

## **Conservation – Is It Working?**

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I normally prefer only to talk on subjects I know a good deal about, but for this lecture I am aiming at a broad and holistic view of conservation, arguing from the familiar and from personal experience beyond to a more global context. It ends with an unsettling message, not a positive one. It may irritate many of you, but preparing this superficial overview was a life-changing experience for me, which I hope to share with you.

### **What is Conservation ?**

What do we mean by Conservation? The Oxford English Dictionary defines it as “the preservation of the environment, especially of natural resources”. Most people assume Conservation to be concerned with environmental quality, landscape, heritage and biodiversity. In this talk I am unashamedly focusing on biodiversity, driven and supported by environmental quality, so, with apologies to Strawberry Hill Gothic I am ignoring architectural heritage in this talk.

What does Biodiversity Conservation aim to do? I think there are at least four levels. First, we often try very hard to prevent charismatic species going extinct. The Arabian Oryx, for example, was shot and eaten to extinction in the wild, but, thanks to a captive breeding program in Britain, is being successfully reintroduced in Arabia.

Another example is the Coco de Mer, quite the rudest of all plants. It has the biggest seed in the world, resembling a significant part of the female anatomy, while its flowering stalk inescapably recalls a characteristic part of the male anatomy. For that reason alone, it is important that the Coco de Mer is preserved, but its natural habitat is just a handful of small valleys on two tiny islands in the Seychelles, under pressure from tourism and development. Only extreme conservation measures are preserving it in the wild.

The second level of conservation is managing special sites to keep species alive within an approximation of their natural habitat. This is the main role of conservation in overcrowded Britain where practically no ‘natural habitat’ survives. We try desperately to maintain as many species as we can within our highly pressured countryside. I used to collect the Chalkhill Blue Butterfly for example, from many downland sites in my youth, but it now has a very restricted distribution. You may find it, locally, in the Aston Rowant Nature Reserve, where it is surviving because of a lot of money being spent on there on active conservation management.

The third level of Biodiversity Conservation is to keep bits of natural habitat functioning properly without our intervention. Areas of land are set aside where natural processes like predation, succession and random events keep things going. The Bialowieski National Park in Poland is an area of enormous conservation importance, covering 105 square kilometres, about the size of Greater Oxford. People are prevented from entering parts of this modest reserve, where there are still viable populations of European bison, European elk, wolves, lynx, beaver and the wild Boar, all long extinct in Britain. In Bialowieski, without our intervention, they still rub along in their own environment, in pretty much the same way they have since the end of the last Ice Age. There are unfortunately no examples like Bialowieski in Britain.

I define the fourth Biodiversity Conservation level as “keeping the biological and environmental processes of the planet functioning naturally in sustainable coexistence with humans” and argue that this is what we must be aiming at. If they are not functioning naturally, they will not be functioning properly or sustainably. If it’s not a sustainable coexistence, then either the natural world or the human race (or both) are heading for disaster.

We can also classify conservation in terms of the scale on which it operates, ranging from local, through regional and up to global efforts, and as short-term, medium and long term projects. All projects should of course be for ever, because if we are really into sustainability, it can have no end. In practice most local projects tend to be short term; national projects tend to be medium term (running at least until the next general election) and global projects have to be long term.

So is conservation working? Yes, at least in some areas. At the local and short-term level community action projects can be very successful. With the least encouragement, people will take responsibility for solving problems in their own area, going out and getting mucky. Locally, Boundary Brook Nature Reserve in Oxford was created and is managed by local residents on the site of redundant allotments, and has won many awards.

My own organisation, Pond Conservation, designed a group of ponds within an area of 2 hectares, by Farmoor Reservoir on land owned by Thames Water. They started as nothing more than holes in the ground, and no plants or animals were added, but within five years these ponds contained 20% of all British freshwater invertebrate and plant species. One pond on the site is the most biodiverse in Oxfordshire. A good example of a short-term local conservation success.

What about regional and longer-term successes? The skilful local reintroduction of the red kite has been a huge success. I’ve seen 25 in the air simultaneously, and nearly crashed the car. The kite population is now sustainable, needing no further help from us beyond protection from shooting and poisoning. On Otmoor, the RSPB bought up large tracts of land and are restoring pre-war wet-land habitats. Already there are breeding populations of pochard, tufted duck, common tern, ringed plover, little ringed plover, great crested grebe and the really

scarce corncrake. Both these are regional, medium term successes, but both were costly in money and hard work.

The elimination of smoke pollution has been a longer term success. Although undertaken for human health, it has had an excellent impact on conservation. Two hundred years ago, the native Peppered Moth was whitish with freckled black markings, hiding it from predators against lichen-covered tree-trunks. During the 19<sup>th</sup> and early 20<sup>th</sup> centuries, the moth evolved a sooty black “melanistic” form, making the variants invisible against blackened, industrially polluted bark, becoming a textbook example of natural selection in action. As a boy, collecting moths in my urban garden, I saw only the melanistic form, and no lichens. Now lichens cover the apple tree in my garden, and the black variety of the Peppered Moth has more or less disappeared in Britain.

I wish I had been involved in the Wildlife and Countryside Act of 1981, in its time a revolutionary piece of legislation, creating the whole legal framework for the conservation of Great Britain. It set up National Parks, penalties for endangering rare species, and Sites of Special Scientific Interest [S.S.S.I.]. These flagships of British Conservation protect about 7% of Britain’s surface area. They are a success, but not an unqualified success.

### **Land use and wildlife in Britain**

Let’s ask the question again – Is conservation working in Britain? American and Russian ecologists find our efforts almost risible. They point out that there are no remotely natural areas left in Britain, and conservation is carried out on the fringes of farmland and suburbia, in the few isolated decent bits of countryside left. The EU classifies all southern England as suburbia !

So how is land actually used in England?

29% is under intensive arable management for crops.

35% is intensive agricultural grassland, “improved” for productivity.

6% is also used for agriculture with polytunnels, greenhouses and farmyards.

9% is woodlands, mainly heavily exploited non-native conifer plantations.

11% is covered in concrete and buildings.

1% is inland water including reservoirs.

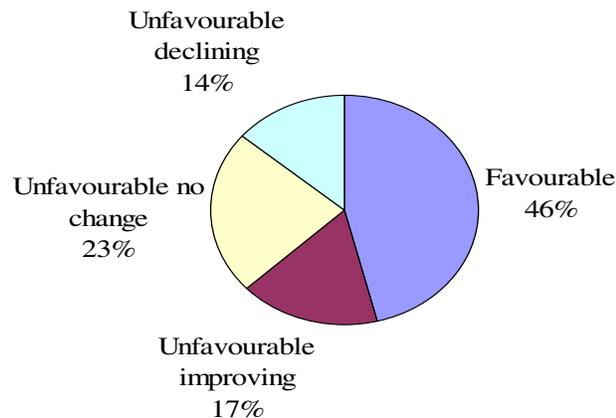
9% is left and includes airports, roads, parks and habitats managed for nature.

So over 90% of land is utilized primarily for meeting human needs, with biodiversity a very poor second or third, and very little land set aside for conservation.

If we look at protected areas, we find that 15% of Britain is within Areas of Outstanding Natural Beauty, but this only means that it’s a little more difficult to get planning permission. The top conservation Sites of Special Scientific Interest (SS.S.I.) occupy 7%, but most are surrounded and hemmed in by intensively managed farmland. National Nature Reserves like Aston Rowant, at 0.4%, are fairly well protected. Local Nature Reserves such as Boundary Brook, occupy only

0.3% of the land cover, and many are designated more for their educational, social and amenity value than for any special species or habitats. Only a little land is dedicated solely to nature, so what state is it in?

The 2004 review of S.S.S.I's by English Nature reported a worrying pattern of their condition. Remember, these are supposed to be the very top conservation sites, on which we rely for maintaining our native flora and fauna.



More than half are in unfavourable condition, and only a third of these are improving under current management. So what are we doing about this? We are spending £4 million a year on improving the condition of SSSIs, but £2 million more is spent providing adjacent car parks so that people can visit them, disturbing wildlife and even letting their dogs run loose. It looks suspiciously like a downgrading of real conservation investment, and diversion of government money to votes-earning access, amenity and recreation.

Birds are the most popular and best supported part of Britain's biodiversity. Even here there have been some startling declines, especially in the numbers of farmland birds, which have been surveyed for many years. An index value of 100 was set in 1970, and by 2002 had declined to 55. Generalist farm birds, like jackdaw and wood pigeon, which are also found in urban areas, have declined little in comparison with specialists such as corn-bunting, skylark, turtle-dove and grey partridge. Enlightened farmers have now halted the decline, but there are still only half the numbers of birds on farms than there used to be. The problem lies in the intensification of land management, leaving very little food and habitat for the birds.

Flower-rich meadows were common in the 1950's, now only 2% are left. The rest have been ploughed up and reseeded, put into arable or built on. Recent statistics - 25 years after the Wildlife and Countryside Act - show that 545 species of British plants (19.6%) are now 'critically endangered', 'endangered' or 'vulnerable to extinction'. 71% of British butterfly species have declined since 1985, and two - the Large Blue and the Large Tortoiseshell - are now extinct in the UK. Bumblebee numbers have dropped by 60% since 1970; frogs are now present in only 1 out of 6 ponds, and toads seem to be in meltdown. Country ponds contain

only half the plant species of ponds in protected areas, largely because of agricultural pollution. European eels are probably headed for extinction. Their population is about 1% of what it was 15 years ago, and we don't know why.

So conservation in Britain is failing. We are not even maintaining the situation we had when the Wildlife and Countryside Act was passed in 1981. I feel it is partly because we have focused funds and effort on the unusual and the rare, like the Natterjack Toad. The Natterjack is abundant in Europe, yet we spend a fortune on the few British populations, while common frogs are left to decline. We have consistently put most investment into the rarities, while neglecting the common species that make the countryside function.

The conservation of British nature is not entirely confined to 7% of land, since money going to farmers for agri-environment measures is intended to contribute by improving farmland for wildlife. But the facts speak for themselves: we have barely halted the decline in iconic farmland bird species, while nitrogen and phosphorus are leaching off agricultural land into ponds and watercourses and degrading their ecology. The large area of land managed for human purposes is overwhelming the little bits left for conservation.

### **The global picture.**

Are we keeping “biological and environmental processes functioning naturally and in sustainable co-existence with humans”? If we aren't, then humans are not in a sustainable balance with nature, and the environment and the processes that maintain our atmosphere and ecosystem are going down the pan. In that case so are we.

Are we in a sustainable balance with nature? Surveys suggest there are now fewer than 3 million km<sup>2</sup> of rain forest left, less than half the original 7 million km<sup>2</sup>. The estimated rate of loss in 1994 was 155,000 km<sup>2</sup> per year, about three quarters of the area of Britain. This annual rate of loss is about 5%, so we will lose the rest in 15 to 30 years.

Why worry ? Simply because rain forests are the most complex and diverse ecosystems on land. One study counted 750 different species of trees, 125 different species of mammals, 400 different species of birds and 100 species of reptiles, in just 46 km<sup>2</sup> (16.5 square miles) of Brazilian forest. We have only about 35 native tree species in all of Britain. A single tree in the Peruvian rain forest can host more ant species than we have in the whole UK. Rain forests are biodiversity hot spots; losing them means losing an enormous proportion of the planet's diversity.

We are losing rain forests though industrial scale logging, and clearing for cash-crop agriculture and cattle-raising, funded by overseas investment. There are also indirect causes: hydroelectric dams; mining, oil and gas production; and especially cutting roads to service all this industry, which divides the rain forest up and opens it to even more depredation.

There is a similar story in the sea, where coral reefs harbour an equal biodiversity to rain forests. Within the last 20 years, they have declined frighteningly. A sequence of photos of a reef in Florida show in 1975 a huge stand

of the important reef constructing coral, *Acropora palmata*. By 1985 it was moribund, but with some structure visible. By 1995 even the structure had completely broken down. Coral reefs are in decline wherever large numbers of people are living close by on the coast, and good reefs are now largely limited to small off-shore islands.

The causes are mainly indirect, including run-off of sediment, fertilizer and sewage, encouraging the growth of competing algae and seaweeds. Ocean warming, probably linked to climate change, causes coral bleaching. Affected corals lose their symbiotic algae, go white and may die. There are also direct causes of coral decline from destructive fishing techniques, such as poisons, explosives or simply smashing coral to reach fish.

New observations reveal that sea-water is absorbing extra CO<sub>2</sub> from the enriched atmosphere and becoming more acidic. Oceanic acidity has fallen only slightly so far, from pH 8.2 to 8.1, (low pH values indicate acidity), by 2300 it may go as low as 7.4. Corals have a calcium carbonate skeleton, which dissolves in acid seawater, so this could spell the complete extermination of reefs.

All the global biodiversity pointers tell the same worrying story. The International Union for the Conservation of Nature (IUCN) has released the following estimates of the numbers and percentages of species that are globally vulnerable, threatened, or critically endangered:

<u>Species</u>	<u>No. Endangered</u>	<u>Percent</u>
Higher plants	34,000	13%
Mammals	1,100	24%
Birds	1,100	12%
Freshwater fish	2,000	20%
Reptiles	250	20%
Amphibians	125	25%

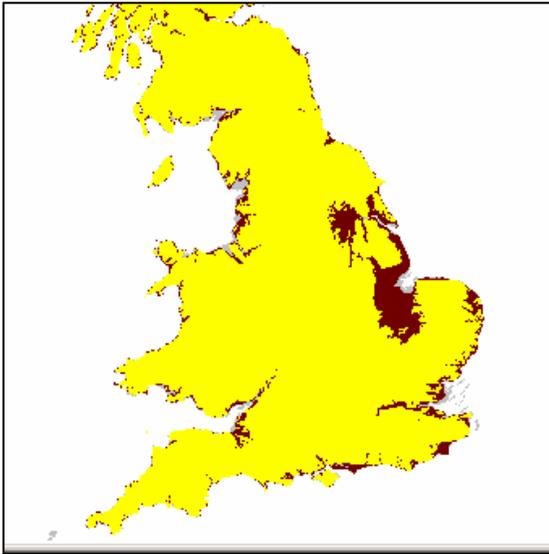
We've lost 50% of the world's wetlands. About 83% of its major rivers, such as the Brahmaputra and Indus, have been damaged by hydroelectric dams and flow regulation to provide water for agriculture. More than half of all mangrove ecosystems have been destroyed by coastal building and charcoal burning. Mangrove swamps teem with life and are important as nursery grounds for young fish. 70% of the world's major fish-stocks are now considered fully exploited or already over-fished. We've even lost 25% of the world's topsoil, through intensive agriculture and soil erosion.

### **Climate change**

This is the big new story, and despite the public position of the US administration, is now scientifically unassailable. Climate change has been driven by the release of incredible quantities of carbon dioxide, since, a couple of hundred years ago, we began exploiting coal, then oil and gas reserves. Atmospheric CO<sub>2</sub> concentrations have risen from 275 parts per million (ppm) in 1740, to 360 ppm in 2000, and are still rocketing up. CO<sub>2</sub> acts like glass in a greenhouse, letting

sunlight in, but stopping it radiating back into space. Very broadly, the more there is in the atmosphere, the higher global temperatures will rise, although there are many complicating factors such as cloud cover, dust and other “greenhouse” gases like methane.

Britain’s Hadley Centre has predicted how global temperatures could change by 2070, if we carry on much as we are. In the Arctic, air temperatures could rise by between 5 to 10°C, while in Britain it may be 2 to 3 °C. But only if we carry on as we are - there’s still time to limit it, though we are doing very little as yet.



Even a moderate 3°C increase in Arctic surface air temperature will cause a 7 metre rise of sea-level, mainly through the melting of the Greenland ice cap. Most of Britain would be unaffected, though we would lose a surprising amount of east coast land. This is trivial, compared to global losses, which include all settlements based on coral islands, and almost the whole of Bangladesh.

The dark areas show the parts of Britain that would be flooded with a 3°C rise in global temperature.

A moderate level of climate change would drown the coastal plains where most people live and farm, and shift the grain belts which supply most of the world’s food. Farming areas would need to move to remain within viable climate conditions. Even if that were possible, soil conditions might be unfavourable, so global food productivity could fall by about 15%, even assuming the land is adequately irrigated. With a warmer air mass extreme weather events such as droughts and hurricanes will become more common, further destabilising agricultural production. All this means that to continue to feed ourselves, even more land would be taken for agriculture, which means less for nature.

In England we are already seeing an extended growing season, about 11 days longer than it was in the 1950’s. Everything is leafing up and flowering earlier, disrupting natural balances between young leaves, insects and birds feeding their brood. As temperatures rise further, most European species will have to shift their range north. We will lose high latitude species currently hanging on in Scotland and the north of England, to be replaced (theoretically) by species presently found in southern France. This change could occur within 50 or so years. It would seriously disrupt species and habitats, and lead to local extinctions amongst British wildlife. And that’s only modest levels of climate change.

There are two even worse news stories, both a little hypothetical so far, but very worrying.

There is increasing evidence that despite global warming, we in Britain could become suddenly much colder. At present we enjoy a mild oceanic climate thanks to the North Atlantic Drift, which brings warm Caribbean sea-water north to our coast. Without it, we would have a similar climate to Labrador. There is disturbing evidence that rapidly melting ice is diluting arctic sea-water, preventing it from sinking to the sea bottom. It is this sinking that powers the North Atlantic Drift, keeping our temperature at least 5°C warmer than it would be otherwise. The vision of long icy winters, and cold short summers is much more worrying to the average Brit than the prospect of Provence-like conditions in Tunbridge Wells, so perhaps this is a scenario to scare us into action.

The really huge fly in the ointment is what could happen to methane hydrates. In very deep cold sea water under high pressure, methane from decaying material gets trapped in a lattice of ice molecules, forming a sort of slush on the ocean floor. It is estimated that there are up to ten thousand billion tons of the stuff, around Britain, both shores of North America, and many other sites. Methane hydrates are stable, unless pressure reduces or temperature increases, causing them to bubble out and rise to the surface.

The worry is that the present total weight of CO<sub>2</sub> of the atmosphere is only 750 billion tons, and methane is 20 times more effective as a greenhouse gas than CO<sub>2</sub>. Remember the Hadley Centre prediction of an Arctic ocean, temperature rise of 5-10°C. A rise of only 6°C could trigger this methane release, or 'methane burp', which would then raise global temperature by a further 8°C, on top of the 5-10°C already predicted.

There is strong evidence that methane burps have occurred at least twice in the history of the planet, coincident with mass extinctions in the Palaeocene period 55 million years ago, and at the end of the Permian, 250 million years ago. At the latter "Permo-Triassic extinction event" 95% of marine species went extinct, including the trilobites which had survived for 322 million years.

Another methane burp now could have a similar consequence for the human race, completely destroying agriculture and our food reserves. The planet would survive, because methane only lasts 6 – 8 years in the atmosphere before oxidising and disappearing. Although the Permo-Triassic extinction removed nearly everything on the planet, in 30 million years it was teeming with life again, dominated by dinosaurs! In the long-term, biodiversity will bounce back, but we probably won't be part of it.

### **What is driving the growing conservation crisis ?**

As I see it, there are only two problems in the conservation of our world:

N – the number of human beings on the planet,

I – the average impact each person has on it.

Multiplied together,  $N \times I = \text{Total global human impact.}$

It is so simple. The more people there are, and the greater our average individual impact, the greater the impact we have on the planet and the more problems there are for biodiversity conservation.

We can break down the Impact element further:

$$I = (\text{our expectations/greed}) \times (\text{money to spend}) \times (\text{resource cost of things we want})$$

So that the more environmentally costly the things we want are (e.g. air flights), the more we want them, and the more we can afford them, the worse it gets. In Britain, more than in any time in human history we have:

- Lots of money to spend
- Lots of expectations
- Lots of cheap but environmentally costly toys and opportunities to buy.

Reducing our impact MUST mean globally lowering our expectations, limiting our greed to what the planet can afford. We must set an example here, in the disproportionately wealthy West. Or/and, we need hugely to reduce our numbers.

### Human population

Homo sapiens sapiens appeared on the scene only about 120 thousand years ago, and emerged from Africa about 60 thousand years ago, when the total human population was probably a million or so.

<b>Estimates of global human population</b>		
<b>Date</b>	<b>Population</b>	<b>Same as:</b>
60,000 BC	1 million	
40,000 BC	2.5 million	Jamaica
10,000 BC	10 million	Belgium
0 BC	275 million	USA
1850 AD	1 billion	
1925	2 billion	
1975	4 billion	
2000	6.1 billion	

It took 50,000 years, a very long time, for the population to increase tenfold, by the end of the last Ice Age. In just 10,000 years, with the invention of Neolithic agriculture and urban life, it had risen 27 fold. By 2000 AD, we had an estimated world population of 6.1 billion. At 12.00 am on the 29<sup>th</sup> of May 2006, half way through the Glaister Lecture, the world population was estimated at 6,524,905,533 people. As I write this paragraph on 3<sup>rd</sup> September 2006, it is 6,645,448,920, rising by about 3 per second.

The UN forecasts that if we carry on as we are going, by 2050 the population will be about 11.5 billion. If we do everything we can to stop population growth, we'd be levelling off at about 8 billion, but if, as is most likely, we do nothing, but diseases like avian flu keep our numbers down, we'd have a

population of about 9 billion – half as many people again on this already over-crowded planet. Let’s look at what this means.

As of today, there is a total of about 2.3 hectares of land surface in the world per human being. But 20% is too high to live in, 22% is too dry and 17% is too cold. That leaves only just under a hectare (2.3 acres) available per person to house us, feed us and supply our needs. By 2050, with half as many people again, it would be 0.6 ha, to supply not only our needs but those of nearly every other terrestrial species on the planet. Most, like us, can’t live where it’s too high, too dry or too cold, so we have to share the best parts of the land with almost everything else.

Unfortunately, the reality is that in Britain we are using far more resources than this. The Greater London Council looked at the “ecological footprint” of London, which is very densely populated and relies on a large area to service it with food and resources. The ecological footprint of London was calculated to be 49 million hectares, or nearly 300 times London’s actual size, and about twice the area of Great Britain. It takes 6.6 hectares to provide the present wants and needs of each Londoner, which is six times our global allocation. For everyone alive on the planet to have the same standard of living as we have in London, we would need three Earths to sustain them.

What underlying pressures could have caused this situation?

*And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.*  
*Genesis 1:28*

So, underlying three of the major religions, Judaism, Christianity and Islam, is an injunction that excuses and advocates the manipulation of the planet to our own goals.

The second pressure is the Western paradigm of growth. For the economy to keep going, it has to grow. The very business of getting interest on money invested requires the economy to grow, it can’t stop. On the 26<sup>th</sup> May 2005, the British Chambers of Commerce expressed alarm at the government’s downward revision of its economic growth figures for the year, from 2.8% to 2.7%. If even this ‘scarily low’ figure of growth continued for 50 years, it would imply a 376%, nearly fourfold increase in consumption, waste and human impact. Is this sustainable, or is the growth paradigm something we absolutely cannot afford?

I feel I now need to exterminate a few sacred cows. Popular mantras that will have no effect whatsoever on lessening the global impact of increasing human over-population include:

Organic farming	Energy coppice	bio diesel
Vegetarianism	Fair Trade	Nuclear power

Wind farms

Recycling paper and glass

Even my own job - trying to conserve ponds in Britain, could be seen as a waste of effort. In 50 years' time, with climate change and our need to wring the most production out of our farmland, ponds will be a minor worry. We should be trying to tackle the real issues.

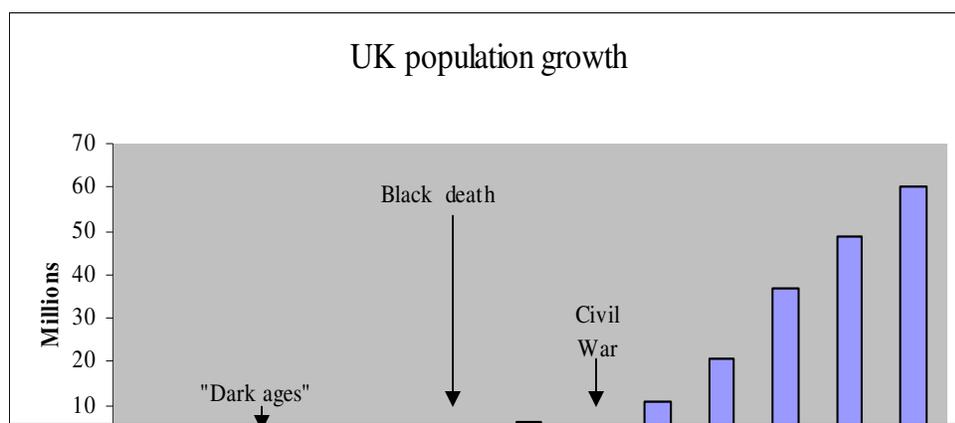
### What we should be doing?

Energy saving at a massive level might help a bit. It's far more efficient and much cheaper to save energy, than to dream up dodgy new schemes like wind power to replace oil. The breakdown of energy use in Britain, between 2001 and 2004, shows that 29% of our energy goes into electricity, a use which practically didn't exist 100 years ago. One third goes into transport; industry and services take up another third. The biggest surprise is domestic energy use, which rockets up fourfold from the summer to the winter, to equal the transport take. This is the energy used to warm and light our homes during the cold dark days.

Two things could make an enormous difference here. We could dress warmly in the winter (remember pullovers?) instead of turning up the thermostat, and sit sweating in shirt-sleeves. We could all insulate our houses better, and can get grants to do so. We are also using a huge amount of energy lighting our streets and houses. As an example, a modern hand torch has just one LED or light emitting diode, and its battery is charged by a magnet. If you shake it for just 1 minute, it will shine brightly for three days. It is wonderfully efficient, wasting practically no energy as heat. So why is it still legal to use wasteful incandescent light bulbs? Even the ordinary low-energy ones are vastly more efficient, and using LEDs would be far more so.

We could also eliminate air transport – at present 6% of the UK's energy use, but predicted to rise to 12% by 2030. Sixty years ago most of us managed perfectly well without it, except of course for dropping bombs. Aeroplanes burn fuel at almost exactly the same rate per passenger as an average saloon car. Imagine the environmental impact of driving 250 cars to Miami, and how much the fuel would cost. It's a really wasteful form of energy use, and it is untaxed. The government is encouraging the building of new runways and increases in air travel. Instead of going abroad, we could holiday locally. Come to Skegness, it's so bracing.

It would really help to reduce the UK population to a sustainable level. From the Roman period in 43 AD through the Dark Ages, it changed little, increased around the Norman Conquest and fell significantly with the Black Death, then rose slowly, until around 1800 when it was about 10 million.



### **What is a sustainable population for Britain?**

Certainly not the nearly 60 million we've got now. If we could go back to the 10 million population level of the beginning of the 19<sup>th</sup> century, we would have the same population density as in Ireland now. Ireland is still a beautiful place, and for me it is because there are so few people and so much more space for nature. They should put a cap on new bungalows in County Cork however.

We should also try reducing our CO<sub>2</sub> emissions per capita from the present figure - about 9.28 tons - to about 1.6 tons, the average per capita emission of the present global population. That would bring us down to an energy use similar to that of Egypt. However, by 2050, with the increased number of people, we would have to bring even that down to about 1 ton, which is the current level of the Dominican Republic. This will be a major challenge for Americans, whose annual emissions are nearly 20 tons, but even worse in Qatar which tops the world list with nearly 43 tons of CO<sub>2</sub> per capita. It's hot there, and they can afford to run their air-conditioning all the time.

I think we need to forget holidays, one-up-man-ship and grapes in mid January. We need to change society and our expectations completely. We should show some humility, and see ourselves almost as equivalent to rats, infesting the planet. We should face up to taking responsibility for what we have already done to it, and for what we need to do, both now and in the future. Above all, we humans everywhere have to reduce our expectations globally, but this must be led by the West, which has most to lose, and is driving the increasing expectations of the rest of the world.

I want to end this, here at Braziers, with a quote from the Braziers' website. John Woodcock wrote in 1999, under the heading 'Reassessing Braziers' Vision', that Norman Glaister:

“... claimed humanity must consciously take responsibility for identifying the narrative story explicit in the history of the universe, in order to comply with it.”

This is exactly what I've been trying to convey. Let's get back to the message of the universe, of our fragile biosphere. How can this be done ? :

“Glaister surmised that much human conflict flowed from the intrinsic and potentially useful specialization of conservative (hard) and radical (soft) types of personality. Society was instinctively balanced in favour of conservatism and was therefore at risk when circumstances required change.”

Well, circumstances do require change, right now, and we are indeed intrinsically conservative and suspicious of change. Particularly Mr George Bush. Some of Glaister's ideas about the way in which human society could reach a compromise and move forward need to be applied at national and international levels, perhaps through the adoption of this last quote:

“To understand... to discuss... and then to cooperate