

Why Population Matters for the RSPB

The Royal Society for the Protection of Birds (RSPB) is one of the foremost conservation bodies in the UK.

With over 1 million members it is the largest conservation charity in Europe, as well as being a respected voice internationally through its lead role in BirdLife International, the global partnership of national conservation organisations.

On its website, the RSPB states, 'We are creating a world rich in nature'. That is an ambitious and admirable statement – but, unfortunately, not one that is generally accurate.

The RSPB does an excellent job of highlighting the value of bird life, both in its own right and as an indicator of the well-being of the wider environment; of conserving and creating vital habitat as feeding and breeding refuges for wild birds and other species on its 200 or so reserves; as well as pioneering the careful reintroduction of formerly native wild birds that had become extinct in the UK (red kites, corncrakes, and cranes being the best known of those).

But all this valuable work – in the UK and globally – is, at best, holding the line.

Across the world, wild species are under threat and in many cases face extinction. The RSPB's own assessment of wild bird species in the UK confirms this – with 4 out of 5 breeding bird indicators falling over the latest survey period and farmland and woodland species numbers crashing – down by over 50% and 75% respectively on their 1970 baseline numbers.¹

We humans are not 'creating a world rich in nature'. Since 1970, on best available estimates, global biodiversity has declined overall by 30%.²

A key factor driving these negative impacts on the world's wild species is the growing human population: the current and predicted numbers of people on the planet; the number of people in developed and developing countries – and of course, per person consumption rates in both.

Yet there is no mention of the issue of human population and its impacts anywhere on the RSPB's website.

That omission is not unique to the RSPB. No leading environment or conservation organisation is talking publicly about population – possibly out of concern that they will be accused of being 'misanthropic', 'racist', of 'blaming the poor' or perhaps because they accept fatalistically that the Earth's human population will grow by at least 2 billion more people to reach 9.3 billion by 2050³ and nothing can be done to prevent that UN projection becoming a fact?

There is no justification or excuse for such fears and fatalism.



Global human population has quadrupled since the RSPB was founded over 100 years ago.

References

¹The State of the UK's Birds, 2011. http://www.rspb.org. uk/lmages/sukbs2011_tcm9-298041.pdf

² http://wwf.panda.org/ about_our_earth/all_ publications/living_planet_ report/2012_lpr/

³ http://esa.un.org/wpp/ unpp/panel_population. htm; UN (2011a) World population prospects: the 2010 revision. Department of Economic and Social Affairs.



Addressing the issue of population directly and in-depth offers a positive agenda that is about:

- Increasing the well-being of everyone on Earth
- Giving all women the right to choose and the freedom to control their own fertility - at least 215 million women worldwide, mainly in the poorest countries, want to delay or stop their next pregnancy, but do not have access to modern, safe contraceptive methods4
- Achieving sustainable development that respects the boundaries of our finite planet
- Enabling people throughout the world to plan the size of their families without coercion
- Sustaining a world that is rich in nature and renewable resources.

As one of the UK's leading and most respected conservation bodies, RSPB has a responsibility to address the issue of population and promote this positive agenda for the good of everyone and all life on Earth.

Principles underpinning concern about and action on Population

Universality - current levels of and predicted growth in population are of concern in both developed and developing countries.

Proportionality - curbing consumption levels of those who consume the most currently is crucial.

Equity - improving the well-being of the over 1 billion people who exist on less than \$2 a day is a priority, such that they enjoy a fairer share of the Earth's available, sustainable resources.

Equality - low-cost, safe family planning should be available for all women on demand as their right to control their own fertility.

Choice – a voluntary, rightsbased approach; coercion has no place in any strategy seeking to the UK think our

of people in

Over four out of five

(84%) think the world

population is

too high.

achieve a sustainable global population. population is too high.

> Population is an issue of public concern

RSPB and other NGOs should take heart from the fact that a large proportion of the public are concerned about the growth of populations in the **UK and globally:**

- A YouGov survey carried out in May 2011 of 3,538 UK adults found that almost four out of five (79%) thought the UK population was too high, with almost half (45%) saying it was much too high;
- Over four out of five (84%) thought the world population was too high; with over half (53%) thinking it was much too high.⁵

⁴ Adding it up: costs & benefits of contraceptive services. Estimates for 2012.

shared/documents/publications/2012/ AIU%20Paper%20-%20 Estimates%20for%20 2012%20final.pdf

org/2011/population matters-news/people-uk-population-high/?phpMyAd min=e11b8b687c20198d9ad 050fbb1aa7f2f



The evidence

Two recent reports
highlight the issue of
human population as
a, if not the key, factor
in impacting upon our
planet and its sustainability
for our and all species on Earth.

Most importantly, the reports raise the debate above out-dated and polarised arguments as to whether it is the number of people on the planet or how much they consume that is critical.

As these reports make clear, it is not either or – but both.

People and the planet

The Royal Society's report, People and the planet, published in April 2012, is the product of a Working Group of over 20 distinguished academics, scientists and experts, supported by a science policy staff of 5 advisors. The Working Group sought evidence from over 100 individuals and organisations across the globe; as well as receiving nearly 200 additional inputs sent in separately and via those attending three workshops held on the role of industry, NGOs and technology.

The Working Group's findings and recommendations were reviewed by an independent panel of eight experts before being approved by Council of the Royal Society.

http://royalsociety.org/policy/projects/people-planet

The Living Planet report 2012

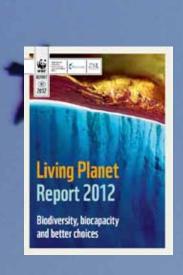
The Living Planet report is produced by the Global Footprint Network and the World Wide Fund for Nature working in collaboration with the Zoological Society of London and the European Space Agency.

By collating and comparing a vast array of data on global biodiversity, ecosystems and natural resources, the Living Planet Report provides an unique overview of humanity's demands and impacts upon our planet and their implications for the sustainability and well-being of our and the other species with which we share the Earth.

http://wwf.panda.org/about_ our_earth/all_publications/ living_planet_report The UN's medium projection for a future world population is 9.3 billion by 2050 – but the range extends from as 'low' as 8 billion to as high as 11 billion.

Of the world's estimated 1.7 billion 'high-rate consumers',

now live in the developing world.







Key findings

People and the planet

"Population and the environment should not be considered as two separate issues."

recommendations for action:

- people need to be raised out of poverty
- Secondly, that rates of consumption must be urgently reduced in the most developed and emerging economies
- Thirdly, that global population growth needs to be slowed and stabilised.

Living Planet report

"With the world already in ecological overshoot, continued growth in population and per person footprint is clearly not a sustainable path."

The report reaffirms the findings of earlier Living Planet assessments that the Earth's capacity to provide 'fair shares' of its natural resources and outputs had already been exceeded "sometime in the 1980s". By 2010, human activities and demands were using up one and a half planet's worth of the resources that are available annually. Clearly, not everyone on Earth is getting their fair share.

The report and its predecessors provide the best estimate and most comprehensive 'snapshot' of the state of all life on Earth.6

The latest report estimates that global biodiversity has declined overall by 30% since 1970 and by double that (60%) in the tropics over the same period. The authors conclude, "Human population dynamics are a major driving force behind environmental degradation. One 1950 - to 7 billion in 2011 and is forecast to reach just over 9.3

"Ignoring this diagnosis will have major implications for humanity. We can restore the planet's health but only through addressing the root causes, population growth and overconsumption."

References

- ⁶ The first Living Planet report first produced in 1998 is produced biennially.
- 7 http://wwf.panda.org/ about_our_earth/all_ publications/living_planet_ report/2012_lpr/
- ⁸ Rising consumption, increased resource use by a growing population puts unbearable pressure on our Planet – WWF 2012 Living Planet Report http:// wwf.panda.org/wwf_ news/?204732

aspect of this is the overall size of the global population, which has more than doubled since

billion people by 2050."7



Relevance to the RSPB

The RSPB's mission is to protect birds and the environment and the organisation states that it believes that bird populations reflect the health of the planet on which our future depends.

Globally, bird populations are under pressure:

- A study by Birdlife International published in 2000 warned that 1,200 species, 12% of the world's total bird species, faced extinction over the next century⁹
- In its overview
 report, 'Winged Messengers
 The Decline of Birds', the
 WorldWatch Institute states that,
 'human related factors threaten 99%
 of the most imperilled bird species'.¹⁰

Birds are indeed "winged messengers" that can be heralds of wider environmental impacts. While many bird species are native to particular habitats and regions, allowing specific measures to be taken by individual countries to help arrest declines – nearly 20% of the world's estimated 10,000 bird species undertake regular migrations beyond their breeding grounds, using 'flyways' that pass over and through numerous countries. This makes them especially vulnerable to any changes to their stop-over roosting and feeding sites.

For example, the White Stork migrates through and over-winters in around 80 different nations and the Siberian crane covers thousands of miles on its three distinct flyways from Western Siberia to the lowlands of northern Iran, the floodplains of the Yangtze in China and its north Indian wintering site.

11% of migratory birds are classed as threatened or near threatened on IUCN's Red List.

"Human related factors" include a range of activities – some of which are readily identifiable and so have the potential to be tackled directly. An obvious example would be ending the shooting and trapping of migratory birds that pass over Malta each year – potentially saving 3 million birds annually.

But such specific and potentially resolvable threats are rare – the greatest pressures on the world's bird populations come from the general human related factors of habitat loss, agricultural intensification and climate change.

All of which are exacerbated by human population growth.

12%

of the world's total bird species face extinction over next century.

References

⁹ http://www.birdlife.org/ datazone/userfiles/docs/ SOWB2004_en.pdf

¹⁰ Winged Messengers – The Decline of Birds, WorldWatch paper 165, Howard Youth, March 2003



The Anthropocene Era

Scientists term the current era on Planet Earth the 'Anthropocene'; dominated as it is by us and our activities which threaten to cause the '6th Great Extinction' of life on Earth – comparable to the major geological events evident in the fossil record. The key difference between this one and the previous five is that the catastrophic changes are happening over decades rather than geological timescales.

For the UK, the changes to our countryside, its biodiversity and ecosystems may appear less dramatic than on the global scale, but they are still considerable:

- 70% of our 333 farmland species of plants, butterflies, bees, birds and other mammals are in decline
- Alongside that loss of biodiversity, there's been a parallel 30% decline in the vital 'ecosystem services' our natural world can provide, such as flood prevention, water catchment management, and carbon sequestration.¹²

We know from the Living Planet report that the human species is already drawing down excessively upon the Earth's available resources – such that we (or some of us) are using up one and half planet's worth of resources that would be available on a sustainable basis. Calls from environmental groups to rebalance the equation by reducing our consumption in the developed world have to date gone largely unheeded.

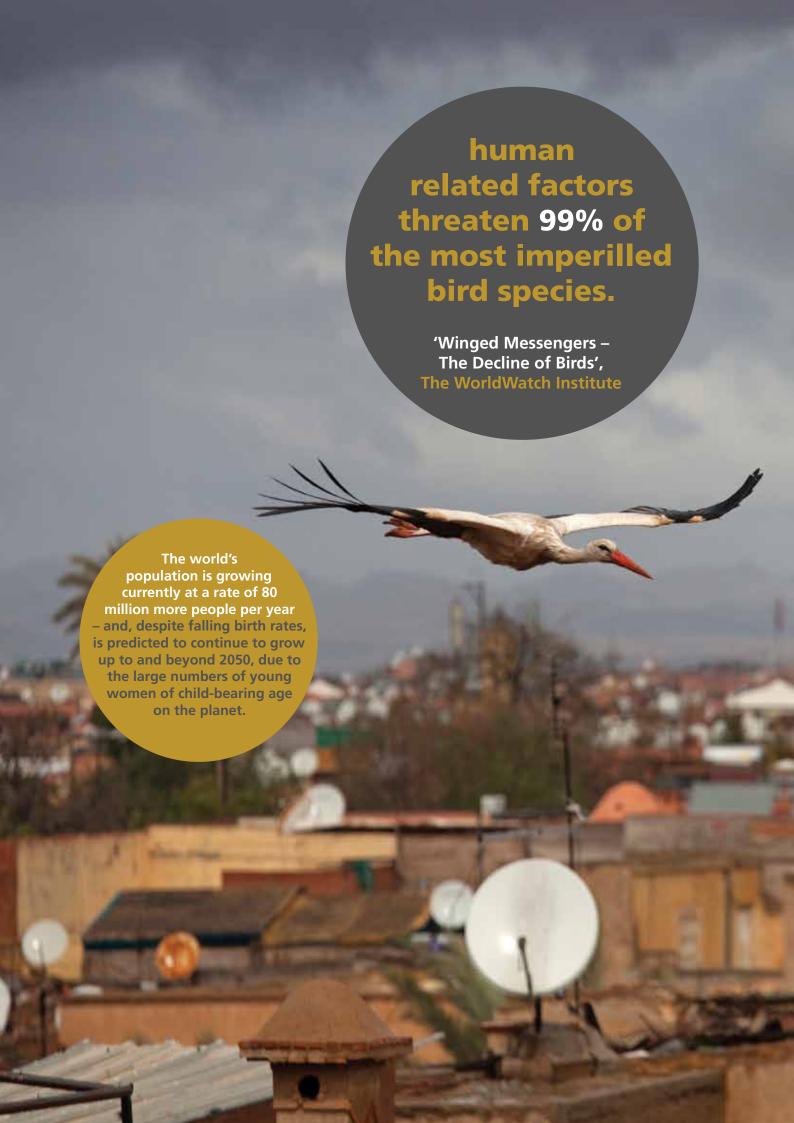
Consumption has been the factor that environmental NGOs and policy makers have focused on as the key driver of detrimental environmental impacts upon the planet, its biodiversity and ecosystems. The chosen paths to address unsustainable consumption have been via attempts to promote 'lighter footprints' coupled with smarter, more efficient ways of using and re-using the resources required to produce the goods and services people consume.

That is an understandable and pragmatic approach – but it has not been sufficient.

References

- "Has the Earth's sixth mass extinction already arrived?, Anthony D. Barnosky, Nicholas Matzke, Susumu Tomiya, Guinevere O. U. Wogan, Brian Swartz, Tiago B. Quental, Charles Marshall, Jenny L. McGuire, Emily L. Lindsey, Kaitlin C. Maguire, Ben Mersey & Elizabeth A. Ferrer http://www.nature.com/nature/journal/v471/n7336/full/nature09678.html
- ¹² UK national ecosystem assessment (2011), Synthesis of the key findings, UNEP-WCMC, Cambridge. http://uknea.unepwcmc.org





"...while poor country population growth is not the driver of climate change, it would be absurd to deny that the necessary global transition to a low-carbon, less-resource intensive, lesspolluting economic future will not be infinitely harder to achieve in a world of 10 billion rather than 6.8 billion.

Given its detrimental impacts on poverty reduction, it is surprising that the issue of population growth has received so little attention over the last decade from development donors, agencies and developing countries alike."13

Save the Children, 2010

Adding the 'P' factor

Until the factor of Population is added to the equation, organisations and policy-makers seeking to create conditions whereby everyone on Earth can enjoy a decent quality of life and a fair share of our planet's resources without compromising the ability of future generations to do so – i.e. live sustainably – are doomed to failure.

At the beginning of the 20th Century, there were 1.6 billion people on Earth, whose activities (predominantly in the industrialised developed countries) released 0.5 billion tonnes of carbon to the atmosphere annually. By 2000, the number of people had increased to over 6 billion and global annual carbon emissions by nearly 15 times to 7.3 billion tonnes.

True, carbon emissions per person and overall are much higher for those of us living in the industrialised nations – each new born UK citizen will be responsible for 35 times the amount of greenhouse gas emissions than a baby born in Bangladesh and over 160 times more than one born in Ethiopia. But the rest of the world is catching up – the fastest growth rates in both per capita and total greenhouse gas emissions now occur in the less developed countries.

Many would argue that this is only fair people in the less developed countries deserve a greater share of the Earth's

available resources to enable them to attain the quality of life of people living in the industrialised countries. The USA with just 5% of the world's population is responsible for over 20% of global carbon dioxide emissions – and its current trajectory is to increase emissions of greenhouse gases by 10% on 1990 levels. Whereas China, with four times the share of the world's population at 20%, produces 17% of global greenhouse gas emissions.14

However, China's overall emissions have rocketed by 170% since 2000, driven by a rising and increasingly affluent population, such that it has overtaken the USA and won the dubious title of being the World's major emitter of greenhouse gases. 15 A trend noted in the assessment of the economic impacts of climate change by Sir Nicholas Stern for HM Treasury, "Population growth rates will be higher among the developing countries, which are also likely in aggregate to have more rapid emissions growth per head. This means that emissions in the developing world will grow significantly faster than in the developed world, requiring a still sharper focus on emissions abatement in the larger economies like China, India and Brazil."16

An additional 10 million people in the UK will make a big difference to our capacity to curb climate change.

- ¹³ Population Policy brief, Save the Children, March 2010
- 14 UNDP Unequal carbon footprints: shares of emissions and population, http://hdr. undp.org/en/statistics/data/ climatechange/shares/
- 15 Is it too late to avoid dangerous climate change? Friends of the Earth, August 2012
- ¹⁶ Stern Review: The Economics of Climate Change, http://www.hm-treasury.gov.uk/d/Chapter_7_ Projecting_the_Growth_of_ Greenhouse-Gas_Emissions.pdf



Official UK targets for reducing overall carbon dioxide levels are an 80% cut on 1990 levels by 2050; 34-42% by 2020. In the 1990s, UK per capita carbon dioxide emissions equalled over 10 tonnes per person annually. If the population remained stable, then the necessary cuts per person to meet those targets would be of the order of 2 – 3 tonnes for each person. But if the population grows by 10 million as predicted, a cut of at least an extra tonne per person will be required.¹⁷

$I = P \times A \times T$

Our impact on our planet is a combination of factors:

- Overall human numbers
- The amount each of us consumes/ demands of the Earth
- Available technology and its efficiency to provide the goods and services derived from the Earth's resources.

Those three factors have been combined in the equation formulated by Paul Ehrlich and John Holdren: $I = P \times A \times T - in$ which impact 'I' is a factor of population 'P', affluence 'A' and technology 'T'. ¹⁸

To reduce the impact on our planet, we can potentially intervene in three ways: curb consumption; improve efficiency of resource use; slow and stabilise population growth. Exclude the 'P' (Population) factor and you load even greater expectations on changing consumption habits (Affluence) and upon the

ability of science and technology to deliver ever greater efficiencies (Technology).

Addressing population, the most effective eco-action

Because consumption per capita continues to be so high in countries like the UK and America, the missing or ignored factor of population has to be addressed – as each additional consumer in the developed world makes a globally disproportionate impact.

A study by Oregon State University in 2009, comparing the impact of an individual adopting six life-style changes to cut their carbon budget over a lifetime, against the single action of having one less child, bears this out:

- By adopting the practical and available 'environmentally-friendly' actions of driving a more fuel-efficient car; halving annual car mileage; fitting double-glazing and low-energy light-bulbs; replacing an older, inefficient refrigerator; recycling all paper, tin and glass - an individual over their lifetime could curb their carbon budget by 486 tonnes
- By taking the single, personal decision to have one less child, a woman and her family would save 9,441 tonnes of carbon over her lifetime.

Nearly 20 times the amount saved from all other positive eco-actions combined.¹⁹

References

- ¹⁷ Growing pains, population and sustainability in the UK, forum for the future, June 2010.
- 18 http://www.ecoglobe.org/ population/agerley/ipat.html
- ¹⁹ Reproduction and the carbon legacies of individuals, Paul A. Murtaugh, Michael G. Schlax, Department of Statistics, Oregon State University, 44 Kidder Hall, Corvallis, OR 97331, USA, College of Oceanic and Atmospheric Sciences, Oregon State University, Corvallis, OR 97331, USA. Global Environmental Change 19 (2009) 14- 20

http://www. biological diversity.org/ campaigns/overpopulation/ pdfs/OSUCarbonStudy.pdf

Fewer people, fairer shares

In contrast to that average American citizen, the people of sub-Saharan Africa and south east Asia, who make up over a third of all people on the planet use (or rather receive) just 3.2% of the world's available resources.

There is no disputing that such unjust disparities in consumption have to be addressed if both global equity and sustainability are to be achieved. But rising populations in poor countries undermine their citizens' opportunities to develop and improve their quality of life, as leading UK development NGO Save the Children notes, "This issue (population growth) should be of particular concern to those working in the development sector, as rapid population growth in the world's poorest countries is a major obstacle to poverty reduction. For example, rapid population growth rates and high fertility rates correlate closely with high rates of maternal and child mortality, and most of the countries that are furthest from achieving the Millennium Development Goals have high rates of population growth."20

Globally, both overall population and the average 'footprint per person' have increased since 1961 – although neither has risen equitably. In Africa, the average per person footprint has decreased by 0.07 global hectares per person over 1961 to 2008; yet the continent's rapid population growth means that Africa's overall footprint has actually tripled since 1961.

Rising numbers of people make things worse for people and planet.

Limits to Efficiency

When the 18th century cleric and political economist, Thomas Malthus, wrote his essay on 'The Principles of Population' in 1798 with its grim predictions that human numbers would overtake our capacity to feed ourselves - bringing war, famine and plague, he did not foresee the impressive advances in human ingenuity, especially agricultural technology and the development of birth control methods. Agricultural advances that enabled farmers to achieve exponential increases in yields and, along with birth control, dispelled

Malthus's bleak, joyless (his proposed solution was sexual abstinence) view as irrelevant and merely of historic interest.

Through the use of new high-yielding varieties of wheat, rice and other staple crops allied to greater mechanisation, irrigation and increased use of artificial fertilisers and pesticides, the 'Green Revolution' tripled world food production over a period of thirty years running from the 1960s to 1990s. But since the 1990s, crop yields have stopped rising (claims made for genetically modified crops have not been yet realised), and many plant breeders believe that the physiological limits for any further yield increases have been reached for most crop plants. US Department of Agriculture plant scientist Thomas R. Sinclair observes that, "except for a few options which allow small increases in the yield ceiling, the physiological limit to crop yields may well have been reached under experimental conditions."21

Even if they haven't, the increased yields achieved from intensive agriculture have not been achieved without considerable cost:

- In the UK, agricultural intensification over the past 40 years has caused a more than 50% decline in farmland bird species, as acknowledged by Defra, "In 2010, breeding farmland bird populations in the UK were at their lowest level ever recorded at half of what they were in 1970"22
- According to the Food and Agriculture Organisation, by 2025 1.8 billion people will be living in areas of the world suffering from 'absolute water scarcity' and two-thirds of the world's population are likely to be contending with 'water stress conditions'23
- 'Water stress conditions', exacerbated by irrigation and drainage for agricultural intensification, are impacting upon our wetlands and their bird life across the world. As reported in The Global Biodiversity Outlook, 44% of known populations of water birds are decreasing, with only 17% increasing – from the low point of the 1970s when 53% of all the world's water birds were in decline²⁴

References

- ²⁰ Population Policy brief, Save the Children, March 2010
- ²¹ Outgrowing the Earth: The Food Security Challenge in an Age of Falling Water Tables and Rising Temperatures, Lester R. Brown. Earth Policy Institute, 2004, http://www earth-policy.org/books/out/
- 22 More than a 50% loss of numbers of 19 indicato farmland species: Defra online PR, 30/11/11.

http://www.defra.gov.uk/ statistics/files/Wild-birdpopulations-in-the-UK-1970-2010-National-Statistics-

- ²³ FAO 2007
- ²⁴ State of the World's Waterbirds 2010, Wetlands International. http://www cbd.int/iyb/doc/prints/iybnetherlands-stateofwaterbirds-
- 25 State of the World's International. http://www.cbd.int/iyb/doc/prints/iybnetherlands-stateofwaterbirds-

In 2010 breeding farmland bird populations in the **UK** were at their lowest level ever recorded

at half of what they were in 1970

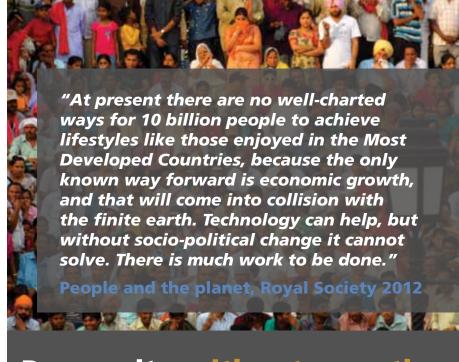
- Water bird numbers are falling in particular in the poorest, most waterstressed countries where population growth has been or remains high: Africa, South America, and Asia²⁵
- Global soils, as well as biodiversity, are under pressure. The UN estimates that half of the world's current arable land will be 'unusable' by 2050 due to desertification and soil degradation²⁶
- A review by the Environment Agency in 2004 reported that soil organic matter (a key indicator of sustainability and fertility) had continued to fall over the period studied of 1979 - 95 and that 17% of soils in England and Wales were prone to erosion.²⁷

The capacity of the world's soils to feed the planet's burgeoning population is as relevant to us in the UK as the state of our own soils and their ability to feed our growing numbers of people – given the UK's dependence on imported foodstuffs (40% of all the food we eat is grown overseas).²⁸

The 'food footprint' of London alone is some 20,035,000 hectares – two million more hectares than all available farmland in the UK – making it clear how dependent we are on 'ghost acres' overseas to feed our population and how vital it is to sustain the remaining area and health of our farmland as a key strategic resource.²⁹ Globally, the area of land viable and available per person for food production has declined due to soil degradation and population growth from 0.32 hectares per person in 1975 to 0.25 hectares in 2000. To produce our typical western diet takes 0.6 hectares per person.³⁰

Feeding over 9 billion people is going to challenge human ingenuity, let alone raising everyone's quality of life to that enjoyed by those of us in the developed world, as Professor Tim Jackson, Economics commissioner for the Sustainable Development Commission makes plain in his book, 'Prosperity without Growth',

"If 9 billion people aspired to live at the level of affluence achieved in the OECD nations, the global economy would need to be 15 times the size of this one by 2050 and 40 times bigger by the end of the century."³¹



Prosperity without growth

In parallel with the need for RSPB and all environmental NGOs to be more active and outspoken on the issue of population, the delusion of limitless growth on a finite planet must be exposed.

Conventional 'classical' economists in the western developed countries look to constant growth in consumption and consumers as the only means to maintain a vibrant economy and to provide the care and services required by increasingly, ageing domestic populations.

A concerted and united effort is required from RSPB and all environment NGOs to challenge the conventional model of economic growth and propose alternative models as per the proposals in 'Prosperity without Growth' that redefine human well-being and quality of life in terms of, "a much broader basket of economic, social and ecological factors".32

Reference

- ²⁶ State of the World's Soils, UNEP, 2002. Also see: http:// www.unep.org/pdf/UNEPstrategy-land-soil-03-2004.pdf
- ²⁷ The state of soils in England and Wales, Environment Agency, 2004. http://archive. defra.gov.uk/environment/ quality/land/soil/documents/ soil-strategy.pdf
- ²⁸ An inconvenient truth about food –neither secure nor resilient, Maynard R, Soil Association 2008.
- ²⁹ Lyndhurst B, London's Ecological Footprint: A Review, Greater London Authority,
- ³⁰ The state of soils in England and Wales, Environment Agency, 2004. http://archive. defra.gov.uk/environment/ quality/land/soil/documents/ soil-strategy.pdf
- ³¹ http://www.sd-commission. org.uk/publications. php?id=914
- ³² See: 'Growing Pains, Population and Sustainability in the UK, forum for the future, June 2010.



Take action

Given the evidence summarised here, we ask RSPB to add its respected voice and considerable influence to ensure the findings and implications of the Royal Society and Living Planet reports are understood by the public and acted upon by policy-makers.

And commit to the following actions:

- Accept and promote the findings of the Royal Society's People and planet report that Population and Consumption must be considered as indivisible, linked issues
- Acknowledge publicly and actively communicate the crucial relevance of population to RSPB's mission and objectives
- Support and advocate the principle of universal access to safe, affordable family planning for all women throughout the world
- Call on the Government to act on the findings of the Royal Society's report and draw-up a national population policy
- Use its considerable policy resources, voice and influence to speak out and engage its members and the wider public in an intelligent, informed and honest debate about the Population issue
- Include the 'P' factor in all its relevant public communications and policy pronouncements i.e. accept the full formula $I = P \times A \times T$.

Find out more

Further information on found at:

www.unfpa.org www.populationmatters.org www.appg-popdevrh.org.uk

This briefing is an independent production written and researched by Robin Maynard and designed by Sam Allen, December 2012. It is NOT an official RSPB publication.

Nature Picture Library : Sandish Kadur, Jenny E Ross, Terry Whittaker, Ernie Janes, Mark Bowler, David Woodfall.

Wiki Commons : Stefan Kuhn, Gemma Longman, Brocken Inaglory, Norddeutsche Mission, Jami Dwyer, Daniel Hauptstein.

freeimages.co.uk : NASA / NSSDC