluated the book by questionnaire in Phase IIb were asked to comment on how the book would contribute to the programmes of study. Their results were tabulated in Figure 8, which is reproduced from Chapter 5 overleaf:

Figure 8 (reproduced from Chapter 5)

KS2 Teacher evaluations of Programmes of Study supported by 'People, Plants and Places' (Agyeman (1995))

Subject :	Programme of Study:
Geography	Post-Dearing geography: (Programme of Study) Geographical questioning, collecting and recording evidence, use of geographical vocabulary, thematic studies (environmental change-how people affect the environment, how people manage and sustain their environment, weather, settlement, environmental change, places, quality and vulnerability of environments (AT5).
History	Romans, Tudors, Victorians, possibly local history, Britain since 1930, exploration and encounters, influence of imported plants and animals (PESC)(AT1/3)
Science	Experimental and investigative science, life processes, green plants, variation and classification, living things in their environment, identification of locally occurring species of animals and plants (AT2), exploring and investigating at least two different habitats, influence of environmental conditions on plants and animals that live there (AT2)
English	Language, reading for information

As was argued in Chapter 5 (Research methodology, methods and results (Phase IIa)), it is clear that, according to teacher evaluations, the book's main contribution is to geography, history, science and English. In telephone interviews to probe the teachers' omission of other subject curriculum areas, such as art, religion, drama, technology and maths, most teachers said that it was an oversight, and that because of the wealth of single subject curriculum materials in the book, they had concentrated on what they perceived as being the 'main' National Curriculum subjects which contribute to environmental education, namely geography, history, science

and English. Clearly, there is more work to be done to push environmental education, specifically urban nature, into other areas of the curriculum, such as art, religion, drama, technology and maths, which teachers do not initially associate with environmental education. This has clear implications for teacher education.

However, in Chapter 6 (Research methodology, methods and results (Phase III)), where in depth evaluative interviews were utilised, the teachers included a wide range of subjects as being supported, or linked into the book. Bill Dargue said "The great thing about it is that it links things together in a way that you have to work very hard as a teacher to link together. We all do a bit of nature, we all do some history, we all do some geography, but this (book) actually weaves them into each other. Now that I think is ideal. I mean the environment is one of the cross curricular areas isn't it? It is one we've always be very keen on doing, but because of the national curriculum it has tended to disappear. Because now we do English, maths, history and geography. We used to do topics. And it has tended to push out these words really. The cross-curricular themes booklet says they need to be built into everything; they tend to be excluded really. I think this (book) is an ideal because if you're doing some history, alright people do the Anglo-Saxons, spending perhaps a term on it, and there are three or four pages they can pick out from here which builds in the environmental aspects. The same with geography too, I think it is ideal, yes".

In a similar vein, Helen Knowles said that, in response to a question on the book's historical aspects: "I feel it is one of it's strengths, yes. I suppose being the humanities coordinator as well, that the area that's my particular thing anyway, so I would probably notice it more. But when you are planning you history topics and you have to put down something for science say, and there are some big gaps, and what do you do, you can't just do Isaac Newton and gravity, you know, but then you can do herbs or you can crush up flowers and get dyes and you get all this wonderful stuff. And it fills that gap in away, for things and activities you can build around it"

5 Some implications for teacher education

Whilst not a focal area of this thesis, its findings in Phase II have clear implications for both pre- and in-service teacher education at the primary (and secondary level). Oulton and Scott (1995) explore the implications of UNESCO-UNEP's pre-service programmes which aim to develop the 'environmentally educated teacher' (UNESCO-UNEP (1990)) through 'foundation' competences in professional education, and competences in environmental education content. In terms of the latter, they rightly criticise UNESCO-UNEP's focus on ecology, and ecological thinking, within environmental education (see Carson (1978:81) who notes that "the basic pattern of thinking in environmental education is ecological"). They quite rightly "challenge the notion that you can only contribute to environmental education if you have this (probably quite substantial) background in ecology" (218).

However, it is precisely the dominance of ecological thinking within environmental education, both historically (Carson (1978)) and presently (Dorion and Gayford (1990/91) and Agyeman (1991a)), which is the subject of this thesis. In some ways, the implications for teacher education resulting from this thesis represent a no-win situation. On the one hand, a greater awareness of ecology within pre-service courses, including the alternative approach offered in People, Plants and Places (Agyeman (1995)), would probably result in pupils being offered a less xenophobic and pejorative study of urban nature at KS2. On the other, the continued dominance of the concepts of 'ecology' and 'nature' within environmental education, stand in the way of progress towards a more balanced form of environmental education and its likely transition towards ES, or "Education for Participatory Democracy" (Agyeman (1994b:52)).

On balance, and whilst a more rounded form of environmental education is supported, it is clear that a more process-oriented view of ecology (especially urban nature) should be integrated into pre-service courses. Oulton and Scott (1995) discuss some of what they call 'features', but which are, in effect, problems inherent in implementing innovations in environmental education, of which this thesis represents a particularly specialised one. These include dense packaging of 'necessary' and 'justified' content in courses; the lack of incorporation of environmental education into specialist subject programmes because of the lack of skills, awareness and motivation and because of other priorities amongst trainee teachers.

Also, given the widespread 'multipliers' of ecological xenophobia (eg TV, the media), it is likely that course tutors, except the most enlightened, will harbour views akin to those of the UWGs which were discussed in depth in Chapter 3 (Urban ecology and environmental education).

Another route to a more enlightened view on ecology, and urban nature especially, could be through in-service training (INSET). Whilst the author has carried out some such INSET on the theme of this thesis (eg at the Botanic Gardens Education Network conference held at Birmingham Botanic Gardens on November 14th 1994) it has been well attended by those of like mind (see Dr Edwards initial comments in Appendix 8 Independent evaluation of People, Plants and Places), but variously attended by teachers (eg LB Lewisham Black History Month's 'People, Plants and Places: what do plants tell us about our history?' October 12th 1994), and perhaps should be linked to an established INSET provider, such as the Royal Botanic Gardens (Kew and Edinburgh), or the Chelsea Physic Garden, who carry out similar INSET.

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APPENDICES

APPENDIX 1 SCHOOLS QUESTIONNAIRE

Dear Headteacher,

I am researching the advice given to teachers in primary schools (KS2) by organisations concerned with urban wildlife. This research is supported by English Nature, the body responsible for wildlife conservation, education and public enjoyment.

I hope that you, or a member of your staff such as the science or environmental education coordinator, will have time to fill in the questionnaire and return it to me in the SAE by March 19th 1993

May I thank you in advance for completing the questionnaire. The outcome of this unique research will go towards the production of enquiry based learning resources linking urban wildlife to historical and geographical processes in the urban environment.

The questionnaire will be treated with the utmost confidentiality.

Yours faithfully,

Julian Agyeman

URBAN WILDLIFE AND ENVIRONMENTAL EDUCATION.

SPECIFIC QUESTIONS

- 1 Does your school have a policy on environmental education? (Y/N)
If yes, please append.

Please answer questions 2, 3, 4 and 5 using the following scale:
1-strongly disagree; 2-disagree; 3-agree; 4-strongly agree. There is space for a brief comment

- 2 "Our governors are supportive of environmental education."
Please indicate your level of agreement/disagreement with this statement:
- 3 "Staff in this school are supportive of environmental education."
Please indicate your level of agreement/disagreement with this statement:
- 4 "Environmental education is well resourced within your school."
Please indicate your level of agreement/disagreement with this statement:
- 5 "Our staff feel confident teaching about urban nature."
Please indicate your level of agreement/disagreement with this statement:
- 6 Please tick the statement which most fits your situation:
A We have an environmental education coordinator
B We do not have an environmental education coordinator
C We have a teacher who combines responsibility for environmental education with responsibility for another area of the curriculum (please specify):
- 7 Do you undertake nature/ecological studies in your school's locality ?
(Y/N)
- 8 Please tick the two most common habitats used for nature study:
A School nature garden B Local nature reserve
C Local park D Wasteland
E Local woods.
Briefly explain why you use each habitat you have selected:
- 9 Do you have an LEA adviser/inspector for environmental education ?
(Y/N/Don't know)
- 10 Have you used the local Wildlife Trust for advice? (Y/N)

If so, please state a typical query, and their response:

- 11 Have you used any urban nature resource packs such as those from the World Wide Fund for Nature (WWF) or the British Trust for Conservation Volunteers (BTCV)? (Y/N)

Please give the name of the pack and its author/publisher if possible:

- 12 Is the division between "native" and "alien" plants useful in educational terms?

(Y/N/Don't know)

Please justify your answer:

- 13 Do you make the distinction between native and alien plants in your ecological/nature studies? (Y/N).

- 14 Have you read, or been advised, that native plants are more attractive to wildlife than alien plants ?

A-Read

B-Advised (please specify by whom):

C-Neither

- 15 The following were taken from a recent newspaper article on alien plants in which they were described as "villains", "barbarian" and "encroaching foreigners". (Independent on Sunday, 17/5/92). Please comment on these descriptions:

THANK YOU.

APPENDIX 2 URBAN WILDLIFE GROUPS' QUESTIONNAIRE

Dear Sir/Madam,

I am researching the ecological advice given to schools by urban wildlife groups, and how schools use this advice. This is a unique piece of research which is supported by English Nature, who will receive a copy of the final report, and will make it available to you, free of charge, on request.

I do hope that you, or one of your colleagues can find the time to return the completed questionnaire, in the enclosed SAE, by March 19th 1993

May I thank you in advance for your time and assure you that complete confidentiality will be observed at all times.

Yours faithfully,

Julian Agyeman

URBAN WILDLIFE AND ENVIRONMENTAL EDUCATION.

GENERAL QUESTIONS

- 1 Which age group is the most frequent user of your reserve
0-11, 12-23, 24-35, 36-47, 47-58, 58+? (Please tick)
- 2 Do schools use the reserve(s)? Y/N
- 3 If schools use your reserve(s), please indicate the frequency of school usage:
< than one per week, one per week, > one per week (Please tick)

ECOLOGICAL QUESTIONS

- 4 EITHER in the management of your reserves, OR in general advice to the public, do you have a policy on alien plant species ? Y/N. If yes, please append.
- 5 Do you receive many queries from the public or schools related to "native" and "alien" plant species ? Y/N

Please answer questions 6 and 7 using the following scale:

1 - strongly disagree; 2 - disagree; 3 - agree; 4 - strongly agree

- 6 "An objective of urban ecology should be to create an improved urban environment based on urban habitats rather than to reproduce impoverished examples of rural habitats in urban areas". (Barker and Graf, 1989 'Principles for nature conservation in towns and cities'. NCC.) Please indicate your level of agreement/disagreement with this statement:
- 7 "The debate surrounding the utility of native and alien plant species is 'eminently emotional rather than serenely scientific'". (Egler 1961 'The nature of naturalisation' Recent advances in botany, Toronto University Press). Please indicate your level of agreement/disagreement with this statement:

You may comment if you wish on the continuation sheet provided.

EDUCATIONAL QUESTIONS

- 8 "Educational work in schools (excluding WATCH) is not priority for conservation organisations." Please indicate your level of agreement/disagreement with this statement:
- 9 Do you currently have any primary school teachers on your Council or executive committees? Y/N
- 10 Do you currently have an education committee/group? Y/N
- 11 Do you currently have an education policy? Y/N
If you have a policy, please append a copy

- 12 Do you have a full-time education officer? Y/N
If so, please describe the main duties of such an officer:
- 13 Does the education officer (or other) advise on incorporating urban ecology into KS2 of the National Curriculum? Y/N
- 14 Are your organisations views on native and alien plant species communicated to teachers, either by request, or in any literature you may produce for schools? Y/N
- 15 Do teachers ever question these views?
- 16 Does the education officer (or other) run INSET (training) for primary school teachers?

Thank You

APPENDIX 3 RESULTS - SCHOOLS.

School responses:

Questionnaire sent to 464 schools.

110 questionnaires returned = return rate of 24 %

SPECIFIC QUESTIONS		
1) Does your school have a policy on environmental education?		
Total: 80	Yes: 29 (34%)	No: 51 (66%)
2) "Our governors are supportive of environmental education" Please indicate your level of agreement/disagreement with this statement:		
Total: 93	Str.disagree: 1(1%)	Disagree: 5(5%)
	Agree: 42(46%)	Str.agree: 45(48%)
3) "Staff in this school are supportive of environmental education" Please indicate your level of agreement/disagreement with this statement:		
Total: 93	Str.disagree: 1(1%)	Disagree: 2(2%)
	Agree: 41(44%)	Str.agree: 49(53%)
4) Environmental education is well resourced in our school" Please indicate your level of agreement/disagreement with this statement:		
Total: 94	Str.disagree: 7(7.5%)	Disagree: 23(25%)
	Agree: 46(49%)	Str.agree: 18(19.5%)
5) "Our staff feel confident teaching about urban nature" Please indicate your level of agreement/disagreement with this statement:		
Total: 91	Str.disagree: 5(5%)	Disagree: 28(31%)
	Agree: 46(50.5%)	Str.agree: 12(13.5%)
6) A: We have an environmental education coordinator:		10 (11%)
B: We do not have an environmental education coordinator:		16 (17.5%)
C: We have a teacher who combines responsibility for environmental education with responsibility for another area of the curriculum:		65 (71.5%)
Total:		91
7) Do you undertake nature/ecological studies in your school's locality?		
Total: 95	Yes: 93(98%)	No: 2(2%)

8) Please tick the two most common local habitats used for nature study:		
School nature garden/local nature reserve:	21 (26%)	
School nature garden/local park:	25 (31%)	
School nature garden/wasteland:	6 (8%)	
School nature garden/local woods:	22 (28%)	
Local nature reserve/local park:	5 (6%)	
Local park/wasteland:	1 (1%)	
Total:	80	
9) Do you have an LEA adviser/inspector for environmental education?		
Total: 92	Yes: 22(24%)	No: 44(48%)
	Don't know: 26(28%)	
10) Have you used the local wildlife trust for advice?		
Total: 88	Yes: 29(33%)	No: 59(67%)
11) Have you used any urban nature resource packs such as those from WWF or BTCV?		
Total: 92	Yes: 38(41%)	No: 54(59%)
12) Is the division between "native" and "alien" useful in educational terms ?		
Total: 87	Yes: 37(43%)	No: 22(25%)
	Don't know: 28(32%)	
13) Do you make the distinction between native and alien plants in your ecological/nature studies?		
Total: 84	Yes: 35(42%)	No: 49(58%)
14) Have you read, or been advised, that native plants are more attractive to wildlife than alien plants?		
Total: 108	Read: 39(36%)	Advised: 26(24%)

	Neither: 43(40%)	
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APPENDIX 4 RESULTS - URBAN WILDLIFE GROUPS

UWG responses:

Sent to 60 UWG's

55 questionnaires returned = return rate of 92%

(5 not filled in due to voluntary status, not carrying out educational work or other.)

GENERAL QUESTIONS		
1) Which age group is the most frequent user of your reserves?		
Total: 54	0 -11: 8 (15%)	12-23: 6 (11%)
	24-35: 9 (17%)	36-47: 13 (23%)
	47-58: 9 (17%)	58 +: 9 (17%)
2) Do schools use the reserve(s)?		
Total: 34	Yes: 31 (91%)	No: 3 (9%)
3) If schools use your reserve(s), please indicate the frequency of school usage		
Total: 27	<than one per week: 13(48%)	one per week: 7 (26%)
	>than one per week: 7 (26%)	
ECOLOGICAL QUESTIONS		
4) EITHER in the management of your reserves, OR in general advice to the public, do you have a policy on alien plant species?		
Total: 38	Yes: 20 (53%)	No: 18 (47%)
5) Do you receive many queries from the public or schools related to native and alien plant species?		
Total: 41	Yes: 6 (15%)	No: 35 (85%)
6) "An objective of urban ecology should be to create an improved urban environment based on urban habitats rather than to reproduce impoverished examples of rural habitats in urban areas." (Baker and Graf, 1989 'Principles for nature conservation in towns and cities'. NCC.) Please indicate your level of agreement/disagreement with this statement:		

Total: 38	Str.disagree: 6 (16%)	Disagree: 5 (13%)
	Agree: 21 (55%)	Str.agree: 6 (16%)
7) "The debate surrounding the utility of native and alien plant species is 'eminently emotional rather than serenely scientific" (Egler 1961 'The nature of naturalisation' Recent advances in botany, Toronto University Press). Please indicate your level of agreement/disagreement with this statement:		
Total: 34	Str.disagree: 3 (9%)	Disagree: 15 (44%)
	Agree: 13 (38%)	Str.agree: 3 (9%)
EDUCATIONAL QUESTIONS		
8) "Educational work in schools (excluding WATCH) is not a priority for conservation organisations." Please indicate your level of agreement/disagreement with this statement:		
Total: 38	Str.disagree: 16 (42%)	Disagree: 11 (29%)
	Agree: 8 (21%)	Str.agree: 3 (8%)
9) Do you currently have any primary school teachers on your Council or Executive committees?		
Total: 38	Yes: 20 (53%)	No: 18 (47%)
10) Do you currently have an education committee/group?		
Total: 41	Yes: 21 (51%)	No: 20 (49%)
11) Do you currently have an education policy?		
Total: 41	Yes: 15 (37%)	No: 26 (63%)
12) Do you have a full time education officer?		
Total: 41	Yes: 12 (29%)	No: 29 (71%)
13) Does the education officer advise on incorporating urban ecology into KS2 of the National Curriculum?		
Total: 37	Yes: 15 (41%)	No: 22 (59%)
14) Are your organisations views on native and alien plant species communicated to teachers, either by request, or in any literature you may produce for schools?		
Total: 39	Yes: 18 (46%)	No: 21 (54%)
15) Do teachers ever question these views ?		
Total: 32	Yes: 9 (28%)	No: 23 (72%)

16) Does the education officer or other, run INSET for primary school teachers?		
Total: 35	Yes: 13 (37%)	No: 22 (63%)

APPENDIX 5 'PEOPLE, PLANTS AND PLACES'

**Appendix 5, PAGES 258-309 REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL
ISSUES**

**Agyeman, J. and Learning Through Landscapes Trust. (1995). *People, plants & places*.
Creditor: Southgate.**

APPENDIX 6 EVALUATION FORM: PEOPLE, PLANTS AND PLACES

Thank you for agreeing to read and evaluate 'People, Plants and Places'. Once you have finished reading it, please spend 20-30 minutes filling in the form fully, answering all questions, and where requested, commenting on your answer. If you need extra space, please continue on the back of the page.

Please return your completed form, in the pre-paid envelope, by Friday 28th April 1995.

<p>1 What status do you give environmental education in your teaching? (Please tick)</p> <p>Low Medium High</p>
<p>2 Which aspect of environmental education (eg buildings and architecture, transport, nature and wildlife, pollution, waste and litter or other) do you personally feel most comfortable with and why?</p> <p>.....</p>
<p>3 Name up to three written resources that you have used to assist you in developing teaching materials for urban nature</p> <p>.....</p>

4 The following statements are about the book 'People, Plants and Places':

- a It presents an alternative way of looking at nature in cities.
- b Its approach is particularly relevant in multicultural areas.
- c It links nature in cities to many other areas of the curriculum which teachers may not be aware of.
- d It shows how to create a 'cultural garden' in the school grounds.
- e It provides a broad range of practical activities, linked to key concepts in the text.
- f It shows how cities differ environmentally from rural areas

Please rank these statements starting with the one you believe to be the most important or significant, and finishing with the one you believe to be the least important or significant (eg d, c, e, f, a, b)

5 Is the content of the book: (Please tick one)

very appropriate	.....
appropriate	.....
inappropriate	.....
very inappropriate

to your needs as a teacher at KS2? Please explain your response

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6 In terms of content, identify up to 5 National Curriculum KS2 Programmes of Study (mentioning which Attainment Target they relate to) with which you think the book can help

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7 Choose your favourite activity in the book. Below, please name it

.....

.....

a What is attractive about the activity?

.....

.....

.....

b How would you use the activity with pupils?

.....

.....

.....

c What outcomes would you expect from your pupils?

.....

.....

.....

APPENDIX 7 RESULTS OF EVALUATION OF PEOPLE, PLANTS AND PLACES

Teacher response 1:

<p>1 What status do you give environmental education in your teaching? (Please tick)</p> <p>Low Medium High ..X..</p>
<p>2 Which aspect of environmental education (eg buildings and architecture, transport, nature and wildlife, pollution, waste and litter or other) do you personally feel most comfortable with and why?</p> <p><i>'I enjoy particularly teaching children about the natural world, raising local and global issues, because I find they are enthusiastic in nurturing and caring for the wildlife around them. They show as much interest in exploring the habitats of an inner city suburb as they do of investigating ways to conserve rural environments.'</i></p>
<p>3 Name up to three written resources that you have used to assist you in developing teaching materials for urban nature</p> <p><i>'Schools Council Publications: "All Around", a pack to investigate plants around us. The Landlife Group packs: "Tree", "Wall", "Herb", etc. Exploring My World: "Plants and Animals", fifth of nine booklets from WWF.'</i></p>

4 The following statements are about the book 'People, Plants and Places':

- a It presents an alternative way of looking at nature in cities.
- b Its approach is particularly relevant in multicultural areas.
- c It links nature in cities to many other areas of the curriculum which teachers may not be aware of.
- d It shows how to create a 'cultural garden' in the school grounds.
- e It provides a broad range of practical activities, linked to key concepts in the text.
- f It shows how cities differ environmentally from rural areas

Please rank these statements starting with the one you believe to be the most important or significant, and finishing with the one you believe to be the least important or significant (eg d, c, e, f, a, b)

'a, e, b, f, c, d.'

5 Is the content of the book: (Please tick one)

very appropriate	..X..
appropriate	....
inappropriate	....
very inappropriate	....

to your needs as a teacher at KS2? Please explain your response

'The book offers a range of diverse cross-curricular activities which can be on-going throughout the year and be implemented over a range of KS2 years. The suggestions complement programmes of study in many areas and would help pupils to develop environmental awareness in a local and global context.'

6 In terms of content, identify up to 5 National Curriculum KS2 Programmes of Study (mentioning which Attainment Target they relate to) with which you think the book can help

*'Science: "...identify locally occurring species of animals and plants..."
"...explore, investigate at least two different habitats and influence of environmental conditions on plants, animals that live there...". AT2
Geography: "...Quality, vulnerability of environments...". AT5
History: influence of imported plants, animals (PESC) AT1/3.'*

7 Choose your favourite activity in the book. Below, please name it .

'Can we grow it here ? (p.32)'

a What is attractive about the activity?

'It would be practical and fun for children to grow food plants they use at home. They could share existing knowledge, experience and develop new skills (geog. & science).'

b How would you use the activity with pupils?

' Grow as many different plants as possible. Draw upon children's/parent's knowledge re growing conditions. Investigate uses, any development issues. Cook recipes.'

c What outcomes would you expect from your pupils?

'Enhancement of self image through contributions to study, respect for other cultures increased. Raised motivation because of personal interest and improved learning.'

8 Is there an overall message or idea which has struck you on reading the book? Please describe it

'A cultural garden could be the focus for investigating plants from around the world, including global issues. The other activities would extend and develop the ideas of interdependence of people and plants locally and in a wider area.'

9 Do you intend to use the ideas and activities in this book in your future curriculum planning? Please explain your answer, and if possible, give an example

'Many of the activities could be incorporated into my existing KS2 schemes, to enrich and extend them, e.g., scientific investigations of the plant world, geographical landscape studies, Britain since 1930s history theme, etc. I like the idea of growing plants from around the world in a cultural garden, exploring their features, origins and uses. Although growing space is very limited, we could use containers to create a variety of plant collections, e.g., from Asia, W.Indies, sensory plants, herbs, etc. The appendix in your book will be useful here !'

Teacher response 2:

1 What status do you give environmental education in your teaching? (Please tick)

Low
Medium
High ..X..

2 Which aspect of environmental education (eg buildings and architecture, transport, nature and wildlife, pollution, waste and litter or other) do you personally feel most comfortable with and why?

'I am interested in buildings and architecture but my main interest is nature and wildlife. Plants are my main hobby/interest and therefore the subject I feel most knowledgeable about and most confident to teach to others.'

3 Name up to three written resources that you have used to assist you in developing teaching materials for urban nature

'Investigating Grasslands, Hedges and Trees - C.B.Green and A.J.Porter - Arnold - Wheaton ISBN 0 560-26536-0. The Clue Books - Flowers - OUP - ISBN 0 19 918003-2. Make it Work! Plants - Claire Watts and Alexandra Parsons - Two - Can Publishing Ltd - ISBN 1 8543 119 7.'

4 The following statements are about the book *'People, Plants and Places'*:

- a It presents an alternative way of looking at nature in cities.
- b Its approach is particularly relevant in multicultural areas.
- c It links nature in cities to many other areas of the curriculum which teachers may not be aware of.
- d It shows how to create a 'cultural garden' in the school grounds.
- e It provides a broad range of practical activities, linked to key concepts in the text.
- f It shows how cities differ environmentally from rural areas

Please rank these statements starting with the one you believe to be the most important or significant, and finishing with the one you believe to be the least important or significant (eg d, c, e, f, a, b)

'c, e, b, a, d, f.'

5 Is the content of the book: (Please tick one)

very appropriate	..X..
appropriate	.....
inappropriate	.....
very inappropriate	.....

to your needs as a teacher at KS2? Please explain your response

'I teach plants and gardening across the curriculum to my pupils. The book covered a wide range of topics and subjects, most of which, are relevant to topics we have covered, or will cover, during the course of the academic year.'

6 In terms of content, identify up to 5 National Curriculum KS2 Programmes of Study (mentioning which Attainment Target they relate to) with which you think the book can help

'Sorry - no NC documents with me here - must finish and post this today, so no details available. However, history - Exploration and Encounters, Victorians, etc. Science - any work on growing and studying plants. English - lots of language work, reading for information, etc. (Sorry, best I can do without anything to refer to!.'

7 Choose your favourite activity in the book. Below, please name it .

'Chapter 5. I like the activities involving growing seeds and tubers of exotic food plants - Can We Grow it Here?'

a What is attractive about the activity?

'It is interesting to grow some of the plants which my pupils (all Asian) use for food but rarely grow at home.'

b How would you use the activity with pupils?

'The activity would be used as part of a science topic and most of the seedlings transplanted and grown on in the school garden.'

c What outcomes would you expect from your pupils?

'Hopefully some of them may persuade their parents to grow some of these plants in their gardens at home.'

8 Is there an overall message or idea which has struck you on reading the book? Please describe it

'What a great diversity of plants we grow, and how many more we could grow. The value of all plants, including those dismissed by most people as 'weeds'. The importance of recognizing the relevance of different plants in different cultures.'

9 Do you intend to use the ideas and activities in this book in your future curriculum planning? Please explain your answer, and if possible, give an example

'I certainly intend to do so. We will certainly try all the activities in Chapter Five. We will use most of Chapter One, including the 1st, 2nd, 3rd, 6th, 7th and 8th activities, both for history (Victorians) and science studies. We have been thinking of turning some of our school garden into a 'cultural Garden' also, so the relevant chapters on this will also be very helpful.'

Teacher response 3:

1 What status do you give environmental education in your teaching? (Please tick)

Low
Medium
High ..X..

2 Which aspect of environmental education (eg buildings and architecture, transport, nature and wildlife, pollution, waste and litter or other) do you personally feel most comfortable with and why?

'Built environment and pollution, also nature and wildlife. My degree was in Environmental Studies - thus wide ranging, I then spent some time working for an urban studies centre in Newcastle upon Tyne.'

3 Name up to three written resources that you have used to assist you in developing teaching materials for urban nature

'English Heritage. Landscape Trust. 'Town Teacher' - study centre I worked for - no longer exists !'

4 The following statements are about the book 'People, Plants and Places':

- a It presents an alternative way of looking at nature in cities.
- b Its approach is particularly relevant in multicultural areas.
- c It links nature in cities to many other areas of the curriculum which teachers may not be aware of.
- d It shows how to create a 'cultural garden' in the school grounds.
- e It provides a broad range of practical activities, linked to key concepts in the text.
- f It shows how cities differ environmentally from rural areas

Please rank these statements starting with the one you believe to be the most important or significant, and finishing with the one you believe to be the least important or significant (eg d, c, e, f, a, b)

'c, e, a, f, d, b.'

5 Is the content of the book: (Please tick one)

very appropriate
appropriate ..X..
inappropriate
very inappropriate

to your needs as a teacher at KS2? Please explain your response

'Its good to see practical, achievable ideas represented in the book. Also its the first resource I've seen suggesting a multicultural garden.'

6 In terms of content, identify up to 5 National Curriculum KS2 Programmes of Study (mentioning which Attainment Target they relate to) with which you think the book can help

'Post Dearing Geography: (Prog. of study) Geographical questioning, collect evidence, use geog. vocabulary. Themes: -Environmental change - How people affect the environment, how people manage and sustain their environment. Science: -Experimental and Investigative Science/life and living Processes and Living Things -Green plants as organisms, Variation and classification, - Living things in their environment.'

7 Choose your favourite activity in the book. Below, please name it .

'Cures, cleaners and smells.'

a What is attractive about the activity?

'We have been looking at Issac Newton's experiments and we will be studying the Tudors - this activity will fit in well.'

b How would you use the activity with pupils?

' I would demonstrate but also get them to mix safer mixtures in small groups.'

c What outcomes would you expect from your pupils?

'A realisation that plants formed and still form basis for many medicines.'

8 Is there an overall message or idea which has struck you on reading the book? Please describe it

'To make better use of the land around the school - ie an extra resource.'

9 Do you intend to use the ideas and activities in this book in your future curriculum planning? Please explain your answer, and if possible, give an example

'We are participating in School Grounds Day in May. On this day we will have a small ceremony to 'open' our new pergola which has been built as part of our school memorial garden. (The school was bombed in WW II. Staff and children were killed). We thought that it would be nice for all classes to join in by decorating a tree - as suggested in your book.'

Teacher response 4:

1 What status do you give environmental education in your teaching? (Please tick)

Low
Medium
High ..X..

2 Which aspect of environmental education (eg buildings and architecture, transport, nature and wildlife, pollution, waste and litter or other) do you personally feel most comfortable with and why?

'Buildings in our area (inner city B'ham) there's a vast range of buildings types, sizes, ages, making the major impact on the way the area looks (also good for history/geog.)

'Trees and shrubs (personal interest) help break up solid bldg environment. Good for study of seasons, longlasting but need care, dramatic aspect.

Flowers and fruits. Growing from seed. Excellent primary material.'

3 Name up to three written resources that you have used to assist you in developing teaching materials for urban nature

*'Material from "Questions" magazine.
Oxford Clue Books.'*

4 The following statements are about the book *'People, Plants and Places'*:

a It presents an alternative way of looking at nature in cities.

b Its approach is particularly relevant in multicultural areas.

c It links nature in cities to many other areas of the curriculum which teachers may not be aware of.

d It shows how to create a 'cultural garden' in the school grounds.

e It provides a broad range of practical activities, linked to key concepts in the text.

f It shows how cities differ environmentally from rural areas

Please rank these statements starting with the one you believe to be the most important or significant, and finishing with the one you believe to be the least important or significant (eg d, c, e, f, a, b)

'c, e, b, a, d, f'

5 Is the content of the book: (Please tick one)

very appropriate	..X..
appropriate	....
inappropriate	....
very inappropriate	....

to your needs as a teacher at KS2? Please explain your response

'There's lots of background material for teachers - more than you'd need but can select from.

The practical activities are genuinely do-able and flexible enough to be adapted.

I like the cross curricular links esp. with history. Good section on food plants etc. - practical. applicable. (not enough on herbs but that a personal interest of mine !).'

6 In terms of content, identify up to 5 National Curriculum KS2 Programmes of Study (mentioning which Attainment Target they relate to) with which you think the book can help

'History units - Romans etc/Tudors/Victorians (possible local history). Britain since 1930.

Geog. - thematic study. Weather/Settlement/Env. change/Places.

Science. Life processes - Green plants/ Variation/ Environment.'

7 Choose your favourite activity in the book. Below, please name it .

'P. 33. Cures, cleaners, smells.'

a What is attractive about the activity?

'It's easy to do, plants etc easy to get. Shows natural remedies not items bought off a shelf. Memorable! - children would remember having their feet or hair washed in class.'

b How would you use the activity with pupils?

' Either science - living things/history - Romans etc./Tudors/(Victorians?).

It would have to be a teacher directed activity but practically done with children in class.'

c What outcomes would you expect from your pupils?

'I'd hope they'd associate plants with cures, cleaners and smells. Rather than/as well as supermarkets.'

8 Is there an overall message or idea which has struck you on reading the book? Please describe it

'Plants are an easily available cheap practical resource and then study is applicable across the curriculum.'

9 Do you intend to use the ideas and activities in this book in your future curriculum planning? Please explain your answer, and if possible, give an example

I've got KS1 - Y2 at the moment but the practical activities are adaptable in many cases and I'd be interested to try some of them out. They fit in most easily with science work.

Good advantage is that the activities are often ends in themselves not requiring write-ups (useful at KS1).

We're just developing a planning system where we outline skills, content and activities. Should be useful.'

APPENDIX 8

INDEPENDENT EVALUATION OF PEOPLE PLANTS AND PLACES

Dr Ian Edwards,
Head of Public Education,
RBG Edinburgh,
Edinburgh.
EH3 5LR

13th July 1995.

Dear Ian,

Good to speak to you again yesterday.

Thanks for agreeing to evaluate my book 'People, Plants and Places'. The following extract from my PhD gives you the three main evaluation criteria:

"The methodology for Phase II is an evaluation which, according to Scriven (1991) is the "determination of the worth or value of something judged according to appropriate criteria, with those criteria explicated and justified". The criteria for the evaluation of 'People, Plants and Places' (Agyeman 1995) were based upon its dual aim of convincing teachers at KS2 that there is an alternative curricular approach to urban nature (ie the content) and giving them the theoretical background (ie the message) and practical activities necessary to offer their pupils such an approach. Based on this, three key evaluational criteria emerged:

- i) the overall message for the teacher;
- ii) the appropriateness of content in relation to KS2 Programmes of Study;
- iii) the usefulness of the activities for the pupils".

I also enclose a copy of the evaluation form sent to the teachers. You may want to use some, or all of the questions in your evaluation. As we agreed, could you return it to me by Friday August 25th.

Thanks again,

Yours sincerely,

Julian Agyeman.

Dr Edward's evaluation

"Julian Agyeman has established a niche and a reputation among environmental educators in the UK for his views on urban ecology, multiculturalism and education and this book was eagerly anticipated by many of his colleagues. What we sought was a publication that provided an alternative to the traditional approach to teaching urban ecology, one which would give British cities a global environmental context and offer an urban rather than a rural dweller's perspective on nature and conservation. I feel that *People, Plants and Places* only partly fills these needs and unfortunately the dynamic nature of Agyeman's personal presentations does not come across so powerfully in print.

The back cover claims "many of the ideas will be new to the teacher at Key Stage 2 and will challenge previously held views". This may be so, but in order to extract Agyeman's original perspective on urban ecology the reader will have to wade through a lot of material on history, geography and ecology which is not especially novel or challenging. Some information, for example the section on ecological succession, would indeed be considered by many as rather out of date. For me, Agyeman's thesis does not come through strongly enough to make the impact that it deserves.

The emphasis on a historical perspective (approximately half the 33 pages of text) is possibly at the expense of detail on the current composition of the urban flora which I believe makes a significant contribution to our regional and national biodiversity and provides an excellent starting point for investigations at primary school level. Controversial issues, like the

spread of Giant Hogweed and Japanese Knotweed, which are at the root of much xenophobia and which I know Agyeman has views on, are not discussed or offered as topics for debate while subjects of limited relevance to urban ecology, such as Neolithic lifestyles or coppice management, are dealt with in detail.

I have not been in a position to try any of the activities in the book but some appear in a similar form in my Green Inheritance pack (eg 'sticky seed walk' and 'we need plants') and I can vouch for their suitability with children of the upper primary level. Other activities would not work - "Oxford Ragwort-an Inter City traveller, for example, does not provide the teacher with sufficient information to complete the exercise.

The five pages in chapter four on "Planning and Designing your Cultural Garden" may hopefully provide inspiration for some schools or community groups to start their own projects but there is clearly inadequate detail to enable any but the most confident teacher to start a project without seeking information elsewhere. Sources of advice and school grounds management are listed in the appendices but as this book is published by Learning Through Landscapes one might expect these practical aspects to be in the fore.

Finally, I regret that so little has been done in the book to recognise and highlight the important role of botanic gardens and arboreta in the presentation of the subject matter (although the names and addresses of neraly 50 gardens and arboreta are listed in the appendix). Agyeman is an active member of the Botanic Gardens Education Network and is very aware of the considerable number of exciting initiatives which have sprung up in botanic gardens throughout the country in recent years. More than half the UK population live within an hours drive of a botanic garden and the opportunities that they offer for the study of plants from around the world are unique. An increasing number of botanic gardens now employ education staff who are available to assist schools in a diverse number of areas.

In summary, I welcome this publication, support wholeheartedly its objectives and will be active in promoting its use in schools. However, I feel that the important and central concept of "cultural ecology" with which

Julian Agyeman is rightly associated within botanical and educational circles, does not come through clearly enough and that opportunities to give more comprehensive practical advice have been missed. The latter, I feel, reflects more the editing than the authorship".

Dr Ian Darwin Edwards,
Head of Public Education,
Royal Botanic Garden,
Edinburgh EH3 5LR
16th August 1995.

APPENDIX 9

BOOK EFFECTIVENESS INTERVIEW TRANSCRIPTS

1 Interview with Bill Dargue, Deputy Head, Heath Mount School, Balsall Heath, Birmingham.

March 4th 1996

Julian:

OK, Bill, I'll ask you a series of questions and if you can give your answer to them, we'll go from there. So firstly, what do you understand by the terms native and alien plants ?

Bill:

Native plants to me, are ones that came here immediately after the ice-age, the one's that colonised first. And alien ones are the ones that grow here unnaturally if you like, since then. There are debates about this. To me, the conker tree for instance is clearly a native plant. They are so well established. I count conker trees and sycamores as natives. There's a grey area.

Julian:

Yes, there is a grey area, isn't there.

Bill:

It's where you set the line almost, isn't it, in historical terms.

Julian:

OK. Do you use the terms native and alien in your lessons ?

Bill:

I'd use the term native. I think it is important to children to understand that this would be the natural cover if things were left to their own resources, without human intervention. But to me, it's not easy really, because in animal terms for instance there is clear evidence that people have brought alien animals, grey squirrels for instance, but the obvious problem is that they will whip out the red ones. Now occasionally that is true with plants. We've got Japanese Knotweed here. I wouldn't use the term alien, but there are problems with importing those kind of plants because they thrive, they haven't got the enemies they would have in their own native environment...

Julian:

That's right.

Bill:

But no, native is a term I would use. I don't know that I'd use a term as regards alien ones. Perhaps, I'm not sure...

Julian:

People use terms like introduced plants or exotic plants

Bill:

One thing that makes me a little uneasy is it does suggest a sort of xenophobia. We always refer to the Japanese Knotweed, and damn those Japs for sending their plants over here sort of thing, that I don't like really. It suggests that it is the Japanese fault. We brought the damn thing here. There are problems in presentation to children.....

Julian:

Bill, the make-up of your ethnic mix in your school, what's that like?

Bill:

About 70 % of children from Pakistani background, with a sort of mix as regards the rest, Yemenis, a few Chinese.....

Julian:

The use of the term alien, given what you said, would it...

Bill:

You could say "Startrek", but to me it sounds something to do with passport control, which is perhaps why I wouldn't use the term. It is definitely not a term I would use. Introduced is perhaps a better one, is it?

Julian:

It is interesting you say that Bill, because, I didn't mention it earlier, but in my research I found....I gave teachers a passage from the Sunday Independent, and it used terms like aggressive, invasive and aliens in our backyard, terms like pink and yellow Japanese terror...

Bill:

It sounds racist.

Julian:

... brutalising the native flora, and the worst one I think, which was a sort of sexual metaphor, staggering penetration of these plants, and teachers were asked to comment on these and a lot of them, like yourself Bill, said I wouldn't use the terms in my school...

Bill:

But there is an issue, isn't there though. Japanese Knotweed is an issue, it's a real issue, it covers up in Birmingham very rapidly. We've got a little walkway along the River Rey, which is a very canalised river not very far

from here, all along the side is Japanese Knotweed, all the way. I don't know how it travels. Is it wind blown, I'm not sure...

Julian:

Yes. What the Victorians thought is that it has beautiful sort of flowers that hang down with the seeds that travel very quickly and also it propagates very well...

Bill:

You chop it down and it thrives

Julian:

The only thing you can do is inject the root with glyphosate.

Bill:

That is an issue. What I said originally, it is not the Japanese fault, and the implication of Japanese Knotweed taking over the British countryside implies that it is the Japanese fault...

Julian:

Well actually it is the Victorians! Rhododendron, Knotweed ... It's interesting though, when you look at it, there are a few plants like Knotweed, but really there are not that many that have become a problem. Bracken is a problem in upland areas.

Bill:

Yes, the famous example is Ragwort isn't it. What does it matter? It is an interesting one to take as an example of travelling along railways and presumably along motorways. But is not an issue. It is not a serious problem to the native population. It is just down to the interest.

Julian:

Exactly, I think that's it. A lot of people have made a lot of the fact that these alien plants are ruining our environment. They are actually not, with one or two exceptions.

Bill:

We've got some green public open space where we did some work planting trees and we got the city to plant some. I sent them a huge list of every strange tree I could imagine because I thought it would be wonderful to have a little arboretum so near, so we could find all kinds of unusual things. They wouldn't do it, they only wanted native species...

Julian:

Really?

Bill:

Yes. So whether the funding wouldn't run to it or whether it wasn't the nature conservation thing to do, I don't know, but we got some trees planted and it is much better than it was, but it would have been much nicer to have some gingkos, unusual things, that you wouldn't normally find. All though having said that, we are near Canon Hill Park, which is Birmingham's biggest public park and there are all sorts down there.

Julian:

Bill, you are aware obviously that the book does take a historical approach. The historical information in People, Plants and Places covers the KS2 historical periods. Is there an example of how you might use this information ?

Bill:

Yes, one thing I find particularly helpful is clearly clear activities. I mean for a teacher that is brilliant. You've got the background information, the drawings are so clear, they are photocopyable. All the background information is there, but in the end as a hard pressed teacher, you will look to that bit where it says activity. It is in different colour so you can focus on it very quickly. The period that I most used was the Tudors and Stuarts, sorry Tudors, the Stuarts have been banned, they are only Tudors now, in the new national curriculum. Yes, these activities are practical activities you really can do and I have found them very useful, yes.

Julian:

Before you read the book, knowing that you are a local historian, before you read the book, were you as aware of the links between plants and history?

Bill:

No. The Victorian one was the one I was well aware of having been to botanical gardens, because they have notices now which inform you about the collectors and so on, whose 'fault' it is. So that one I knew well, and the pre-historic aspect. I was aware that in this area there was dense forest because of the very wet clay conditions, but in between I wouldn't make any particular links, I don't think. I would tend to do plants as a separate theme in a science or an environmental context rather than a historical context. And yet obviously plants were of vital importance before and during the industrial age as the raw material from which every thing was made. In Tudor times everything was made from trees and plants, with some exceptions, wool and leather and so on. But they were all natural materials weren't they.

Julian:

So the book helped you make some of those links outside the Victorian area?

Bill:

The information is here and in an easy to use format. I mean, there's the Anglo-Saxons, it's a page jam packed with information, but easy to read and as I said with the activities quite clearly to see.

Julian:

OK. Now, one of the things that the book makes a point of is that there are environmental ie climatic and ecological differences between urban and rural areas. Can you tell me a bit about these? I can't remember which page, but there's... (looking in the book)... In your teaching, Bill, do you go out to the city and look at nature?

Bill:

Yes, but it is so occasional that I would say it's almost useless, but it isn't useless by any means, but it is not near enough to use that as a valid comparison. This is something I am aware of. On the radio, on our local station, they give you the city temperatures and what it might be outside the city as well, which is always a couple of degrees lower. And you know, look at the concentration of pigeons in city centres and starlings and so on, it's to do with temperature, they all come back for the warmth at night. No, that isn't a link that I would have made especially in a city this size. We're 10 miles from the nearest village outside. But no, it wouldn't be useful really.

Julian:

Would that have to do with a lot of the kids don't go out at all. If you are preparing them for life, realistically, given the resources you got, you're preparing them for a urban life.

Bill:

Our children do... They are going to see relatives in Bradford or London travelling down the motorway like an urban corridor linking the two cities. They have little conception of what lies on either side of that corridor. You know, you stop, in stop in a service station, which is an urban area really, isn't it. So no, they've got a very limited understanding of countryside and how big it is and what functions it performs and what goes on in it. But, yes you are right, we live in the city after all...

Julian:

Exactly. In an ideal world I suppose...

Bill:

That's right. We do go to take them to the countryside, our schooltrips tend to go there. But then again you often go to little bits of the city out in the country. We are not going into the wild or anything. We take them to farms in the infants. They are not real farms, they are children's farms.

Julian:

That's right. Before you read the book, were you aware of these differences between sort of environmental and ecological differences between urban and rural areas ?

Bill:

Not consciously. Not consciously.

Julian:

One of the points about the book is that it describes something called a cultural garden...

Bill:

Yes.

Julian:

Can you just tell me briefly, Bill, what you understand by this?

Bill:

I've looking at your book because we've just been awarded £250 to take part in a police project. I don't know where they got it from..we ask no questions. And last year we had £500 from English Nature to plant a hedge all around our perimeter, a native hedge... Of course we had that dreadful summer, so we lost most of it, dreadful. But I thought, instead on just replanting it, to leave what we've got, there must have been some hawthorns that survived, to replant with one or two more interesting species. We've got some buddleias around, but we haven't a wide rage of species. So I've been looking through this section with plants for the cultural garden to use it. I haven't come up with a list yet, but certainly I have found it useful. Yes, to me, I suppose in a primary context you want as wide a range of plants from as wide as range of areas as possible, I think. You are looking for plants that will perform different functions, different sizes, different fruits, different kinds of flowers that will attract insects, some will attract birds. It is the variety that you are after. And similarly a variety of countries of origin, I suppose. If you're doing South America, you've got... come on...

Julian:

Passion flower

Bill:

And you've got to be practical, what you can actually see...

Julian:

Yes, absolutely. I think one of the points you make there about if you doing South America then you can say: we have a South American plant. One of the ideas I put forward here is plants as 'windows on culture'. You know the notion that you can see....maybe you've got a South American kid in the class who could say something. So the cultural garden...

Bill:

Yes, we've taken children to the Botanical Gardens and we certainly have this experience and Bill Graham (the Garden's education officer) likes to focus on it. A lot of our children went back to Pakistan and ... he'd say (Bill Graham): What is this? and they'd say "it's sugar cane, we've had some of that". That's useful educationally. You can't have all sorts here (at the school), banana palm or what ever... There's certainly an aspect of that, isn't there. You know, any lesson with some kind of species related or on object or an artefact of some kind will stick to the children's mind. It's the

same thing if you can say: this is a South American plant . Here it is. Look. It adds something to it, I'm sure. I don't know if a 'window' is quite the right word...The link that you're making, the actual physical link, something real children can touch.

Julian:

I think another reason behind the cultural garden as well was this, you know it suddenly struck me, look, we've got these multicultural cities, you know, and really our ecosystems are multicultural, plants and animals from around the world co-existing in cities. We've got animals like gulls, I've stopped calling them seagulls now, I see more of them...

Bill:

I know

Julian:

...the urban fox, the kestrel. Things have changed with us, as humans. One thing I have evolved in this book, is this idea of a multicultural city ecosystem. You know,...

Bill:

It comes back to planting the trees, which I didn't think they needed to be native species, because there's plenty of native species. They are not in danger. And they thought, you know, an oak tree supports 250 different species and Sycamores don't support so many. Well, so what...You know.

Julian:

Interesting point there though, Bill. See what you're not told. I mean, Sycamore support about 40 insect species, oak 250. What you are not told is that the biomass of insects supported by sycamore is far greater...

Bill:

Oh yes, that's right

Julian:

So, basically if you're weighing up weight for weight, you know...

Bill:

You see they might be desirable aliens after all!

Julian:

That's right!

Bill:

To me, any piece of greenery is there in it's own right. Giant Redwood is a splendid tree to look at that might not support one insect species. There's hundred of Oak trees, they are not in danger. Actually there are about 50 of them in my classroom at the moment!. And they are easy to grow so they

are never going to be threatened by... not threatened by sycamore. They grow very easily

Julian:

There's obviously need for some element of control. But George Barker from English Nature says by comparing 250 species on oak and 40 on sycamore, he says, of the 40 on Sycamore, it doesn't matter what species of insects it is, but that the bird or what ever, has eaten at all. So it's the biomass equation, there's lot of them there, rather than what species that food is. So again, I think, you know, I wouldn't say that it's pseudo-science this notion of range of species... It's one that has been used...

Bill:

And it is more complicated than that, because there are other trees besides Sycamore and we've gone past the point of no return, haven't we. You can't re-nativise our flora, can you, or fauna.

Julian:

Well, on Hampstead Heath, there's a big debate at Kenwood, one of the big areas of Hampstead Heath in London, they want to cut down all the trees and renativise, exactly what you said, Bill. This is the problem I think with a lot of what has happened in terms of teaching Key Stage 2, there's been pressure from wildlife-groups to plant only native species. You talked about your native hedge, funded by English Nature, English Nature's advice to schools in it's Schools Nature Area Action File still says, you know, plant native species.

Bill:

BTCV.. or is it BCTV, I never get it right! They were instrumental in putting it in (the hedge) and ordering and so on. And their bias was clearly towards native species

Julian:

Yes exactly. I suppose the book is saying, in urban areas, does it really make that much difference? The book doesn't say go out and plant SSSIs with..

Bill:

No, absolutely. Look at people's gardens, I mean many gardens there's not a native plant to be seen in them, but nobody worries about that.

Julian:

But there's still blue tits and other birds and butterflies.

Bill:

Absolutely. In fact buddleia attracts native butterflies, so..I'm sympathetic to what you're saying.

Julian:

Had you heard of cultural gardens before you read the book?

Bill:

Not as a term, I wouldn't say, but again having used botanical gardens so much, as a concept I suppose, it is there in my head. But I don't think it is a term I've never come across. I've seen historical gardens, within the last couple of years, there's a Roman garden, ...Medieval sort of monastery style gardenand a Tudor garden, a Knot Garden and these have been set up.....I think they got some funding from the EC or something

Julian:

Again, one of the other things in the book is growing vegetables from different parts of the world, would you consider it?

Bill:

No, we don't. One problem is our site does get used as a thoroughfare and we have done it, but it's been a disaster really, they've just been walked over or pulled up, and you need to keep it weeded and clear. If its obvious you are looking after it, teenagers will come... We abandoned it. I think it is a shame because not far from here there's an Asian allotment association, they grow lots of interesting vegetables.

Julian:

That's not Ashram Acres is it?

Bill: Yes. And they are quite keen to work with people, but we've never been able to take advantage of that, because of the nature of our site. The other problem is the ground here. It was previously Victorian houses, before they put the school here. The ground is appalling. It's just rubble underneath, so we are very sympathetic to it, we would like to do it but it is not practical on this site, unfortunately.

Julian:

Have you ever thought, yes you have obviously thought of growing vegetables here...

Bill:

We've had a go.

Julian:

Yes, but site reasons...

Bill:

But I think it is a shame, because you know there are a lot of Asian vegetables particularly that will grow in this climate and this soil. There are local people who do that, and we just can't take advantage of it.

Julian:

Two final questions. Do you think, Bill, the book has been effective in informing your attitudes or helping to change your attitudes and subsequent curriculum practice?

Bill:

The great thing about it is that it links things together in a way that you have to work very hard as a teacher to link together. We all do a bit of nature, we all do some history, we all do some geography, but this (book) actually weaves them into each other. Now that I think is ideal. I mean the environment is one of the cross curricular areas isn't it? It is one we've always be very keen on doing, but because of the national curriculum it has tended to disappear. Because now we do English, maths, history and geography. We used to do topics. And it has tended to push out these words really. The cross-curricular themes booklet says they need to be built into everything; they tend to be excluded really. I think this (book) is an ideal because if you're doing some history, alright people do the Anglo-Saxons, spending perhaps a term on it, and there are three or four pages they can pick out from here which builds in the environmental aspects. The same with geography too, I think it is ideal, yes.

Julian:

One of the criticisms of the book by the expert external evaluator (Dr Ian Edwards), was that he would have liked to have seen more on contemporary issues in urban environments rather than the historical approach the book takes. I obviously argued that in 48 pages you've got to be selective. A lot of teachers I have interviewed said that the strength was the historical aspect, because it was easy to get other information.

Bill:

I think that is probably right. I...

Julian:

So as a Key Stage 2 teacher, Bill, what is your view?

Bill:

I agree with that. I think current issues are very obvious, any informed teacher, if you listen to the news, or current issues programmes or nature programmes, you are aware of these issues, I think. And the information is easy to get, if you talk to an urban wildlife group or people who are in the business now. But the historical aspect is much, much more difficult to find out...and mind you the geographical aspect isn't so easy to find out either, but certainly the historical one...it isn't easy to find information on this and then to have it in a easy usable form is wonderful I think.

Julian:

Final thing, Bill, over to you, are there any other points that you would like to raise about the book? You've had it about a year now, is there anything else...?

Bill:

I wouldn't alter a single word or comma. I think it is splendid. I mean, really what you need is somebody with a two or three year project to actually go through the activities and do them. It is only in the end by people working on them, you find out whether they work or not. You know we all have books that look good, but when you actually use them, it doesn't work. But you know, in my judgement as a teacher, it is excellent. They (activities) look good and practical, and in the end, that's what counts, isn't it? You need to make some judgement like yes, I'd use that with my kids. It's ideal I think. It's a super book.

Julian:

As a deputy of this school, you would recommend it?

Bill:

Absolutely, we are out of money at the moment, but...I'll tell you the only thing I don't like, it's just a personal hang up, is the tree decorating...

Julian:

Really?

Bill:

Yes.

Julian:

That picture in the book is one of Bill Graham's (education officer, Birmingham Botanic Gardens)

Bill:

I recognise where it is as well....in the Pinetum...To me it (tree dressing) seems alien to the...although, good Lord, what do we do at Christmas?...

Julian:

Every year...

Bill:

No, I don't like it. I prefer to be planting something instead of prettifying something which to me is perfect in itself. I don't think you need to do anything to a tree. That's a minor one and I wouldn't actually go out and protest about other people doing it! No, I think you have worked really hard on it...it's a splendid compilation...

Julian:

Great, OK, look thanks ever so much Bill

Bill:

Incidentally you've sent it to various people who do reviews for magazines and so on? I do occasional reviews for Questions magazine. Have you sent on to them. I mean, let me just give you their address. It's a Birmingham

publisher and I normally do environmental reviews so...They used to have a magazine called... I can't remember the name, but they have amalgamated two anyway....

Tape-recorder switched off.

2 Interview with Helen Knowles, Humanities Coordinator, Sandhurst Junior School, Lewisham, London.

27th February 1996

Julian:

First question, Helen, is what do you understand by the terms native and alien plants?

Helen:

Right, native plants are plants which originated in the environment. They've been there for a long time, they have always been there, they are indigenous to the climate, the place, to the country. Whereas alien plants are plants that have been brought in from outside, by people or by pollution or by being carried there, but they weren't indigenous to begin with.

Julian:

Right, yes, that's my understanding of the terms as well. I think actually alien plants, really are brought in by humans...

Helen:

Yes.

Julian:

And they were not indigenous to the area. So for instance, a plant such as Sycamore which wasn't a natural plant in Britain, has been brought in...though I don't know exactly when. Do you use the terms native and alien plants in your lessons?

Helen:

I have done with the year 6 children, but I'm teaching year 3 at the moment, so we haven't, but we've talked about habitats, and ecology, but we haven't gone into those kind of terms.

Julian:

Do you think that the terms are useful educationally or not?

Helen:

Well yes, I think they probably are because something like alien, they know what that is, for them it's the science-fiction type thing, but they know it's something that comes from another place. So, yes, I think, yes. Native, I'm not so sure, I think that's a more difficult concept, perhaps, it's not a word they are so familiar with.

Julian:

Do you think there is a problem if, say, you know, I know the concept of the alien is a very real concept for kids, isn't it, space and all that you know, but if kids see something that shouldn't be there if you like, is there any danger with policies...the school or the council has on..multiculturalism?

Helen:

Yes, absolutely, because you've got this idea, you know, that certain things or even people belong in places, and other people have come from outside. Yes, there could be problems, if it wasn't handled sensitively.

Julian:

It's about the handling?

Helen:

It's about awareness, isn't it?

Julian:

It's just that you see, some of the quotes I have managed to find for the research...and these are quotes from newspapers and popular things, they talk about alien invasions and brutal aliens, you know, which terrorise the native plants or.., you know, it's almost sexual metaphor...

Helen:

And this insect thing that is on at the moment...

Julian:

Oh yes

Helen:

"Alien nation", and I always think that is a connection..

Julian:

That's right. And when you start talking with kids about what should be there and what shouldn't be there...I suppose I'm thinking back to my childhood and how I would have felt...Maybe I'm too sensitive or what ever, but I suppose there is an issue. One of the things that we've done in the book is trying to provide quite a lot of historical information. The historical information in the book covers the Key Stage 2 historical periods. I've noticed you're doing an exhibition on the Tudors. Is there anything in this book that would be of use to you or...

Helen:

Yes. Well, I specifically asked the teachers who have been doing the Tudors, would they, you know, find this book useful and they said yes...a lot of the work. I think you've got some examples, haven't you, in your activities, the herbal stuff especially, the alchemy... not alchemy, what's the word?

Julian:

Medicine?

Helen:

Yes, medicine and all that business, certainly they touched on it. So, yes, they've used ideas for that.

Julian:

Before you read the book, were you aware of any of the links, or as many links between plants and history?

Helen:

Probably not consciously. I suppose if I had really thought about it...I'm probably more aware than some of the teachers since I have done some work outside, teaching environmental education. So I'm probably a bit more tuned in to it than they might be, but I have pointed it out to them. Yes, but certainly it has given me lots of more ideas. I like the idea of the reeds around the top of the columns, the Egyptians, that was a nice thing to bring in arts...the Greeks used the lilies and the wall paintings and everything.

Julian:

I suppose what we're trying to say there is that plants and history and culture are so inextricably linked...

Helen:

We've been looking at how they picked olives. It hasn't changed. It's still how it was on the Greek pots..

Julian:

Yes, exactly. One other difference that I make clear in the book is that there are environmental and ecological differences between urban and rural areas. Can you say anything about those...I know you're an urban teacher, aren't you, but there is one particular experiment called "Weather watch" where we get kids to look at the early evening weather, and what you notice in London is that temperatures in central London are always 2 or 3 degrees higher, you know,...do you make that difference between..

Helen:

Well, actually we are doing the weather at the moment, as a year long study so we can see the seasonal changes as well. And because I am from South Yorkshire, and I pop up home quite a lot, I do say to them...I said to them yesterday in fact, when I came back, in the city how much warmer it is and why did they think it is warmer? They will say because it's more people. And yes, in a way that's what it's all coming from. So yes, we have talked about it how the city has it's own habitats and the countryside is different.

Julian:

Again, before you read the book, were you quite as aware of these great differences...

Helen:

No, I think probably looking through here, as I say, it does, it brings things to mind. You think, oh yes of course, you know it is there and we know it, but it reminds you of it.

Julian:

Right. I suppose it is the same with a lot of resources, isn't it, we actually know a lot more than we...

Helen:

Yes, and as a teacher you do. You have all this information, but often you need something just to make it easy to facilitate, to give you the idea, because we can't be thinking of new things off your head all the time, you need something to give the idea, and think "oh yeah, I can do such and such".

Julian:

In the book, we sort of mention this thing called a cultural garden and I remember, actually, in your initial review of the book (Phase IIb), you said: 'it's the first resource I've seen that mentions a cultural garden', so obviously you hadn't heard of them before. Can you tell me what you understand by the notion of a cultural garden?

Helen:

Well I would... assume that a cultural garden would be plants from all parts of the world that would obviously grow here, and that you could use as a resource for art or history or science or whatever or just to go and have a look and talk about and then you could use it to talk about habitat and that kind of thing. So yes to me... I'm hoping that when... we are supposed to be having our classroom knocked down in the playground, the old asbestos ones, and we are supposed to having a new two storey extension built over here, there will be some more room out here. We've got a garden, so I was thinking it would be nice, as part of our improvement we could have some kind of multicultural...

Julian:

Just on that, Mike Prime is a wonderful source, he goes around the world collecting stuff and before you spend any money, go and see Mike and he'll pot stuff on for you, make sure you do that.

Helen:

Yes, because I just think it would be a nice thing to have...

Julian:

It would. I mean, the other...you have given a very curriculum centred view... but... quite rightly...the other side of it is a more spiritual or what ever... it's a little bit of your school life that says we are a muticultural school, this is a little bit of the world.

Helen:

It's our statement.

Julian:

Yes. That's right. That's another side. Some schools have looked at the religious significance of plants

Helen: Oh yes, absolutely.

Julian:

In all religions, if you look in Islam, in Buddhism, certainly in Hinduism, and Christianity have a notion of paradise, the garden of Eden. Trees, fruits feature very strongly.

Helen:

Yes.

Julian:

Do you, or would you consider growing vegetables from different parts of the world, you know, based on some of the ideas in this book?

Helen:

Yes, I mean, I never thought of it really, I guess you immediately think of plants, you know, adding flowering plants or shrubs, but thinking about it, vegetables are perhaps even more interesting, you know, especially as resources for drawing and art, we are always bringing in gourds or whatever to draw. And it would be quite nice to think that this is something we've grown and then we'll draw it and investigate what's inside. I mean, I suppose it has more implications for care, somebody has got to be prepared to take care of the looking after bit. You could train the children to do it, but then .. and also you've got the element of people coming in destroying it, you know...which we do have a problem with.

Julian:

Sure. I think the thing...

Helen:

We shouldn't be negative...

Julian:

Well, no let's call it realistic...

Helen:

Practical...

Julian:

Well, yes, practical. One of the things we do push in the book is the notion that, you know, through food you've got access to all sorts of issues, I mean

food is a topic at Key Stage 1, you know. I noticed you've got the kitchen here, you know, you could cook the food once it's grown or...I'm sure a lot of parents would know different names of food. Again, that's why we brought in food as a sort of topic there.

Helen:

And a good idea too.

Julian:

Had you ever thought about growing vegetables from different parts of the world?

Helen:

No, as I said, not really no, but having seen it in here (the book), you think, oh yes, that would be quite a nice idea. But as I say, in this garden, if we ever get it off the ground, that's the thing we need to think about.

Julian:

Do you think the book has been effective in informing your attitudes and curriculum practice? Very broad statement but...

Helen:

Erm, yes... yes, I think it has. Yes, I think though, certainly. I mean for me particularly, I've looked through it and thought that, yes, these are things that I have seen before and happening in practical situations, in the study centre I was in (Town Teacher, Newcastle), but never actually put down into an accessible form. I think that's the thing, it is quite easy to read and it is easy for the teachers to flick through and pick out what they think will be useful.

Julian:

OK. Are there any other sort of points you'd like to raise about the book? Any queries or...

Helen:

No. I mean I think it is great. I think it is a really good idea, really useful. When is the next one?

Julian:

I wonder, I wonder!

Helen:

I like these activity sections. They were the bits I found particularly useful with these ideas. And it certainly sparks off other ideas, you know. I particularly like this idea of the trails. There's one I think you've got a habitat one. I think we could build that into our geography work, you know, rather than just going around just looking at the houses, we could actually look at the different habitats...We've got a park down there, gardens, a derelict site...

Julian:

Is it, I mean again, is it...I was brought up through the science route of school... but now I am more interested in the links across the curriculum. When you think of other resources that you've got on urban wildlife, does this give more links across the curriculum?

Helen:

I think, yes, yes. It is one of the few that actually has history in, for sure. You know, as you say, a lot of them are very much orientated on the nature side. I mean, there are a few sort of ecology based textbooks, but then they go into acid rain, the greenhouse effect and all those kinds of things, they are not really just plants. So yes, bringing in the history certainly...

Julian:

That's interesting. One of the things...I've had it reviewed by an expert, a guy at Edinburgh Botanic Gardens, and whilst he wasn't a teacher I think it showed, he said that, you know, "over a third of the book is devoted to historical perspectives, I would have liked to see more on contemporary stuff". It is interesting you bring out the historical bit. I actually think the historical bit is were teachers...it's were...it fits exactly into the Key Stage 2 curriculum, cause we deliberately chose Key Stage 2 historical periods... You feel that's one of it's strengths?

Helen:

I feel it is one of it's strengths, yes. I suppose being the humanities coordinator as well, that the area that's my particular thing anyway, so I would probably notice it more. But when you are planning your history topics and you have to put down something for science say, and there are some big gaps, and what do you do, you can't just do Isaac Newton and gravity, you know, but then you can do herbs or you can crush up flowers and get dyes and you get all this wonderful stuff. And it fills that gap in away, for things and activities you can build around it

Julian:

Good, good. Any other sort of things, other bits...

Helen:

No, no, I mean I think that's... We thought about doing this, the 'dress your own tree' for School Grounds Day. We were going to do it last year, but then we combined it with...we got this new pergola up there. This is a memorial garden; the school was bombed during the second world war and this is the bit that was built on. About 40 children and several staff lost their life so we use it as a sort of memorial garden for those children. So it was actually 50 years so we did that instead. But I think it would be quite nice to do trees, we've got some nice willow trees out there, each year we could have a tree...

Julian:

Yes, and also tree-dressing is a really cross-cultural thing isn't it.

Helen:

Yes. We really wanted a May Pole, but could we find anywhere with a May Pole...

Julian:

I think it would be really difficult...

Helen:

Not in London anyway...

Julian:

Think about getting a totem pole, I mean...I'm a school governor up in Islington where I used to work and we actually got some money from the Council to create a totem pole. Not a totem pole based on Native American ideas, it's an urban totem pole, based on what the kids wanted to show over the year at school....It's really nice, about 15 feet tall and we had a ceremonial to raise it...

Helen:

So who did the carving, did the children or somebody...?

Julian:

Well, we got a guy to work with the children. He found that some of the best kids at the carving were the Bangladeshi kids... it worked really nicely though....

Helen: I'll tell our head, she's a sculptress

Julian:

Thanks ever so much for that. It's really useful. I'll close the interview now.

Tape recorder switched off.

3 Interview with Nick Nickolaides, helper at Winton Primary School, Islington. Nick is due to start a PGCE (primary) in September 1996 at the Institute of Education University of London.

2nd May 1996,

Julian:

Now, Nick, the aim of this interview is for me to try to assess whether this book has influenced your attitudes towards nature in cities really, whether it has informed your attitudes towards it.

Nick:

I think I would say that it hasn't. It's just background information...some of the things on seeds I didn't know...

Julian:

What I'll do, I'll take you through a series of questions. There's chance for you obviously to actually look at the book and also to give me any thoughts you can. Nick, what do you understand by the terms native and alien plants?

Nick:

Native....I think I know the termnative plants are plants that are intrinsic to this country, alien plants have come in in from abroad... commerce. I think that there is actually a section where it says pre-ice age, but I can't remember why, I'd have to go back and look through it.

Julian:

Have a look at it's exact details...

Nick:

Yes, I mean there was a time when there was a land bridge, so those plants were part of British or rather European flora, while alien plants have been collected or brought across.

Julian:

As you are not a teacher at present, you are intending, what I would have said is do you utilise the terms, but I'll just say: would you use the terms native and alien plants in your lessons?

Nick:

It hasn't come up at this point. The classes I'm working in are just starting to do things about growth cycles and stuff. As yet it has not been applicable.

Julian:

Right, but can you think of...are there any issues you think might be...

Nick:

Yes, actually. In terms of say the Romans or the Vikings and stuff, we were talking about food they eat and stuff, and few food we eat now like carrot and tomatoes are not native plants, and they are actually quite recent, yes, those things have come up.

Julian:

Right, OK. Obviously, the book does have a lot of historical information in it, it covers the Key Stage 2 historical periods. You just mentioned the Romans and the Vikings. Can you give me an example of how you might use some of the information in the book in the context of those historical facts?

Nick:

...A lot of the plants were actually brought by the Romans, like garlic...peppers... they actually brought those things with them. You know, you don't just come over and settle down in a little bubble, you certainly co-exists, the foods you use spread out in the general community, the Britons start to use the foods...plants and herbs...

Julian:

So you are saying that in a sense that you are trying to show children that the Roman's didn't just come over as Romans, they came over with a whole load of...

Nick:

Yes, you're bringing your whole cultural baggage and then...

Julian:

And your ecological baggage...

Nick:

Yes, that's part of the same thing...also the idea that you should go abroad, so things spread, so the food you eat spreads. Say you go to York, you eat a certain diet, surely that will seep out into the local community....and it becomes a part, like food that weren't, like potatoes in English food, but it's not, it is only 500 years old, that sort of thing.

Julian:

Before you read the book Nick, assuming you did...

Nick:

I read it from cover to cover, it was a right riveting read!

Julian:

Before you'd read it, were you aware of these great links between plants and history and how they could be used?

Nick:

Not generally, no I mean, generally rather than specifically. I mean I know some of these things, but I wouldn't know specifically when plants were brought. I mean I knew about Culpeper and Tradescant and...that people went looking for things, but not... You don't tend to think about their actual specific use for children, how to apply, it's just as it comes up.

Julian:

Can we say, has the book helped you in that sense?

Nick:

I wouldn't say yes, because... I can't really think of specific things that that has done. If we were actually doing that stage or you know, if it was a term on, they have just started one of the classes I do with plant-cycles and there it would be applicable. I think it is just a question of timing I think, had you asked us in 3 months time or...

Julian:

Sorry Nick, I think we misunderstand each other. What I'm trying to say is not... can you divorce in a sense, what you are doing at present with the kids, I'm trying to say, you know...

Nick:

Will it be useful....?

Julian:

.....has the book increased your awareness of the links between plants and history

Nick:

Yes, Yes....

Julian:

....and how it can be useful, not in relation to where you are in the curriculum at the moment.

Nick:

Yes, I see. Yes, it has.

Julian:

Right, OK. There's another aspect to the book, we try to show the difference in climate between urban and rural areas, there's an activity called weather-watch. Can you tell me anything about these climatic differences?

Nick:

I think...the city is a couple of degrees warmer...ambient kind of heat... so you get slightly greater variety of plants...and also the localised

plants...there was something about how Oxford Ragwort has slowly colonised along the railways, but was very specific to that area.. so..

Julian:

I mean, were you aware, before you read the book, were you aware...

Nick:

No, because I had never really thought about the railway being used for transporting seeds and things like that and the curious thing, I live near the Parkland Walk, which is you know, a railway...

Julian:

Oh, in Islington

Nick:

Yes, though I live in Highgate, the Crouch End area, that's a classic example where something has been used for a specific purpose, and now it has been..not over run, but it has become wild again as such, and there's loads and loads of plants that come from gardens that are now... becoming natural again.

Julian:

Yes, yes. Can you think of ...it isn't a question on my sheet, but it highlights an issue for me, obviously, you know, the Victorians, the railways is a theme that is used in Key Stage 2. Could you use some of these ideas about wildlife moving along railways...

Nick:

As I said...yes, if that came up...it is actually quite interesting, it's something I perhaps hadn't thought about before, that it's a very obvious way seeds are transported. The other one you mention I think, is on the back of sheep and things, you know,... but...yes, sure, cause it means...with the Victorians, apart from the canals, it became a major form of transport, yes.

Julian:

And you'd see that as a way of linking economy and environment...

Nick:

Yes.

Julian:

The book also has a chapter which describes something called a cultural garden.

Nick:

Which I think we're supposed to have (at Winton).

Julian:

Can you tell me what you understand by the term cultural garden?

Nick:

Actually I thought about it a little bit vague, because I think about the way that people now buy plants from all around. I think the idea was that it would be specific plants from specific countries, this is West Indian because it's a particular kind of plant, this is from India or this is from Africa, Chinese or what ever. Now you have the rhododendron from the Himalayans in almost every garden. So I think that it's a good idea that is not...it has changed you know...everybody sees plants... you go to the shop and get a lot of plants without really thinking where they come from.

Julian:

I think the idea behind it you see, was exactly what you are saying. We know we buy these plants from all around the world...

Nick:

...but we don't make the link.....

Julian:

...but we don't actually say to people: these are from...Wouldn't it be nice, because we all know where all the kids are from in the school, to say "hang on, we know about their cultural background or what ever.... somewhere in the school there's a list of languages. Wouldn't it be nice to say the same for plants just to show...

Nick:

I see what you mean, but I think over time it becomes like potatoes. Potatoes are now really European plants, though in truth it never was, you know... chrysanthemum...everybody knows what a chrysanthemum is from China, or is it Japan? Can't remember where it's from...

Julian

The potato?

Nick:

Chrysanthemum.

Julian:

Chrysanthemum. I think it's from China..

Nick:

Chinese....yeah.....and it's a plant we have so it is difficult to re-establish that link again. I suppose in a way yeah, it does make sense, because it makes people think...about ethnic groups and stuff ...like you and I are Yorkshiremen but we are both culturally from a much more diverse background..

Julian:

Yes, and in a sense, the bottom line is culturally we are from Yorkshire aren't we, more than you're Cypriot and my being Ghanian.

Nick:

I mean, ...it's specifically one of the things that Yorkshiremen say: "I'm from Yorkshire, I'm a Yorkshireman", but a lot of people would tend to say it's not so clearly defined, is it...Londoners might say: "I'm a Londoner....perhaps geordies say that "I'm a geordie"...maybe I'm wrong".

Julian:

But our cultural baggage, is, as you say, of the North of England..

Nick:

Yes. There's also the other things, you know, ethnic backgrounds, it's just an underlying complexity

Julian:

But using...yes, it is an underlying complexity, but it is interesting this, because it's very similar to the cultural ecology debate. So, you know, if anybody were to hear us, you and me, speaking on the phone, they would think they are a couple of Yorkshiremen, looking at you they would probably think probably born and bred in Yorkshire.... they wouldn't necessarily with me.

Nick:

Yes, yes. I see.

Julian:

...Similarly with the plants, you see what I'm saying is this. What we are trying to say in cultural ecology is hang on these may seem like plants you've seen in English gardens for centuries, but in actual fact....(Interruption)

Julian:

Just continuing this bit on cultures. I think we are on the same wavelength.

Nick:

I understand, when I think about it. I would say, the actual thing of making it a nice garden is good enough in it's own right. Children like that sort of stuff, they like to see plants grow, I don't think you need ...to add the cultural bit is complicated. I don't think it matters. Just to make a garden of any form is good for the kids.

Julian:

OK. Continuing in that sort of line, would you consider growing vegetables from different parts of the world, based on the ideas in the book?

Nick:

Yes. I mean, yes, most vegetables are flowers. I think the thing with children is...you can say, well alright, you will have an end product in four months time, you might get some tomatoes or something, they want to see something immediately, so you need flowers or something that's going to happen quickly. Yes, I would...

Julian:

I suppose what I'm trying to say is, would you, you know, in a similar way to our discussion about the cultural garden, would you make the links, the fact that these vegetables were from different parts of the world?

Nick:

It is probably actually easier... yes, that would be OK. I mean...It's difficult to say to a child: No, the tomato doesn't come from the shop down the road down the road, you know, mind you, I guess they are used to the fact that it says "product of Israel" you know, "product of Greece" or what ever, you know, they are used to the fact that the products come from abroad.

Julian:

Before you read the book, had you thought about the potential of growing vegetables from different parts of the world?

Nick:

No. I mean I thought about it in terms of ...I mean I understand these things...but no.

Julian:

Right. Do you think you know, in sort of balance, do you think the book has been effective in informing your attitudes and curriculum practice?

Nick:

It has certainly helped, because I mean, it's one of these things where any more information helps. I mean, you just have something more to say. I think, had it been something we specifically were doing, it would have helped a lot. There's a lot of things you can do, that I hadn't thought about...

Julian:

Again, applying the same principle, obviously, I know you are an intending teacher but you are not...

Nick:

.....I haven't got the background....

Julian:

.....there is nothing you've been teaching at present where you've been able to filter in these ideas, but on balance...

Nick:

Yes, I think...I'm sure it would. The only thing that did occur to me, is that it's a long term thing. You are probably talking about a whole year's work, rather than...it's not only a topic for a term. It does take such a long time and there's a lot of things you can do potentially, so you would have to say, alright, we're going to be doing this this year. So it would be better, I would think, to do it with the older ones...because of the need to change things....

Julian:

Right. Finally are there any other sort of things you would like to raise about the book. I know you are from an arts background, any thing, you know...

Nick:

No, I can't think of anything...I think it is difficult to think in terms of it not being just read like an informative thing. I mean I'd...I mean this stuff we were talking about the change in urban ecology after bombing and stuff, it's things that hadn't occurred to me, but once you say it it's obvious...it releases land...yeah...

Julian:

What about things like the Biblical garden, or celebrating, perhaps tree-dressing...

Nick:

Yes...I've heard of those things before but...I had never really thought about them...yes, it is quite interesting stuff...and it has quite a lot of historical antecedents and it goes back a long way...these things, the Doric columns...the Egyptian types of things... I'm sure, children would understand presumably that the Egyptians will have been a theme at some time before...

Julian:

OK. Well, Nick, thanks for looking at it, and as I said, you can keep a copy of it...

Tape recorder switched off.

4 Interview with Wendy Chaffe, Science co-ordinator at Winton School, Islington.

26th April 1996.

Julian:

Wendy, can I ask you what do you understand by the terms native and alien plants?

Wendy:

Native plants are plants that are indigenous to this country and they have always been here, alien plants are plants that have come either from discoverers... or blown, airborne or whatever.

Julian:

OK, and do you use the terms native and alien in your lessons?

Wendy:

I have occasionally when I was a year 6 teacher. I haven't yet with my children, but yes we are going to. For instance we went to Hampton Court on Tuesday. Unfortunately we didn't get chance to do it because Hampton Court is so large, but one of the things I had asked the children to do was to note plants and trees, flowers and bushes that they could see from the labels were not from this country. I used the word country of origin, and said find the country of origin. And then we were going to take this back to school and we'll use this book (People, Plants and Places) to track the ones that supposedly belong here but that are actually from other countries and we'll structure it and use it to go on to the explorers and so on.

Julian:

The book has information on the Key Stage 2 historical periods. Can you give an example of how you might use some of that information?

Wendy:

Yep, certainly. The Tudors and Stuarts...the book actually opened my eyes because I... in the book it tells you that it's a slight misnomer to say all the woods were gone. As you point out, it was a fear, but it wasn't actually happening because there was very good forestry and management going on. That opened my eyes, because I knew they'd used a lot of oak timber for ships and for buildings, and I often wondered whether we'd suffered deforestation then. Now I know different so that way I can inform the children about that, and that was very useful to me.

Julian:

Before you read this book, were you as aware of the links sort of between plants, forest and history as you were after you read the book?

Wendy:

I think I was aware of it, but as I said, it has helped me to learn a bit more than I already thought I knew. It has improved my knowledge which in turn I hope will improve the children's knowledge.

Julian:

One of the things about the book is... what it tries to do is to show the links between climate and plants, and the difference between urban and rural areas...was there anything about that, that you found...

Wendy:

...yes. (looking in the book) This chapter 2, introducing plants in urban areas. I knew about the Oxford Ragwort, I knew....I had read it somewhere and also Bob Gilbert (nature conservation officer, Islington council) did a lot of work with us on urban plants, so I knew about that one and the buddleia, I knew a little bit about buddleia and... this book is really gonna be useful for children, it really is.

Julian:

There is one experiment I was thinking of...(looking in the book)...yes, it is this one: "Weather watch" where it looks at the difference between, you know between urban and rural areas, and there's an experiment here on looking at day-time and night time temperatures in towns and outside. I know it's quite a sort of specialist thing, but did you sort of...were there anything there that you found interesting?

Wendy:

Yes, I'm thinking of using this one because, all though the topic this term is Tudors, I'm going to do a separate science block. It's linked with the Tudors in so much as we are doing herbs and such like. We are also doing living plants and organisms. So all being well and we've got time at the end of the term, then this one, even if we only skate over it, I'm hoping to make them aware of the differences urban and rural climates. We have already talked a bit about it when we've been to Cardfields (LB Islington's field centre in Essex), how it feels nicer here, or it feels colder here than it does in town, and it is not so mucky, so this business about the gaseous pollution and some of the children are fairly aware of it already, but I want to build on what they've got already, providing I get the time, that will help.

Julian:

And you think at Key Stage 2, the kids are aware, you know, and they can feel the differences...

Wendy:

Oh yes, they are very aware. It's just...what they need is to be aware that they can use so called scientific terms in everyday language, because... when I was a kid at school you know, people said: did you do science? And you'd say: no, we did nature study. I want the children to be aware that nature study is science and science doesn't mean white coats and whacky professors all the time, it means what's going on around us and let's find out about it. Again this is going to be really useful to me.

Julian:

One of the bits of the book.... sorry, I just missed a question there. We were talking about the climatic differences between urban and rural areas. Before you'd, sort of used or read this book were you as aware of these differences between urban and rural areas?

Wendy:

Sort of...I wasn't consciously aware of it, I mean...I'm not terribly well travelled anyway. I was aware of the fact that when I went on holiday up the river Thames, it everything was a hell of a lot better there than when I came back to London 'cos of the muck and the filth...But no, probably not as aware as I was after reading the book...

Julian:

So the book has helped you to see the differences?

Wendy:

It has. It has.

Julian:

In the book as well, I mentioned this thing called a cultural garden. Can you tell me what you understand by the notion of a cultural garden?

Wendy:

.Erm...Yes, it is a very good idea. Because again, not only with plants but with everything, it's what we are trying to achieve in this school: knowledge, respect and care; so yes, with a bit of luck you know, after I have had a chat with Jane (the Head), we'll actually get children identifying where these plants come from and then linking them. It might even be a nice idea, if somewhere in the school had a world map where we could take photographs from around the school and link them to the countries..

Julian:

It would be really nice, wouldn't it

Wendy:

It really would be a lovely idea, and again the book gives you some really good ideas for doing that sort of thing.

Julian:

I suppose, when you think about it, we've got kids from all around the world and in our country and in our sort of market gardens and in our horticultural societies we've got plants growing from all over the world, it seem natural to bring them together...

Wendy:

Yes, and I'm pleased you did it. I don't know why but we haven't done it before.

Julian:

Had you actually heard of this thing called cultural garden before you read the book?

Wendy:

...I don't think I had. As far as...I mean, the only thing here that I thought about was the fact that we do tell people where the plants come from and we have got a totem pole, which is a celebration of friendship, and apart from that: no.

Julian:

One of the other sort of things (interruption)...Another thing that the book tries to do is to look at vegetables, because these are things we eat and to try and dispel some of the myths about vegetables.

Wendy:

I'll tell you what I really like about that....

Julian:

Would you consider growing vegetables from different parts of the world, based on the ideas in the book?

Wendy:

I don't see why not, because we have actually grown tomatoes in our school garden, and they turned out so wonderful that we ended up... we had about 50-60 tomatoes, and after they had been thoroughly washed, cook took great delight, cut 'em up and used them in kids salads.

Julian:

So you could actually grow things here and actually eat them as well?

Wendy:

Yes we could. I mean some people, some teachers, not now, but a few years back we had a teacher, she wasn't very happy about the garden, she was thinking about pollution, you know. All you got to do is wash them. I'm liking for a page...(looking in the book)...the one with the different names....

Julian:

Ah yes, it's here. This one.

Wendy:

I like that, I really do like that...

Julian:

Could you just explain what you like about that, that's the one about cosmopolitan vegetables?

Wendy:

Yes. Well if you asked...I mean, if you asked anybody really about cauliflowers, carrots, cabbage, brussels sprouts, tomatoes, cucumbers, spinach, they are not actually going to see just how near some of the other languages are to our own, and how easy it is for us to actually pick up different languages...and use them with the children as a recognition of their language. And I like the 'typical English vegetables' question-mark, because...yes, because everybody would think well...yes, they're all English, but because of the book, I wasn't sure which was which. It is very useful and I like it. I like the religious and biblical gardens.

Julian:

The religious, biblical gardens? What is it you like about that?

Wendy:

It's still a cultural garden but also a religious garden...St John's wort...I mean the buddleia is prime example, not only is it talking about a particular person (Bishop Buddle), but it is also encouraging the butterflies. ..It is absolutely wonderful to link all these things in. It's really good.

Julian:

I suppose yes, you know, behind the naming of St John's wort is a story, behind the name buddleia is the story of bishop Buddle. You could use those stories as being sort of symbolic and all sorts of things... And before you read this book had you thought about these vegetables from around the world in the same way...?

Wendy:

No, to be perfectly honest ..no I hadn't. I mean I was aware of the fact, but I hadn't thought of it as a teaching-learning process. I hadn't given it that much thought.

Julian:

Do you think this book, you know, has been effective in informing you attitudes towards plants?

Wendy:

Yes.

Julian:

Has it given you a new insight?

Wendy:

Yes, it has definitely.

Julian:

You explained some of these ways. You talked about cultural garden and the language use around cosmopolitan vegetables, oh, and the oaks in Tudor times. Are there any other things that have sort of struck you, as being maybe things you knew, but what you said to me, you said you'd thought of some of the ideas you know, but not in an educational sense?

Wendy:

That's right...I've seen...again I can't remember where, this idea about dressing trees as and old tradition in other countries as well as in England. I don't know how well we will be able to do it, but it's something that I like the look of...This I like (leafing through book), plants and mythology, as well...it's...the things are in your head and and you know they're there and you just drop them in occasionally as you're doing another lesson, and it is frustrating, because you say something to a child and then you think oh, have I named the right plant, you know like deadly nightshade. I always thought that it looked like a particular plant. I've since discovered that what I thought was deadly nightshade is actually cow-parsley. But, in the book because you put all these different plants and related medicine and cures and myths and mythology to them, if I had this book when I said a particular thing to a child, I could say hold on I'll go and find out, and I could have said: "Wait a minute. Hold on. I'll go and find out". And then I could have said "I got it wrong, or yes, I got it right. Here it is". So again, I intend to use this book a lot.

Julian:

As science coordinator, would you...how much say do you have in what other teachers do, I mean, is your role...

Wendy:

It's an advisory...informative and advisory and as facilitator. But I intend to recommend the book to everybody because it's, I mean...the appearances of the pollen grains, the microscopic appearances, the early plant introductions, things that you think have always been here ...and the Roman one would have been particular useful...

Julian:

Which one was that? The Roman diet?

Wendy:

Yes, the Roman diet and all this bit about the Romans and the Anglo Saxons because they're all areas as you know, obviously, that we cover.I've heard about this one but I haven't done it yet, "the sticky seed walk", we are going to try that one ever so soon in long grass up the road, if I'd known about this one when we went to Carfields (LB Islington field centre in Essex), we would have done it, if I'd had the book.

Julian:

One criticism of the book that I have had from a reviewer was that it concentrates too much on the historical perspective rather than the contemporary. Do you have a view on that?

Wendy:

I do not agree. I think the history of the plants is as valid and as valuable as the history we do, whether we're doing history world wide, whether we are discussing Bangladesh or whether we are discussing the British Empire or the independence of America. What ever we are discussing, where ever they were, they needed plants, either to survive, cure their ills...or to do their houses. No, I don't think that. The only criticism I would have is that, I would have liked a bit more about the Tudors, because there are lots of things I think I know...I can confirm them in other books, but when I saw this and got quite excited, and thought oh great, but it (the section on the Tudors) stopped fairly quickly and went on into the British Empire and the Victorians, and the only Tudor activity you've got, is the tree-trail. I know you've got some back here about plant gels and creams and things. It would have been really nice if, in here, in your activities you could have done some sort of Tudor remedial cure for the kids to test, to find out. But that's the only criticism I've got.

Julian:

I noticed you ...when I said the Tudors and Stuarts, you said the Tudors... I'm out of date obviously, but have we dropped the term Stuarts now?

Wendy:

What has happened now is that teachers have realised now with the National Curriculum, and you can't possibly teach the Tudors and the Stuarts in one term, and if you've got to do in one term, you can't fit it all in and I don't know how many other teachers feel the way i do, but I don't think it is fair...to surface skim those two particular crucial periods, whether it is because you want to make sure that the children understand about slavery or the voyages of discovery, because you've got to see that what we see now as wrong, they didn't necessarily see it as wrong, you need time to make children understand that, and to talk about the other countries that were discovering things, you need time compare what, you know, to get kids to understand that ...because we're talking about here, it doesn't mean that nothing happened there, so it not just the Tudors in England, it isn't titled Tudor England, it's the Tudors. We've got to go world-wide, and we don't have time to do the lot, so we tend now not to do the Stuarts as well, which is a shame.

Julian:

I see. Finally are there any other points you'd like to raise. Obviously I have given you a series of questions, any other sort of things you liked/disliked, like to raise?

Wendy:

There are two things I like very much. I like the resources on cultural ecology. I like the way there's all these addresses...

Julian:

Could you tell me what the addresses are of?

Wendy:

Well, botanic gardens, horticultural centres and books and other publications that we can use, very, very useful. The plants for a cultural garden, I mean it doesn't have to be strictly for a cultural garden you can use it for reference, the Latin names, the common names, the types of flowers, the colours, flowering periods, whether they are aromatic, what their wildlife value is...that was a wonderful source of information, even if you only use it as a reference, because it covers Africa, South America, Asia, China, the Caucasus, the Himalayas, India and Sri Lanka, the Mediterranean...Italy and Sicily, and Portugal and Spain and I think that is valuable, it really is. And I can't find anything to criticise other than what I said I'd liked a little bit more about the Tudors, and maybe, I know it is expensive to do it, but it would be nice to have a few more colour pictures. But the contents of the book and the balanced way you have done it, I like it. I like it very much...There was one thing that did confuse me...

Julian:

That's the diagram on generalised terrestrial succession...

Wendy:

Yes.

Julian:

What was it that confused you about it?

Wendy:

What confused me was...my own inadequacy. I didn't look at it properly and then I realised it was travelling a line of progression and once I'd understood that then it was fine. It is not a criticism of you, that was me...I can't fault it.

Julian:

Some of the early stuff is not necessarily stuff that is directly relevant relevant to the Key Stage 2 curriculum, you know, I think some of the bits for instance on the ice-age. Obviously the ice-ages aren't a feature of it, but were there bits in this that you could somehow bring in to the curriculum at Key Stage 2?

Wendy:

Oh yes, definitely, because I mean if you're doing a block on green plants as organisms, you can quite easily say to children "how long have plants been around?". "Were there plants in the ice-age?". The children say: "No". You say, "let's find out, let's go and have a look at the book and let's see what was happening then", and to show them that people have been around a long time, plants have been around much longer. There's always a way you can put it in (the ice ages), especially if you are doing a specific topic on...even if you are doing dinosaurs...the dinosaurs were vegetarians.. so you go back to the ice age and then you move on and move on, so yes, it does come in on Key Stage 1 or 2...For Key Stage 1 it is obviously a teacher's

reference book, but at Key Stage 2 quite a few of the kids in my year 5 and I should thin the majority at year 6 could actually look at this themselves...They'd need help obviously, first we'd need to tak about it. But this one, the activity for scattering seeds. I know that I could discuss this with some of my children. I'd say "Have a look round it, tell me what you're going to need, tell me which bits you are going to do and how you're going to find out". They will be able to get what they need from here. So it can be used as a classroom book as well as a teacher resource book...

Julian:

Thank you very much for you time Wendy, and I hope the book will be of some use to you.

Tape recorder switched off.

5 Interview with Dawn Sanders, Education Officer at Chelsea Physic Garden, and part-time teacher at the Environmental Curriculum Service run by the London Borough of Greenwich.

May 3rd 1996.

Julian:

First Dawn, can you tell me what you understand by the terms native and alien plants?

Dawn:

Well I understand it to be that the native plants are ones that, to my mind have been here a really long time usually to do with the Channel appearing.....I am not particularly fond of these terms that's what I understand them to be.....and then alien plants coming in, travellers coming in at a later date.

Julian:

OK. Do you use the terms native and alien plants in your lessons or with school groups?

Dawn:

No, I don't.

Julian:

Any reason why you don't use the terms?

Dawn:

I'm not sure if they do any favours for either the plants or the people listening. So I just don't think they are valid terms really.

Julian:

Could you see why some other teachers don't use them as well? What I'm trying to say is that: do you think there is a groundswell of opinion that maybe these are not appropriate terms?

Dawn:

I think there is quite a few of us who teach environmental education who think that the words 'native' and 'alien' are.....they have undercurrents of mis-interpretation, and in modern Britain I don't think they have a place.

Julian:

The historical information in "People, Plants and Places" covers the Key Stage 2, historical periods, I appreciate you are not full-time classroom teacher, but can you give me an example of how you might use this information?

Dawn:

Well, being a botanical garden and being a very historical place, and having a high profile Victorian aspect, I do use some of the stories in the book, especially the one about the fig trees and the steel works and changes, and that whole concept of historical change, and what happens to plants because of that, and the plant journeys, and also how Victorian culture again impacted on plants. So for me the book, the historical side of the book is actually very useful and very important.

Julian:

One criticism of the book has been that it perhaps over emphasises the historical aspects and quite a few of the Key Stage 2 teachers have countered this criticism. Do you think it is a fair criticism?

Dawn:

I think in terms of the book, the historical contents works well and I see the need for it to be there, and I have found it very useful, and then other people might have wanted more of a book that looked at contemporary cultural gardens, but then I think that is another book, maybe.

Julian:

And before you read the book, were you aware of the links between plants and history, and how they could be used at Key Stage 2?

Dawn:

Yes, because I did cultural studies at college and ecology, so I have always been interested in how people and plants and the historical side of things interact.

Julian:

One of the aspects of the book is..well, it concentrates on looking at the climatic ie environmental and ecological differences between urban and rural areas. Can you tell me anything about these?

Dawn:

We are a classic example in Chelsea because we are surrounded by a brick wall and brick buildings and we're in London, we're on average 2 degrees warmer than anywhere else in Britain, and since the 17th century there has been studies done here on tenderness of plants and the ability of different plants to survive. So I am very aware of ecology and climate, especially in urban areas.

Julian:

Right, actually the next question was before you had read the book, were you aware of the environmental and ecological differences between urban and rural areas? Obviously you are quite aware of micro-climatic differences. People, Plants and Places also describes something called a cultural garden. Can you tell me what you understand by the term a cultural garden?

Dawn:

My understanding of it, is it that you have plants that reflect the cultures of the people who create the garden and also the communities around the garden...

Julian:

(laughing) That is pretty much what I understand as well, Dawn. Had you heard of cultural gardens before you read the book?

Dawn:

I had, because I had heard you speak about it.

Julian:

Right, OK. Another aspect of the book, and some people my argue, that it's not strictly ecology, is about growing different vegetables in the school grounds. Now, if you were a teacher, and if you were a teacher in a school rather than being based a resource like Chelsea Physic Garden, would you consider growing vegetables from different parts of the world, based on some of the ideas?

Dawn:

Oh yes, definitely. There are some very good books on that as well, like the Pip book, that looks at different things you can grow from pips, and lots of different vegetables are actually very easy to grow, for instance some Asian vegetables...

Julian:

Can you see that... would you think that schools in London, certainly in multi-cultural areas, would benefit from growing, rather than just growing carrots or what ever I used to grow when I was at school...

Dawn:

Oh yeah. I think it is really important to reaffirm different cultures and using plants to give people a sense of place, it's a mixture of things.

Julian:

And, had you ever thought of growing these vegetables before you read the book?

Dawn:

Yes, I did, because I worked on a horticultural city farm whose brief was to grow a diverse range of vegetables that reflected the groups in the area.

Julian:

Just going back to those days, it's 7 or 8 years ago, isn't it? Is there evidence that different cultures were interested in growing things that had cultural significance to them?

Dawn:

Yes, it was amazing actually, we had a guy whose roots were Bangladeshi, and he, actually we gave him an area, and he just grew loads of different things. And then we grew lots of Vietnamese and Cypriot foods, and people would come and take them away and cook a meal and bring it back to share the meal with us, so it was very much a sense that ...of communication, and sharing, and affirmation about the plants.... they were very good facilitators for spreading different horticultural and cultural messages.

Julian:

Do you think that, I know whilst the city farm movement has really pioneered...permaculture and whatever. Do you think we are anywhere near maximising the schools potentials for this kind of work, or do you think it is just the beginning?

Dawn:

I think it is just the beginning. Some of the problem is space. We have just come across some small glass-houses that are shaped like pyramids. They are accessible to children and they can be moved indoors, so if there is a risk of vandalism at night, they can actually...they're lightweight....you can take them indoors. So we are encouraging schools to get those to develop growing spaces. And because they set up an even warmer micro-climate than generally London has, it provides a environment to grow a diverse range of edibles and ornamentals from all around the world.

Julian:

What role do you think, I mean, you work at a botanic garden now, what sort of role can you see for places like your own,..what role can you see in the future for botanic gardens in pushing this kind of work that we are talking about?

Dawn:

I think botanic gardens have always, erm... shown the diversity of plants in the world and also shown the cultural importance of plants, and the fact that those plants can be grown here. I think that mixture of things can support teachers to diversify their concepts of their school garden.

Julian:

Do you think there has always been...well, let's re-phrase that...What do you think the relative influence has been in schools, you know... when you look at the role and influence, when you look at ecologists, especially those in urban situations, in urban wildlife groups and say, people like yourself, from the botanic garden side. Who has had more influence in schools?

Dawn:

I think initially it was wildlife trusts, because we tended to work within our walls, but now there's a much stronger outreach movement in botanic gardens and also we are networking. The last couple of years we have built quite strong networks. And I think ecologists have shifted a bit as well.

Julian:

In what way(s) do you think ecologists are shifting?

Dawn:

Well, I think they carried a perspective of a singular image of the countryside, and Britain has historically been a mosaic of habitats created by interactions with people, and I think they forgot that dynamic for a while and tried to create a static slice of life and they are just coming around to the fact that maybe the dynamism and interactions, particularly that you get in urban ecological set ups are interesting and have their own value.

Julian:

I mean, the urban wildlife groups set, well started, roughly around 1980. What do you think have been the main influences in changing their focus, shifting them to value the urban, not just hanker after, you know, encapsulated countryside?

Dawn:

I think just statistics, the fact that..is it something like 9/10ths of the population are urban, and...the message needs to go far and wide and you can't just keep taking the message about conserving if you don't reflect the needs of the urban populations.

Julian:

So, they have been learnt a sort of lesson from local communities and what ever. OK, do you think that the book has been effective in informing your attitudes and your practice in the curriculum?

Dawn:

It has, 'cause it has given me some lovely stories that I can use, and I'm very in to using stories to teach children, so there are some, I mean particularly the fig story and the steel works I use quite a lot. And so in that respect it has given me more to build on.

Julian:

Are there any other points about the book you would like to raise that I haven't sort of covered in this interview, any other things you would like to say?

Dawn:

I think maybe if there had been something a bit more about how botanic gardens and wildlife trusts can work together. I still think there's a problem that we are not working together. I have networked with lots of organisations, but it is still very hard to get into the sort of wildlife trust section. As soon as you say "Botanic gardens" they tend to...it's a different field.

Julian:

There's a quote that I have got in my thesis from Oliver Gilbert who's...he seems to be the natural bridge between ecologists and botanical gardens, he is professor of landscape design at Sheffield and one of his books is an excellent book on urban ecology, and he talks about the garden...the domestic garden as being sort of not viewed as pukka by ecologists yet, you know some old gardens, according to research, you know, some old Victorian gardens are according to research wonderful ecological reserves...

Dawn:

Victorian cemeteries are amazing places.

Julian:

Yes, I mean, is there anything...do you know of any initiatives to try to build links between you know, horticulturalists and botanic gardens people on the one hand and the sort of ecologists on the other, because it does seem there's still a sort of divide, people like myself talking about this more enlightened view, but largely in educational terms, still the technical people at the background...one thing Dawn, for instance, I found that 53% of urban wildlife groups had policies on native and alien plants and yet only 37 % had educational policies, this in a movement which were supposed to be an educational movement... Is that not maybe a gulf that can't be bridged

Dawn:

I think they have to really look at their commitments to education, but then something like the UK action-plan on bio-diversity with it's emphasis, I mean...the whole of several chapters focuses on education and working in partnership, I think there's got to be a shift. It stresses how important botanic gardens are. Hopefully, there will be some links.

Julian:

Yes, one suggestion I made at Utrecht in '91 was that cultural gardens in school grounds could act as satellites for botanic gardens and I mean you know about the Southwark garden...

Dawn:

Yes, some of their people came to us and looked around and we talked to them at length about plants.

Julian:

I mean, you could almost have a twinning, couldn't you, a teaming up, is anybody looking at that seriously, do you think..or is it still...?

Dawn:

I think, it is something we would like to do. The trouble is we're all so...I mean, botanic gardens usually only have one or two people doing education and the range of things that we have to do within that precludes some outside links, but I think in the end there will be, we hope to keep our links with Southwark...it's time and personel really.

Julian:

Exactly. OK Dawn, thank you very much, it was very useful.

Tape recorder switched off

