



GUILDFORD ENVIRONMENTAL FORUM

newsletter

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DECEMBER 2010

## *Transition Guildford and the Forum "juice it up"*

*John Bannister*

GUILDFORD ENVIRONMENTAL FORUM has a very close relationship with Transition Guildford, in fact we were instrumental in setting it up. Firmly established Transition movements are flourishing in Farnham, Haslemere and Dorking, with many others up and running and more emerging across the south-east and throughout the UK. What is the Transition movement and how does it compare with the Forum's aims? Actually it has a lot in common but appeals to a younger, more adventurous age group and goes wider into the arts, story-telling, food and small-scale local enterprise. So Transition is an excellent complement to the work that the Forum has been doing for almost 20 years.

The Transition movement is quite young. It was started by Rob Hopkins in 2006 and grew out of a Permaculture course he created at The College of Further Education in Kinsale, Ireland. He now runs the Transition Network from Totnes. As part of the course his students carried out a community visioning exercise which led to an Energy Descent Action Plan for Kinsale. They did this because they were getting increasingly concerned about our total dependence on hitherto cheap oil (it is hard to think of anything we buy that isn't dependent on oil), our growing dependence on imported food and the fact that our food has also become totally reliant on oil and chemicals derived from oil. What we are now seeing is that the oil age will be very short-lived in historical terms, 200 maybe 300 years. Oil is a finite resource. Global oil production has already peaked and is now in steady decline. This is referred to as "Peak Oil".



Raymond Smith

**Delicious apple juice, extracted on the spot, being poured out at the Surrey Hills Wood Fair, which was held at Birtley House, Bramley (how apt!).**

The number of senior figures in government, military and oil industry circles prepared to admit that Peak Oil has been reached is increasing. Another important realisation back then by the students at Kinsale was that even though oil will continue to be available in decreasing amounts for some time the price will spiral to levels that seriously risk destroying the fabric of modern society and result in more oil wars. So the strap-line for the Transition movement is "From oil dependency to local resilience". They coined the term "resilience" for this purpose. It is now totally obvious that it is

# RENEWABLES and the NUMBERS

Jenny Barnes

THERE ARE MANY ARTICLES published about renewable energy – a wind farm set up here, photovoltaic installed there. And there are others about less renewable things – nuclear power stations, carbon capture and storage coal-fired power stations. But it's rare that there's any real context.

That wind farm that provides enough energy for 200,000 homes, for example. Is that a lot? How does it compare with a nuclear power station? The total electricity demand of the UK? With apologies for the numbers, this is an attempt to give you some useful numbers so you can gauge these things.

The basic unit of energy, which you'll see on your domestic energy bills, is the Kilowatt-hour (KWH for short). One Kilowatt-hour is the energy used by a 1 KW (one bar) electric fire in one hour; and the power consumption of that 1KW fire is – surprisingly – 1 KW. When we start talking about industrial units of power, we use bigger units, and the two useful ones for this article are the Megawatt (MW), which is 1,000 KW, and the GigaWatt (GW) which is 1,000 MW or 1 million KW. So a 1 GW power supply can run 1 million 1 KW electric fires. **Remember – KW, MW & GW are all measures of flow, and KWH, MWH, GWH are all measures of quantity.**

Let's get back to that wind farm. A typical off-shore wind turbine has a 3.6 MW rated output. Because of intermittent wind, it will not produce 3.6 MW continuously, and the average output of such a turbine will be 1 MW. As a rule of thumb, you divide the rating by 3 or 4 to get the effective output. The Wind Energy Association is fond of measuring output in "homes". This may not mean what you think. It is not the total energy consumption of a household, nor is it the total energy required for heat and electricity in a household, but the **average electricity consumption rate** of a house. This is 0.5 KW. So one offshore wind turbine at 1 MW provides 2,000 "homes" of electricity by this measure.

For comparison a big coal-fired power station (Kingsnorth, FerryBridge) would be around 2 GW – which means that 2,000 windmills are needed to provide the same amount of energy. The newer nuclear stations are around 1.2 GW (1,200 windmills), while a typical Combined Cycle Gas Turbine (CCGT) power station would be around 600 MW. Note that the standard size of electricity turbine, whether used in nuclear, gas or coal-fired plant, is approx 600 MW, which is why power stations tend to have output power that is a multiple of 600 MW.

The total **electricity** demand of the UK is around 45 GW; while the total **energy** demand of the UK, including heating, transport, industry, commercial and so on, but excluding embedded energy in imports, is around 300 GW. Electricity is a big part of the energy requirement, but it's nowhere near all of it.

One thing to remember with electricity is that when we're converting fossil fuel to electricity, due to the basic physics of heat engines, only 40 to 50% of the primary energy is converted, the remainder being lost to low temperature waste heat. Those cooling towers you see round most power stations are vital to give the temperature gradient that drives

the turbines. Unfortunately this waste heat is at such a low temperature as to be useless for any other purpose (ideally 20°C or less). It is possible to use the heat

from the back end of power generation as a low (say 50°C) temperature heat source for domestic heating and hot water, but the price for that is reduced efficiency in the electricity generation process. While a "Carnot efficiency" of 40 to 50% sounds awful, in fact the engineering design of thermal power stations is such that the electricity generated is very close indeed to the theoretical physical limits of any heat engine.

Another renewable energy scheme that comes into view from time to time is the Severn Barrage. This – depending on the scheme chosen – has the potential to generate up to nearly 9 GW peak, which would average around 2 GW, equivalent to a large coal-fired power station. An advantage of this scheme is that the tides happen predictably, and it would be possible to adjust supply to some extent to generate when there was demand, possibly even storing excess windpower for later use. Indications are that this project, unfortunately, is a casualty of the current austerity programme.

The recent announcement of eight sites for new nuclear power stations does not identify the likely output; however, typical modern nuclear power stations run at around 1.2 GW, so if all were built this would give a total output of around 10 GW.

**AREAS.** The average power density of offshore wind is 3W/m<sup>2</sup>, so each windmill producing 1 MW needs just under 350,000 m<sup>2</sup>. One thousand windmills, enough to replace a 1 GW power station, or half the Severn Barrage, would use 350,000,000 square metres, or a square a little less than 20 km on the side. Note that the recently opened Thanet wind farm, reportedly the largest offshore wind farm in the world, contains just 100 windmills.

**PHOTO-VOLTAIC.** A typical domestic PV installation would be rated at 2.2 KWp (kilowatts peak output). Because it's not always daytime, and there's less sunshine in the winter, and because of weather effects, the average output is equivalent to about a tenth of this, say 250 watts, which again would be enough to provide roughly half the electricity consumption of the average home.

So. Try and remember these numbers:

1 GW = 1,000 MW = 1,000,000 KW = 1,000,000,000 watts  
300 GW – UK energy demand  
45 GW – UK electricity demand  
Large coal-fired power station: 2.4 GW  
1,000 large offshore windmills: 1 GW  
1-bar fire: 1KW  
A "home": 500 watts  
A domestic PV installation: 250 watts

## References

1. Many of these numbers are derived from *Sustainable energy without the hot air* by David Mackay (accessible online at <http://www.withouthotair.com>)
2. *Reflections on the Motive Power of Fire and on Machines Fitted to Develop that Power* (1824) by Nicolas Léonard Sadi Carnot (1 June 1796 – 24 August 1832)

We blended Prince Albert, Elison's Orange, Sunset, James Grieve, Bramley Seedling, Blenheim Orange and Charles Ross – and these were just from my garden! Other varieties brought were Laxton's Superb, Sturmer Pippin, Worcester Pearmain, D'arcy Spice, Egremont Russet and many we simply couldn't identify. It is a sober reflection that we have been duped by supermarkets, global agribusiness and "cheap" imports to buy just a few relatively bland imported varieties. But apple growers

here are fighting back. Supermarkets are starting to stock English apples again and there is reviving interest in community orchards.

We would like to restore a much larger apple press belonging to Roberto so that we can make juice in "barrel loads" in years to come. Finally, it is worth noting that Traditional English Orchards are recognised as an important wildlife habitat by the National Biodiversity Action Plan and there is a campaign associated with this to identify and report on the status of these orchards. Transition Guildford is participating in this exercise. Please find out more about Transition Guildford at [transitionguildford@googlemail.com](mailto:transitionguildford@googlemail.com)

*If you have land or know of land that the owners would be happy to have cultivated by community groups to grow vegetables or apples please get in touch with John Bannister.*

## Subscriptions for 2011

As members will already know, it was agreed at the AGM in May that the annual subs would be increased to £10 pa for an individual and to £15 per household as from April 2011. So as to make our volunteer administration simpler, in the New Year we will be contacting all those members who have standing orders to ask you to change your order so that the payment date becomes standardized to 11th April.

As always we would very much appreciate your prompt attention on the matter, or if you have already changed the date of payment please let us know so that we do not need to spend valuable time and funds chasing up.

*Chris Coventry, GEF Membership Secretary  
Adrian Thompson, GEF Hon Treasurer*



The Mayor of Waverley, Carole Cockburn, tries her hand at apple-pressing.

not just "Peak Oil" we are witnessing it is "Peak Everything" as governments compete mindlessly to get their economies restarted based on an unsustainable and destructive growth model.

As an example of building a little bit of resilience here in Guildford, Transition Guildford is gardening unused plots of land for the community to grow food. This includes orchards, from a few trees to hundreds of trees, where the apples and plums and pears are being left to rot! We decided to raise awareness of this terrible waste by organising an apple pressing at the Surrey Hills Wood Fair on the 8th and 9th October. Members of the public were invited to bring their apples and take an active part in pressing and sampling the juice. It is hard to find enough uses for apples when they ripen in profusion through late summer and autumn. There is only so much apple crumble one can eat! A mature Bramley tree can produce more than 90kg of apples. Juicing is an excellent way to harvest and store all the golden value tied up in those little beauties.

At the Wood Fair we attracted a huge amount of interest and it opened up new possibilities for us to be involved in community orchards and gain access to more unused land. The National Trust at Winkworth, for example, is very interested in working with us, as they are considering creating a community orchard. Roberto Vogel, a Forum member, supplied the press, and at the Fair many helpers got stuck in washing, slicing, pulping, pressing, bottling and sampling the results.

There are so many delightful apple varieties in Britain, over 2,000, and our climate produces more flavoursome apples than the imported varieties. Our dessert apples originated from trees that still grow wild in Kazakhstan's Tien Shan mountains (the word "Kazak" means "Father Apple") and were probably brought here by the Romans. Henry VIII ordered apple planting on a vast scale and sent his chief fruiterer to bring back new varieties from France. He set up the first commercial orchard in Kent.

# Eco Park for Surrey?

Lucy McSherry

SURREY WASTE MANAGEMENT, working on behalf of Surrey County Council and SITA UK, is currently developing a planning proposal for a waste treatment facility given the name "Eco Park", at a site at Charlton Lane in Shepperton.

The existing site incorporates a Community Recycling Centre (CRC); its bulking and transfer station currently has approximately 150,000 tonnes of waste and recycling – including large quantities of garden waste.

The proposed Eco Park would include development of the CRC and the addition of an Anaerobic Digester and a Batch Oxidation System gasification facility that would process 40,000 tonnes and 60,000 respectively.

An anaerobic digester has been described by some as similar technology to a cow's stomach! Biodegradable waste, in this proposal Surrey households' food waste, is broken down by micro-organisms in the absence of oxygen. This breakdown produces a gas (biogas) and a digestate. The biogas is proposed to be used to generate renewable energy enough for approximately 4,000 homes. The digestate is similar to compost once it

has been de-watered, and this is intended to be sold for use instead of conventional fertilisers.

A number of concerns have been cited regarding this element of the proposed facility. The quantity of food waste is high and would mean a lot of Surrey's boroughs and districts that currently have household food waste collection would divert their food waste to Charlton Lane. Local residents are very concerned that this will lead to bad smells and refuse lorries coming from all over to Surrey to tip at Charlton Lane. Surrey Waste Management has stated that the area where lorries will be emptying food waste will have fast-opening doors and be kept in a negative air pressure state to prevent aromas exiting the building.

The Batch Oxidation System (BOS) gasification unit being proposed will treat 60,000 tonnes from the residual waste stream that otherwise would be going to landfill. Gasification is a form of thermal treatment that super-heats the waste, which then produces a gas that can be burned at high temperature to generate power for approximately 6,000 homes.

## Bioethanol

It is now believed that corn-based bioethanol is worse for human health and the environment than petrol and diesel fuel. Some of the health problems are associated with the use of fertilisers that contain ammonia.

(Source: BBC Focus, Apr '09)

## FACTS & FIGURES

### Gone fishing

Adult kingfishers have to catch in the region of 5,000 minnows in order to feed their brood of six or seven chicks before they're ready to leave the nest tunnel. And most pairs manage to raise two broods in a season.

(Source: Halcyon River Diaries, BBC2, 6 June '10)

## Not only 'Deep Water Horizon'

Many oil companies are causing as much, or even more, harm than was done in the Gulf of Mexico disaster. In Nigeria's major oil-producing region of the Niger Delta, for example, rivers, marshes, forests, farmlands and drinking water are contaminated with considerably more oil every year than was discharged in the entire Gulf spill.

(Source: BBC Wildlife, Autumn '10)

## LED lamps

Light-emitting diode (LED) lamps use a third of the energy of compact fluorescent lamps (CFLs) and have no hazardous mercury content. They are expensive to purchase, but with an average life expectancy of 25,000 hours, they rarely have to be changed.

(Source: New Statesman, 31 May '10)

## FACTS & FIGURES

### Albatrosses

Each year 100,000 albatrosses die because of longline fishing. Of the 19 species of albatross, 15 are classified as threatened with extinction.

(Source: Independent, 11 Apr '09)

### Cultured pigeons

Experiments show that the humble feral pigeon can be trained to distinguish music by Bach and Stravinsky, and paintings by Monet and Picasso.

(Source: BBC Wildlife, Autumn '10)

There is another BOS system currently in operation in Dumfries, Scotland. Local residents are extremely concerned about the emissions associated with the thermal treatment process, and especially as a result of the dispersal models the stack proposed is in excess of 45 metres high!

Consultation is on-going with local residents and Surrey Waste Management has established a Community Liaison Group with a number of local residents for their concerns and questions to be aired and answered. The majority of issues are around traffic implications, air pollution, water usage and disposal (as both the processes proposed are water-use intensive), as well as site selection queries and biodiversity implications.

The formal planning application was

submitted at the end of October to the relevant statutory consultees, with the determination of application due in February/March 2011. If successful, construction could begin as early as August 2011 and would continue until November 2013.

For more information please see Surrey County Council's website. Alternatively, you can contact Alison Bennett at Surrey Waste Management, on 01306 748 300 or email [surrey.waste@sita.co.uk](mailto:surrey.waste@sita.co.uk), or contact Surrey County Council Waste Management Team on 03456 009 009 or email [waste@surreycc.gov.uk](mailto:waste@surreycc.gov.uk)

Learn more from Richard Parkinson, of the Waste Team at SCC, who will be talking about the Eco-Park to the Forum on Wednesday 12 January (details on page 12).

## Surrey Advertiser

published the following letter from John Bannister in its edition of 29 October

### TaxPayers' Alliance miss the point

You recently gave the best part of a page to the TaxPayers' Alliance to voice their views on council functions dealing with diversity and climate change.

I would like to support the work carried out by Climate Change officers at the two councils I am most familiar with, Guildford Borough Council and Surrey County Council, especially the work they have carried out and are continuing to do to reduce 'their' energy bills.

These two councils are paying energy bills, on the buildings and assets they manage on our behalf, of £1.2 million per annum and £17 million per annum, respectively.

Some 40% of GBC's energy bill is incurred at the Spectrum Leisure Centre and approximately 60% of SCC's energy bill is accounted for by our 400 state schools.

It makes eminent business sense to reduce these energy bills where it is cost-effective to do so.

In a world of limited resources with 'peak everything' happening all at once, prices of many vital raw materials including fuel and food are escalating dramatically.

Barring another global recession fossil fuels, and that means electricity prices too, are expected to continue rising steeply. So it is essential the councils manage 'their' energy use.

Deciding on which are the best energy conservation projects to invest in is demanding both technically and in terms of time.

Some in-house expert resources are needed, as in all well run organisations, to select the most attractive projects and bring them to a successful conclusion.

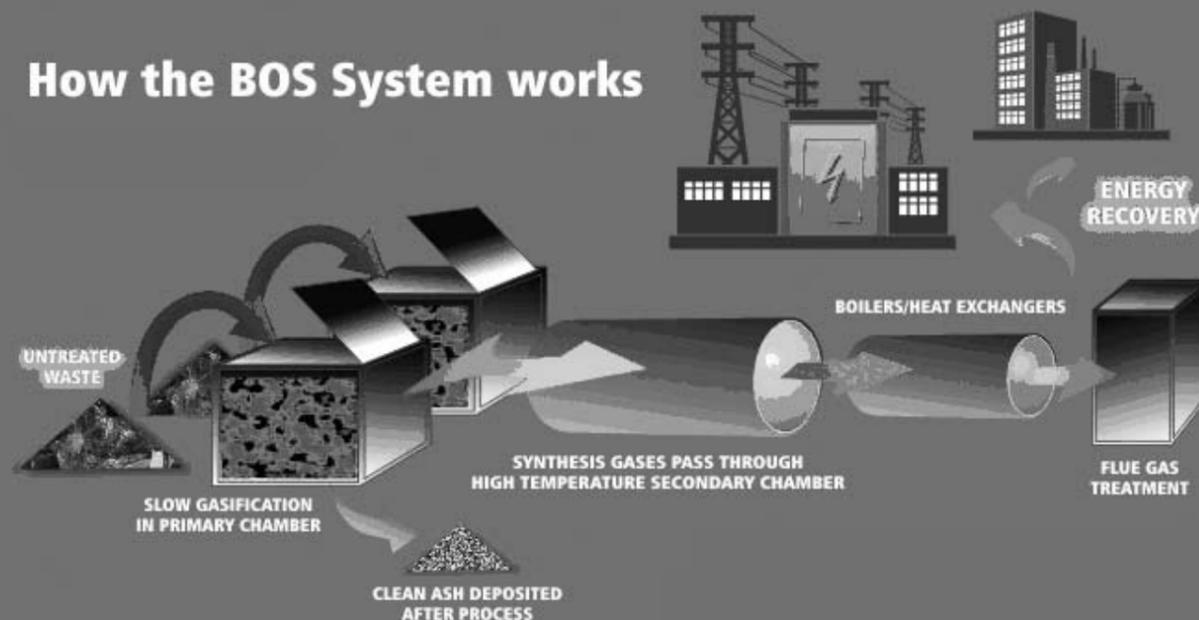
This is a major part of what the councils' Climate Change officers do.

They also advise our residents and businesses on how they too can reduce their energy consumption at a time when the number of people living in fuel poverty is rising steadily.

In this the Guildford Environmental Forum, Transition Guildford and Guildford and Waverley Friends of the Earth are acting as partners to both councils.

**JOHN BANNISTER**  
Guildford Environmental Forum,  
Transition Guildford and Guildford  
and Waverley FOE

## How the BOS System works



THE GOVERNMENT HAS PROMISED a new White Paper next year on the natural environment (see September newsletter). It has undertaken an initial consultation, issuing a Discussion Document *"An invitation to shape the Nature of England"* containing a number of questions. Rather than simply responding to these, however, GEF's response reviewed the contents of the Document.

## REVIEW

Fundamentally it is very welcome that the Document emphasises humanity's dependency on the natural environment, and builds most of its argument on that basis. However, the Forum is concerned that it does not go far enough to acknowledge the level of our dependence. For example the estimate *"that the degradation of our planet's ecosystems is costing us €50 billion each year – a figure that could rise to the equivalent of 7% of global GDP by 2050"* must be a massive understatement. When estimating the cost of losing the resources provided by the natural environment we need to estimate the replacement cost of providing those services by other means. To take one simple example, how much would it cost to hand-pollinate all the crops that are currently insect-pollinated? Elsewhere in the Document the figure of *"£440m per year"* is given as the UK cost of the decline in pollinators (the web source referred to gives no indication of how the figure is reached). On the one hand this may itself be on the low side, but clearly undermines the claim that the global cost of ecosystem degradation is only *"€50 billion each year."*

The ambition contained in the statement *"We have the opportunity to be the generation which puts this right"* is also very welcome. We need, however, to acknowledge that we are the generation that has got it wrong on an unprecedented scale, and overall we are failing to put things right. The failure to address this problem adequately is evidenced in the Document itself in the statement: *"Deficit reduction and ensuring economic recovery are the Government's top priorities. But we also know that we can no longer afford the costs to our economy and quality of life which arise from a degraded natural environment."*

Whatever the questions are on the rate of deficit reduction, having a viable biosphere in which to live is actually more important than the economy. Borrowing to buy equipment that will be used to generate an income over many years is perfectly acceptable business practice. If it were necessary to borrow now to facilitate an environmental "return" from the natural world this would also make good business sense – preserving the biosphere should not come second to deficit reduction. It would also not be acceptable to take a "repair and maintain" approach to a vital asset that is in decline. The continuing falls in populations of pollinators and farmland birds are evidence of the worsening problem.



## Guildford Environmental Forum comments on *"An invitation to shape the Nature of England"*

Raymond Smith

*"We now have the opportunity to be the generation that finally puts a stop to the piecemeal degradation of our natural environment and, instead, seeks active opportunities to enhance its value"* is rather a weak aspiration. We should be aiming at restoring most of the damage that has been done in the last 40 years. Being even more prudent, the aim should be at restoring wildlife populations to pre-DDT levels.

Whilst unnecessary regulations are a waste of resources, to take the approach *"reflecting the Government's plans for reducing regulatory burdens including introducing a one-in-one-out system for new regulations"* is placing ideology and "sound bites" above good management.

To claim that *"This is not a process in which policies will be dictated from the centre"* is clearly belied by the regulation-swapping approach and by the pre-eminence of deficit reduction.

*"For example, the value of natural resources extracted for use in the UK economy in 2007 was £41 billion."* (ONS, 2007: [http://www.statistics.gov.uk/about/methodology by theme/inputoutput/latest data/asp](http://www.statistics.gov.uk/about/methodology%20by%20theme/inputoutput/latest%20data/asp)) The tables referred to do not address the non-monetary aspects of the services provided by the natural environment – air cleaning, water cleaning, pollination and soil preparation, to name just the most obvious. Underestimating these benefits only goes to reinforce the problem of *"leading us to squander valuable natural resources."*

*"The last Environment White Paper: This Common Inheritance: Britain's Environmental Strategy was published in 1990. The intervening 20 years have seen*

*a wide range of measurable improvements to our natural environment, for example: The air we breathe is cleaner today than at any time since before the Industrial Revolution."* It should be remembered that legislation to clean the air is not just an achievement of the last 20 years, but what is clean? Carbon dioxide levels are of course higher.

*"The quality of the water in our rivers has improved measurably since 1990, demonstrated by the return of otters, salmon and other wildlife to many rivers for the first time since the Industrial Revolution. Between 1990 and 2008 the percentage of rivers of good biological quality in England rose from 55 to 72%. These improvements are attributable to the positive impact of investments by the water industry and pollution control measures."* It would be wise to recall that this investment is significantly due to pressure from the EU.

*"In 2009 26% of water bodies were classified "good" and this is expected to rise to 31% by 2015. There is therefore much to be done to deliver the objectives of the WFD. However while this is a challenge it provides us with an opportunity to think differently about how we can protect the water environment, taking an holistic view of land and water and ensure that we take appropriate action to protect ecosystem function."* If, however, we are to reach the Water Framework Directive (WFD) target that 95% of all British rivers are in "good" ecological condition by 2015 it will require more than new thinking – important though that is.

The statement *"clearly demand for resources such*

*as energy, food and water increases with the number of people but the way we consume is also a major issue"* puts the cart before the horse. The way that we consume is not just a major issue, it is a far bigger issue than population growth. To visualise this simply one only needs to appreciate that the ratio between world population now and say 50 years ago is far smaller than the ratio between the consumption levels of the poorest and the richest societies in the world.

It might be as well to acknowledge the connection between the statement about *"Our seas"* that: *"Globally the world's oceans are an enormous carbon sink, having absorbed 25% of global carbon emissions from human activity over the past two centuries"* and the statement: *"In the last 200 years, ocean acidity has increased by 30%."*

## OUR REPLIES

We did reply to some of the questions. In these we made the following points.

- It would be useful to make some realistic calculations of the replacement cost of the services provided
- Much of the content is very welcome, but there is still clearly not sufficient appreciation of the significance of the biosphere in other sections of government.
- We can reduce our footprint on the natural environment abroad, by moving away from the assumption that more luxury consumption is a desirable. In particular we need to acknowledge that meat consumption is far above that which is necessary for a healthy diet, and that it makes excessive demands on global resources (the Forum is not specifically advocating vegetarianism, but a reduction in consumption levels). This applies just as much to UK produced meat, much of which is dependent on vegetable protein (mainly soya) grown overseas.
- The campaign to increase the use of sustainably produced palm oil has already received some government support. This should be continued at a more public level, and should be pressed for as a topic for EU action.
- The value of the natural environment be considered within local planning by having sufficient of an attitude change in the building industry and amongst consumers to the point that locally appropriate biodiverse green roofs were seen as the normal approach on all new buildings.
- Whilst research and education on the issues are important, to encourage businesses to reduce their impact on the environment we must be prepared to use regulation to ensure that the damage done to the natural environment is prevented, so that the costs of this protection are thus passed down the supply chain.

# Hedgehogs

Dr Nigel Reeve

ALTHOUGH NIGEL did not put it so starkly, the story of the hedgehog over the last century or so is a microcosm of the failure of humanity's approach to the rest of the natural world. At one level there is a display of great affection for the hedgehog as a symbol of cuteness whilst on another their populations are declining, at least in Britain, as we harm the real creatures on an unprecedented scale, both directly and via damage to their habitats. By contrast earlier generations who displayed at best a lack of interest but often active hostility to hedgehogs, did them less harm in practice, even if only because they could command fewer resources.

Nigel showed examples of the hedgehog as a cultural icon through much of the world; in Europe these stretched from Spain to Russia. Particularly in America they are being kept as pets – usually an African species. Keeping them as pets creates problems for their welfare, for example neurological disorders as a result of in-breeding.

The European hedgehog is one of fourteen species of hedgehog in the world and its range is from Iberia through to Russia, where its territory overlaps with that of the Eastern European species. They occur in a range of colours from dark brown through to blond, and there are occasional albinos. In Britain and Europe its closest relatives are the mole and the shrew. In this country there has been a marked population decline, that has been shown by the reduction in the numbers seen killed on roads. It is assumed that hedgehogs have not become more adept at avoiding vehicles. As a result of this decline it has become a Biodiversity Action Plan priority species.

The spines of hedgehogs flex at the base so that they are not forced into the skin in a fall, and they act as a very effective shock absorber. Their other distinctive characteristic is their ability to "curl up". This is achieved by a muscle covering their back which they expand over the rest of their body, rather like a draw-string bag. Whilst this is a very effective defence in most situations, badgers (their main predators) are strong enough to tear open and peel away the hedgehog's spiny skin. The hedgehog itself eats invertebrates including many beetles, caterpillars, worms, fly larvae and slugs.

In the 1970s the courting season generally began around mid May, but with climate change it is now often a month earlier. The litters can range from 1 to 10 but are on average 4 to 5, and arrive after 1 month of gestation. Recent research has shown that litters can have more than one father. When the young are born their skins are puffed up with fluid to contain the spines and facilitate birth. These early spines are white and are soon replaced with the adult brown ones. The young are weaned after 40 days.

Individuals have established ranges, and so they suffer if there are changes to their habitats. They are not territorial,

however, as these ranges overlap – most of the time they are good at avoiding each other, possibly by using smell. Some years ago Nigel undertook innovative work studying their habits and found that males have a range about three times that of females. A female will travel 1 to 1.5 km per night, whereas males travel 2 to 3 km. Hedgehogs need an area of at least 10 ha (25 acres) over which to forage and males may range over three times that area in search of females. The males especially have a variety of day nests and they move between these as they move throughout their range. They have a preference for edge habitats, along hedge lines for example, where there is a greater variety of prey items and cover is always nearby.

Hedgehogs hibernate in a nest of leaves beneath some kind of structure. This insulates them against both the cold and warmth. If they get too cold they have to use up energy reserves to warm up, but if they become too warm their metabolism increases and again they use up energy.

Nigel also gave us advice on estate management that protects hedgehogs. There are restrictions on cutting undergrowth for example on verges in the bird breeding season but it is legal after July. However, hedgehogs need undergrowth all the year and there is never a safe time to cut it from the their point of view. There is no way to get the hedgehogs out before cutting. If cutting back scrub (such as a long road verges) the best approach is to cut high, at about 12" (30cm) or above which will not damage the nests. For the sake of all animals, cutting should be done from the centre of a site outwards as this avoids trapping them in the middle.

It would be beneficial to provide nesting places, for example in municipal park hedges. The hedges should be wide at the base and not cleared of vegetation. They need a supply of leaves left for nest building, and of course nest sites that are undisturbed throughout the year. There must also be foraging areas – conservation grassland is good in this respect.

The continuity and connectivity of habitats is important, so a barrier such as a wall or fence is bad. Near houses where boundaries are inevitable leaving a gap for animal passages is important. Low density suburbs are a good habitat, but medium and high density suburbs are less good and hedgehogs are likely to be declining more in these areas as the

habitat becomes more fragmented and night traffic levels are higher.

In domestic settings we need to reduce the hazards: check sheds etc. to make sure they are not trapped inside (try to keep the door shut as much as practical to stop them entering in the first place); check compost heaps before digging them and of course also check piles of leaves (or any other garden waste) before burning (not that GEF would recommend having bonfires anyway).



Hogs Lodge Hedgehog Sanctuary

## Solar power

Energy equal to 6,000 times the world's electricity use constantly shines on Earth. If photovoltaic panels covered just three-tenths of a percent of the United States (equivalent to a 100 mile square) they could power the whole country.

(Source: National Geographic, Sept '09)

## Nature's benefits – 1

A 50% reduction in vandalism and domestic violence has been noted in families in tower blocks that have views of vegetation, compared to identical blocks without such a view.

## Nature's benefits – 2

Self-discipline is improved by 20% in children whose homes have views of trees and vegetation.

## Nature's benefits – 3

Hospital patients with views of nature need fewer painkillers following operations. (Source: Natural World, Spring '09)

# FACTS & FIGURES

## Softly, softly, sneezy monkey

In early 2010, a team of primatologists discovered a new species of monkey in northern Myanmar (formerly Burma).

*Rhinopithecus strykeri*, a previously undescribed species of snub-nosed monkey, has an upturned nose that causes it to sneeze when it rains.

(Source: Fauna and Flora International)



Bill Bannister

## Send CoE First School happy to be sun-powered

John Bannister

DURING THE SUMMER HOLIDAYS this year an impressive array of solar PV panels was installed at Send CoE First School on its school buildings. As shown in the photograph above of jubilant representatives of the school and funding organisations, these panels are on flat roofs and angled to the south on frames.

The total capacity installed is 8.51 kW(p), which will supply a significant part of the school's electricity consumption, helping to reduce its electricity bills. Surplus electricity production from the system is fed into the grid. There is a nice display in the school reception area showing how much electricity has been produced by the panels and how much carbon dioxide has been offset. The Head Teacher, Simon Hobbs, the PTA, the Bursar and the children are thrilled to be part of the green revolution slowly gathering momentum in the UK.

Government grant funding was obtained for about 50% of the installation cost, with the balance coming from local sources including the Community Foundation for Surrey, Johnson Wax Charitable Trust Ltd, Surrey County Council's Local Committee, Guildford Borough Council's 'greening the borough' grant, the school itself and £500 from Guildford Environmental Forum.

Credit must go to Cati Smith in Guildford Borough Council's Climate Change team for the huge amount of work needed to obtain the government grant for the school. Even though only a small part of the total cost came from the Forum, we believe that a

contribution from a community group such as ours helps secure additional funding.

The school was one of the last community projects in the UK to obtain a government grant for renewable energy. These grants for microgeneration schemes have been phased out with the introduction in April 2010 of the Feed-in-Tariff (FIT) funding mechanism for distributed renewable electricity energy systems in this country. Because of the timing of its installation, there is uncertainty over what payments the school will receive under the new FIT for the electricity it supplies to the grid. It is not eligible for the full 36.1p/kWh that post-grant small-scale community PV systems between 4 and 10 kWp receive.

When launched, the FIT payments were guaranteed for the next 25 years but the government considered cutting the FIT – and potentially choking off the mini-boom in solar PV – in its comprehensive spending review in October. This is despite the fact that the subsidy is paid not by the taxpayer but by the electricity companies, which add the cost to consumers' bills. In the end the government gave the tariffs a reprieve until 2013, when they could be cut by 10%.

If you are contemplating installing a solar PV system on your house then you should seize the window of opportunity over the next couple of years. After this, the 41.3p/kWh tariff you can earn from domestic-sized PV systems up to 4kWp, along with all the other tariffs, will slowly reduce (although index-linked).

# RECYCLING UPDATES AND REMINDERS

John Bannister

## PLASTIC BAGS

There is no excuse for putting these in your kerbside waste bin as nearly all supermarkets have in-store bins to send these for recycling (and you all should have sustainable, reusable alternatives by now).

## LOW ENERGY LIGHT BULBS

These bulbs last a very long time but when they do fail they need to be disposed of correctly as they contain minute traces of mercury and rare earths and their disposal is covered by regulations. Your local supermarket almost certainly has a bank to put these in – Sainsburys at Burpham and Godalming do, for example. We understand the mercury and some other materials are recycled. You can also take them to all Community Recycling Centres in the area; they recycle the filament materials as well as the glass elements.

## RIGID PLASTIC CONTAINERS

For a long time the Forum has campaigned for plastics recycling. The introduction of kerbside collection for plastic bottles across most of Guildford Borough has been a tremendous step forward. But that still leaves a lot of people frustrated because other rigid plastics like yogurt pots, food trays, margarine tubs, microwave trays, etc are still being sent to landfill. Nearly all of these have neat little recycling logos embossed on them which just adds to the frustration.

All plastics have a high embodied energy and separation and recycling to remake a new plastic food containers is the best

environmental option. Waverley Borough Council has Bring Banks in its major towns for a wide range of plastic containers, those with recycling logos 1, 2, 5 and 6 (respectively PET, HDPE, PP and PS), which cover the majority of plastic containers we all acquire. There is a Bring Bank in the Sainsburys car park in Godalming taking all these plastics.

The company operating Waverley's scheme is Recresco (who recycle Guildford's mixed glass). Recresco bale the mixed plastics and sell on to a firm in Bristol who, they say, separate into the different types of plastic. Recresco charge Waverley Borough Council £30 every time they empty a Bring Bank, which is perhaps three or four times a week.

Guildford Borough Council is considering the possibility of kerbside collection of NON-BOTTLE RIGID PLASTIC CONTAINERS. We would like to suggest that the use of Recresco Bring Banks may be an interim solution for Guildford while kerbside collection of non-bottle rigid plastics is being evaluated.

If kerbside collection proceeds it is likely to be restricted to that part of the borough within practical driving distance of a depot operated by Verdant in Camberley, in Surrey Heath. Verdant is part of the fast-growing local authorities' recycling company Greenstar UK Group, and claims to have helped South Oxfordshire achieve an average recycling and composting rate of around 70%. This is the target set by Surrey for 2013/14. (Note: care needs to be taken when comparing recycling and composting rates to ensure they are on a consistent basis).

### Bags and bags

UK supermarkets gave out 452 million plastic bags in May 2009, down from 870 million in May 2008. (Source: BBC Focus, Oct '09)

### Prescient toads

An earthquake struck Italy in 2009. At a toad breeding site in the vicinity, 96% of the male toads upped and left before the earthquake struck. Researchers from the Open University suggest that toads can detect "pre-seismic clues such as the release of gases". (Source: BBC Wildlife, June '10)

## FACTS & FIGURES

### ... like there's no tomorrow

One hundred cars are produced every minute around the world. (Source: BBC Focus, Summer '09)

### Pressurised bats

Bats found near wind farms in Canada are dying of decompression sickness due to drops in pressure near moving turbines. They can detect and avoid the blades, but not pressure changes. (Source: BBC Wildlife, Nov '08)

### Lowland heath

There are just 58,000 hectares of lowland heathland left in England today. Though small, this is still 20% of the entire global coverage. (Source: BBC Wildlife, June '10)

## So you want to calculate your carbon footprint?

At the Forum meeting on 18 October ("Life After Growth") a request was made that we provide a link to an on-line carbon footprint calculator. If you like the idea of monitoring your energy use, your eating habits and your buying habits then this could be for you. It might be instructive for you, and perhaps indicate areas of your lifestyle that you may not have connected to your generation of carbon dioxide emissions, to at least take a look at a carbon calculator.

If this appeals to you then why not take a look at: [www.resurgence.org/carboncalculator](http://www.resurgence.org/carboncalculator) They offer a short-cut method based on your expenditures, if handling lots of data connected with your lifestyle doesn't appeal to you. Don't feel guilty about the result. If you commit to cutting your emissions by 4% a year, then (if you live long enough) you will achieve the required 80% cut by 2030, well ahead of global targets.

The Guildford and District RSPB group have kindly agreed to let us use the following article by Alan Bowen, which appeared in their Autumn 2010 newsletter. Alan is a former leader of the group, and he and his wife Monica are also Forum members.

I can remember when he rang me up very excited by the first sightings of peregrines over Guildford. I installed the large peregrine nestbox on Guildford Cathedral in 2001 as a GEF/SITA funded project, but so far no breeding has occurred on the cathedral. I'm confident it's only a matter of time, as peregrines are frequently seen there.

Alan's reference to house martins refers to the three artificial nestboxes for martins that he has put up on his house in Mountside and the three natural nests the birds have built. He thinks all six pairs returned from last year's broods, with a total of over 20 youngsters being raised again this year.

John Bannister



Dan Powell

## Look up for peregrines

IT'S NOT ONLY THE MARTINS that have cheered my August days since the swifts left. One morning early in the month I was in the garden and realized that I could hear a young bird calling, not in the bushes nearby, but above me. There, some 100 feet or so up, were not one but two peregrines. They looked like young ones, swooping and calling. 'Can't be real' I thought; then eliminated any hawk by the pointed wings, kestrel by the facial markings and depth of wing front to back, and hobby, which has very similar facial markings, by size and, on a later check, voice. And anyway, why would hobbies be here? Their place is at Thursley. Come to that, why would any peregrine be here? They haven't nested on Guildford Cathedral and I hadn't heard of nesting at nearby Woking.

Four days later we heard the calls again and rushed into the garden to see the two young joined by another pair which we reckoned were the parents. Four peregrines!! I feel elated and a little nervous to claim such a sighting.

Ten days on, walking on the Hogs Back I hear the call and see the two birds again. A man flying a kite with his children asks, "What birds are those?". "Peregrines," I say proudly, pointing out the difference from a helpfully hovering kestrel nearby. "Oh," he says, "I live down there below the cathedral and can hear them calling every evening when they are roosting on the tower."

A few minutes later they are in combat with another bird. At first I think that they are being harassed in the way that many birds will try to chase off raptors;

but quickly the tables are turned and one of the peregrines catches the bird – it's very white underneath and I wonder if it's a wader on migration, but I never manage to identify it successfully. Quite soon the intruder-cum-prey escapes, dives to earth and out of sight and the peregrines resume their play and move on.

Just think how rare these birds were a few years ago. So not all is gloom and doom in the natural world. Alan Bowen

## YOUR WRITING PLEASE!

In addition to regular input from Forum group chairs to our newsletter, we have sometimes received and published articles, even a series, sent in by members. These items are most welcome, broadening the newsletter's content and providing new perspectives.

So I'm appealing to the membership for more contributions to our newsletter. Any environment-related topic that inspires you would probably be suitable, and if it's got a Guildford connection so much the better.

There's no stipulation as to number of words (although a thesis wouldn't be appropriate!), on the understanding that text may be edited a little for space reasons. And of course it's always nice to receive accompanying illustrative material such as photographs.

If you have ideas you'd like to write about and share with other members, please get in touch with me (details on back page). Clare Windsor



Guildford Environmental Forum aims to improve the environment in and around Guildford for wildlife and for people and to build a sustainable future. Forum membership costs only £5 per year or £7 for a couple, and new members are warmly welcomed. Please contact Chris Coventry on 01483 283571 or e-mail [gefmembership@dsl.pipex.com](mailto:gefmembership@dsl.pipex.com)



# CALENDAR



All the Forum's Group meetings are open to the public

## Wednesday 12 January

GEF Energy Group. **"The Eco-Park, Surrey's Solution to Cutting our Waste to Landfill"**. Richard Parkinson, Waste Contract and Infrastructure Team Manager at SCC, will take us through the design and planned operation of the anaerobic digestion and gasification plants. 1845 for 1900. Committee Room 1, GBC Millmead Offices.

## Monday 24 January

GEF Food and Energy Groups in conjunction with Guildford and Waverley Friends of the Earth. The film **"Food Inc"**, showing the inside story of our global and often cruel food system. 1845 for 1900. Council Chamber, GBC Millmead Offices.

## Wednesday 26 January

GEF Biodiversity Group. Jonathan Bradley, of Verdant Ecology: **"Protected Species and Planning"**. 1845 for 1900. Committee Room 1, GBC Millmead Offices.

## Thursday 3 February

Geographical Association of Guildford. A talk by Tony Bryan of Water Aid: **"Water Aid – Problems and Solutions"**. 1830 at Guildford High School (junction of London Road and Nightingale Road).

## Thursday 17 February

GEF Energy Group. **"The Surrey Lighting Project"**. Street lamps across Surrey are being replaced. Craig Hales, Environmental Manager and Mike Saraty, PFI Street Lighting Project Manager of Skanska will explain the rationale, energy savings and smart features of this project. 1845 for 1900. Committee Room 1, GBC Millmead Offices.

## Thursday 17 March

Geographical Association of Guildford. A presentation by Dr Caroline Scarles from the University of Surrey: **"Social and Economic Issues Related to Tourism"**. 1830 at Guildford High School (junction of London Road and Nightingale Road).

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