

NATUR CYMRU

A Review of Wildlife in Wales

Rhif/Number 15 • Haf/Summer 2005



- Arthur's Crow
- Octopus Encounter
- Adar a Chymunedau
- Environment Strategy Special
- Fforwm Carreg
- The tale of a nursery

PLUS Moonwort, hedgehogs, bumblebees, books



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NATUR CYMRU

A Review of Wildlife in Wales

Cyhoeddir *Natur Cymru* bedair gwaith y flwyddyn, mis Mawrth, mis Mehefin, mis Medi a mis Rhagfyr. Cefnogir y cylchgrawn gan aelodau o Bartneriaeth Bioamrywiaeth Cymru. Y rhain yw: Cyngor Cefn Gwlad Cymru, Asiantaeth yr Amgylchedd Cymru, y Comisiwn Coedwigaeth, Llywodraeth Cynulliad Cymru, Amgueddfeydd ac Oriolau Cenedlaethol Cymru, Cymdeithas Frenhinol er Gwarchod Adar, Ymddiriedolaethau Bywyd Gwylt Cymru a WWF Cymru.

Bwriedir i *Natur Cymru* hyrwyddo a chyfnewid gwybodaeth am fioamrywiaeth a hyrwyddo dadl. Nid yw'r farn a fyneir yn y cylchgrawn hwn o anghenraid yn farn y noddwyr. Os oes gennych wybodaeth, erthyglau neu waith celf y credwch a allai fod o ddiddordeb i'r darllenwyr, cysylltwch â'r Golygydd os gwelwch yn dda.



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Natur Cymru is intended to promote the exchange of information about biodiversity and encourage debate. The views expressed in this magazine are not necessarily those of the sponsors. If you have information, ideas for articles or artwork which you think might be of interest to readers, please contact the Editor.

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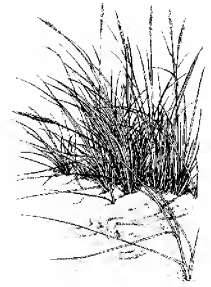


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NATUR CYMRU GOLYGYDDOL



Yn gynharach eleni, fe gafodd y newyddion trist fod un o bob pump o'n planhigion dan fygythiad gryn sylw yn y cyfryngau. Yn wir, bu'r stori ar dudalen flaen yr *Independent*, er enghraifft. Ffermio a gafodd lawer o'r bai, ond yn erthygl olygyddol y *Western Mail*, fe nodwyd nad ffermwyr sy'n llunio'r rheolau. "Nid ffermwyr a gynigiodd grantiau i ddraenio gwlyptiroedd neu i annog pobl i ddiestrio gwrychoedd, ac nid nhw a aeth ati i blannu coedwigoedd conwydd difywyd lle ceid gynt goetiroedd brodorol."

Gan roi o'r neilltu am y tro pwy'n union a oedd yn dadlau dros beth – ac nid yw undebau'r ffermwyr yn ddi-fai yn hyn o beth – y peth pwysig yw bod buddiannau blodyn-ymenyn yr'yd a'r ffermwr, sydd ill dau dan gryn bwysau, yn mynd law yn llaw, fel petai. Mae'n rhaid iddyn nhw sefyll fel un neu gael eu gorchfygu. Yna, nid oes yn rhaid pendroni rhyw lawer cyn sylweddoli fod cysylltiad i'w gael rhwng buddiannau byd natur a buddiannau dynol-ryw yn gyffredinol. Y llynedd, cafodd darn o fforest law Brasil, a oedd mor fawr â Gwlad Belg, ei dorri i dyfu soia ar gyfer ffermwyr eidion (rheswm arall dros fwyta cig eidion sy'n dod o Gymru, ac i beidio â bwyta cig eidion o gwbl os nad ydych yn gwybod ei darddiad). Oherwydd hyn, rhaid i ddynol-ryw geisio darganfod ffyrdd o roi stop ar ddiestrio'r biosffer hollbwysig yma – dyn a'wyr beth fydd yn digwydd fel arall.

Yn ddiweddar, aeth James Lovelock – sef pensaer damcaniaeth Gaia, lle caiff y ddaear ei gweld fel

organedd hunanreolus – ati i ddisgrifio datblygu cynaliadwy fel syniad gwirion afyddai wedi bod yn syniad gwych yn 1800, ond ei bod bellach yn rhy hwyr i'w roi ar waith. Fodd bynnag, er mor ddu yw'r rhagolygon, ayw hi byth yn rhy

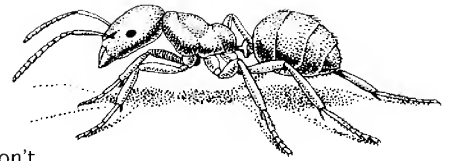
hwyr i wneud ymdrech pan focymaint yn y fantol? Fe fydd gwledydd sy'n ystyried o ddifrif y bygythiadau amgylcheddol bydeang, ac sy'n newid eu ffyrdd o wneud pethau, mewn gwell sefyllfa o lawer i wynebu'r dyfodol na'r rhai hynny sy'n gwneud dim.

Yma yng Nghymru, mae'r Cynllun Datblygu Cynaliadwy wedi cael ei roi ar y gweill, ac mae llawer yn rhoi eu ffydd yn y Strategaeth Amgylcheddol sydd ar ddod. Dim ond amser a ddengys pa un a oes ganddynt y momentwm gwleidyddol i dorri trwy'r llesgedd sefydliadol a'r buddiannau breintiedig, ai peidio. Ond o leiaf fe allwn ddweud ein dweud – dyma rywbeth y mae Gweinidog yr Amgylchedd yn ein hannog i'w wneud ar dudalen 45. Yn sicr, fe ddylem ddilyn ei gyngor. Er mwyn rhoi rhywfaint o'r cefndir i chi, mae gennym ddwy erthygl yn sôn am wahanol agweddau ar y Strategaeth Amgylcheddol. Mae Paul Allen yn trafod yr her anferth a ddaw yn sgil newid yn yr hinsawdd, tra mae Tony Prater yn trafod pa wahanueth a ddaw i ran bioamrywiaeth yn ei sgil.

Mae *Natur Cymru* yn bedair oed, ac mae 15 o rifynnau wedi eu cyhoeddi. Er mwyn dathlu hyn, rydym wedi cyflwyno cryn dipyn o welliannau i'r cylchgrawn, ac rydym yn gobeithio'n fawr y byddwch yn eu hoffi. Bellach, mae modd cael lluniau lliw ar bob tudalen – rhywbeth a fydd yn ein cynorthwyo i ddathlu'r cysylltiad bendigedig hwnnw sydd gennym â natur yn well. Ys dywed lolo Williams yn ei raglen deledu ddiweddar ar fywyd gwyllt, os nad ydym yn gwylio'i raglen ef fe ddylem fod allan yn yr awyr agored yn gwerthfawrogi'r olygfa. Darllen *Natur Cymru*, wrth gwrs, yw'r dewis amlwg arall. Ymunwch â'n cyfranwyr wrth iddyn nhwyylio cacwn â rhifau ar eu cefnau, wrth iddyn nhw ddisgrifio'r rhinweddau hudol sy'n perthyn i loer-redyn, neu wrth iddyn nhw ddarganfod octopws dan graig. Gadewch i ni boeni am y geiriau a'r lluniau – y cwbl sy'n rhaid i chi ei wneud yw rhoi o'ch amser a'ch dychymyg.

James Robertson





The grim news that one in five plants is under threat was widely reported in the media earlier this year, taking over the front page of the *Independent*, for example. Farming got much of the blame but, in its Editorial, the *Western Mail* pointed out that farmers don't make the rules. "It wasn't farmers who offered grants to drain the wetlands or encouraged the destruction of hedgerows, or who replaced native woodland with lifeless conifer forests."

Leaving aside exactly who argued for what, and the farming unions are not blameless by any means, the important point is that the interests of the struggling corn buttercup and the equally struggling Welsh farmer are now clearly allied; they stand together or fall apart. It is then only a short step to recognising the link between all our human interests and those of nature. With an area of Brazilian rainforest the size of Belgium being bulldozed last year to grow soya for beef farmers (yet another reason to eat grass-fed Welsh beef, and not to eat beef at all unless you know its provenance), humans must find ways of applying the brakes to the destruction of the life-supporting biosphere, or we will all go under.

The architect of the Gaia theory of the Earth as a self-regulating organism, James Lovelock, recently described sustainable development as a crazy notion, which would have been a wonderful idea in 1800, but was now far too late. However black the outlook may be, can it ever be too late to make the effort, when the stakes are so high? Countries which take global environmental threats seriously and shift their ways of doing business will be better placed to

face the future than those that don't.

Here in Wales the Sustainable Development Scheme is up and running, and hopes are also being pinned on the forthcoming Environment Strategy. Whether they have the political momentum to breach institutional inertia and vested interests, time will tell. But at least we can have our say, as the Environment Minister urges us to do on p46. We should take him up on this. To fill in some of the background we have two articles on different aspects of the Environment Strategy. Paul Allen looks at the huge challenge of climate change, and Tony Prater at the acid test of what difference it will make for biodiversity.

Natur Cymru is four years, and 15 issues old. To mark this we have made a number of improvements to your magazine, which we hope you like. Every page can now carry colour images, which will help us to better celebrate the life-affirming virtues of contact with nature. As Iolo Williams advised us, on his recent television wildlife safari, when not watching his programme we should be out there breathing in the view. The next best thing, of course, is to read *Natur Cymru*. Join our contributors, as they watch bumblebees with numbers on their backs, describe the magical qualities of moonwort, or discover an octopus under a rock. Let us provide the words and pictures. All you need to do is supply the time and imagination.

James Robertson



Rohan Holt



Arthur's Crow

Choughs

RSPB

Aloft above a Welsh cliff, buffeted by a wind heavy with ozone and salt spray, the chough more than any other bird encapsulates not only the physical reality of Europe's Atlantic fringe, but also its romantic, Celtic spirit. So when the chough was in trouble, in a sense so were we.

IAN BULLOCK describes how our knowledge of the exacting requirements of this master of the air has brought about a welcome recovery in the fortunes of Arthur's Crow.

The crow family includes the most intelligent and yet the most reviled of birds. 'A murder of crows' is their collective reputation. The jackdaw with the alert silver eye of the pickpocket, the raven associated from antiquity with corpse-strewn battlefields and the magpie, in modern times perhaps the most hated of suburban thugs, plundering the nests or murdering the chicks of our best loved garden birds. But the least known of the seven British crows has long been my favourite, and is admired by all who love the mountains or coasts of Wales. When it sweeps into view, bounding along on gusting winds which would capsize lesser mortals, it brightens the bleakest day. In flight it has the easy grace of an athlete, the broad shoulders and long fingers of the acrobat, and the bold ringing cry of the extrovert. Not till it lands can we see its finest features, the curved red sickle of a bill, and the bright vermilion legs. These give its alternative English, and commonest Welsh names: the Red-billed Crow, *Brân Piggoch* or the Red-legged Crow, *Bran Goesgoch*. What a combination: jet black and scarlet! One of the older legends says that the red beak and legs of the chough signify the blood of King Arthur's battles; that when he died, his spirit entered a chough and flew to the west. Some say it represents the guardian spirit of King Arthur, who will return one day to free his people: *Brân Arthur* in Welsh, Arthur's Crow.

No wonder it was coveted as a heraldic symbol in the past, appearing on many coats of arms. The dramatic colours set it apart from all other crows. The bright red pigments of bill and legs occur throughout its biology: the egg has a vivid orange yolk, and even a moulted feather



found on a clifftop can be identified by the orange signature at the tip of the quill. Until the 16th century the chough as heraldic device was reserved exclusively for Cornish families, but thereafter it occurs more widely on various crests and coats of arms. It is still inextricably linked to Cornwall though, appearing on the county coat of arms, the crest of the St Aubyn family of St Michaels Mount, and is the central motif on the insignia of RAF St Mawgan near Newquay.

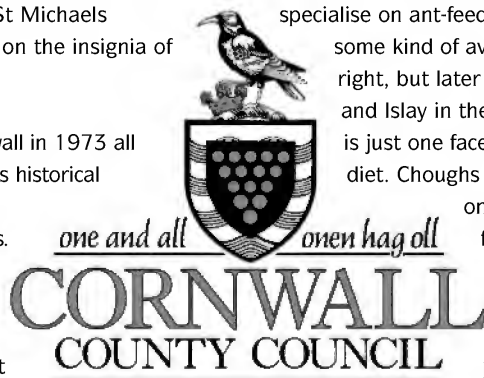
This made its extinction in Cornwall in 1973 all the more dramatic. A review of its historical distribution shows how its range has shrunk since the early 1800s. It disappeared from the Kent and Sussex coast by 1850, from the Cumbrian coast by 1860, from Somerset and Dorset by 1890, from most of the Scottish mainland and offshore islands by 1900, and from the Channel Islands (Jersey, Sark and Guernsey) by 1930. When the last 'Cornish' chough died in 1973, the chances of their ever breeding again in England seemed at an end. T.A. Coward, in his *Birds of the British Isles and their Eggs*, wrote: "A melancholy interest surrounds the chough... it is a species that is going under". What could be more poignant: that the bird which kept the spirit of King Arthur alive for centuries might perish in his native kingdom.

With such a range contraction, and the taint of extinction still heavy on the species, there was great

anxiety to learn more about this charismatic bird before it was too late. At the time, there was little known about the feeding ecology of the chough, nor why it had vanished from what were considered to be its strongholds. Irvine Whittaker spent several years in the 1940s studying a pair of choughs nesting in a disused quarry in Wales and wrote: "The birds seemed very conservative in their choice of feeding grounds. Insects and their larvae obviously constituted the bulk of their food, but the more precise nature of these I was unable to determine with certainty. Several individuals amongst a party of ten feeding on sheep pasture, and which I watched closely, were digging into the short cropped vegetation with the utmost vigour".

One of the first to shed light on their diet was Sue Cowdy, who in 1958 on Bardsey described how, in late summer, they gorge on ants. For many years afterwards, bird books recorded faithfully how they specialise on ant-feeding, giving the impression of some kind of avian aardvark. Sue Cowdy was right, but later studies on Anglesey, Bardsey and Islay in the late 1970s showed that this is just one facet of a remarkably specialised diet. Choughs are almost wholly dependent on soil invertebrates for their food, locating them by digging vigorously, as Whittaker described. The chough bill is about 4 cm long; it can probe 2-3cm, and dig to 4-5cm depth. This gives it

access to insects hidden in the roots of grasses and herbs in the top 5cm of the soil. The long curved bill is fine at the tip like a curlew's but thickened at the base like a woodpecker's beak. This gives it the sensitivity to feel for the telltale change in texture or movement of a buried grub, the strength of a pickaxe to hack into the ground and the precision of forceps to extricate items after excavation. Prey items most commonly taken are beetles and their grubs (eg wireworms and mealworms), fly larvae (favourite of all being leatherjackets), moth larvae, spiders, earwigs, and ants. The diet varies seasonally, with a preponderance of soil items in autumn, winter and spring





(supplemented in the short days of winter with cereal grains taken from stubbles, if they can find them). In summer, when soils dry out and many insects hatch, as Sue Cowdy noted on Bardsey, choughs may take more surface items of food, breaking open ants' nests, picking beetles and spiders off the surface, occasionally even chasing grasshoppers.

Soil invertebrates are most abundant in open habitats with varied soil depth and botanical diversity, so choughs feed most commonly in poorer, grazed pastures on rocky coastal terrain. Conversely, improved pasture with a single grass species, compacted soil and heavy addition of fertiliser is often poor in soil invertebrates, particularly the fly and beetle larvae on which the chough depends. Choughs also prefer to feed in well-drained soils. These are easier to excavate, less prone to the waterlogging which reduces invertebrate numbers, and warm up faster in winter. Anyone who has watched choughs knows that they enjoy feeding around rock outcrops where the soil is thinner. Such sites often concentrate invertebrates, partly helped by the extra warmth from the rocks in sunshine,

partly because of the better drainage. The light soils in sand dunes (which can support huge concentrations of chafer larvae in some seasons) and the loose, crumbly soils of bare cliff slopes are also very popular feeding sites.

Research shows that vegetation height is critical to choughs' ability to feed. Studies carried out on the RSPB Ramsey Island reserve have shown that in both clifftop grassland, (where vegetation height ranged between 0 and 7cm) and in inland pastures (where it varied from 0 to 21cm tall), the mean sward height at chosen feeding sites was 1.1cm. For a bird with a bill 4cm long, searching for food 2-3cm down in the soil, it follows that vegetation more than 1 or 2cm tall will impede its ability to dig. Modern grass leys are therefore of no use to them. The longer the grass, the less light reaches the soil, creating a cold, dark environment unattractive to insects. In horse- or cattle-grazed pasture they concentrate on the fly larvae and dung-beetles in cow-pats and horse droppings. Close-cropped sheep pasture is ideal, particularly if unimproved. Mixed livestock, out-wintered, as on the Castlemartin Ranges of south Pembrokeshire, is an excellent combination.

Rabbit-grazed clifftop lawns are best of all. Old photographs show that this habitat was once very common around much of our coast. The pattern since the war has been to withdraw livestock from the cliffs and graze them in improved, enclosed fields inland. Without grazing on the cliffs, rank grass, bracken and bramble quickly invade, and within a decade gorse bushes create a dense, closed canopy. It is no accident that, for much of our coast, the only places that chough can feed are on the coast path itself, where walkers have created a strip of short turf, or at the very cliff edge, where the soil crumbles away and larger plants cannot get hold.

The exposed headlands of Pembrokeshire and Caernarfonshire are now among the last available feeding areas for chough. Here winter gales stunt vegetation, exposure creates more open ground, and thin soils allow a variety of plants with associated invertebrate richness. One other important effect of

the sea is its influence on local climate. The maritime strip receives more overall sunshine and freedom from snow and ice. The extra warmth allows insect larvae to continue to grow through the winter months, providing a rich food resource despite short day-length. Frozen ground in winter is fatal to a bird that needs to dig for its food; there was evidence of the high mortality in the coldest winters of the 60s and 70s. Ironically, for chough global warming will be a mixed blessing: the milder winters mean better winter survival, but warmer, wetter weather encourages faster vegetation growth, which may reduce feeding opportunities.

Much has changed for chough since the early days when farmers shot it on sight as 'a crow with blood on its bill'. Now the bird (and its nest) is protected by law on Schedule 1 of the Wildlife and Countryside Act. Choughs nest high in the roof of sea-caves, in deep fissures in sea or mountain cliffs, in old mineshafts, and even in disused buildings in Scotland and Ireland. Where there is a conflict between nest sites and climbing routes, seasonal bans have worked well to reduce disturbance at the nest. Climbing skills have even been used to extend its breeding range, as Tony Cross has demonstrated in Ceredigion with artificial nest sites on otherwise unsuitable coastal cliffs.

Colour-ringing of chicks in the nest in north Wales, mid-Wales and Pembrokeshire has shown just how widely young birds can disperse. Females travel further than males and have been found nesting up to 47 miles from where they fledged, which bodes well for re-colonisation. Indeed when choughs returned to the Gower peninsula in 1990, breeding again after an absence of nearly 100 years, colour rings showed they were Pembrokeshire natives!

Our understanding of the importance of land management for chough feeding habitat is now driving several practical initiatives to help them. The National Trust, which owns many of the finest strips of coast where chough still breed, has been active in reintroducing pony grazing at key coastal sites. The Trust has also pioneered the management of heathland, burning, clearing gorse and grazing to maintain the open maritime heath which is also a key chough feeding habitat on many headlands.

One of the best recent schemes was set up in 1999 by Pembrokeshire Coast National Park, called 'Conserving the Coastal Slope'. This provided practical help for local farmers, clearing blackthorn, bracken and gorse or providing water troughs and fences to allow them to graze coastal slopes again. Such techniques are now integral to Tir Gofal agreements throughout Wales,



which, in benefiting though, also improve conditions for coastal flora, rare invertebrates and the butterflies which once thrived in the sunnier, more open habitats.

How has the chough population fared in recent decades? The first chough census in 1963 found 7-800 breeding pairs in Britain and Ireland. A more thorough national census in 1982 found just over 900 breeding pairs, with a distribution almost identical to that shown in the 1972 *Atlas of Breeding Birds in Britain and Ireland*. In both of these censuses, the bulk of birds (over 70%) were along the west coast of Ireland, with around 140 pairs (15%) in Wales. Repeated again in 1992, the census recorded 1247 breeding pairs in Britain and Ireland, three-quarters still in Ireland, and with an increased Welsh population of 150 pairs. In the intervening decade, the population on Anglesey had increased markedly, whereas the inland population in Meirionnydd had fallen from 12 to 8 pairs. The most recent census was undertaken in 2002 and this found a minimum of 228 breeding pairs in Wales, which looks remarkably

healthy. The overall results, collated by RSPB, are currently in press, but show a healthy Irish population, steady Scottish population, an incredible increase on the Isle of Man (up from 76 to 128 pairs in the last decade) and one pair clinging on in Northern Ireland. Perhaps most exciting of all, in 2001, four choughs appeared dramatically in Cornwall. No one knows where they came from. They have bred successfully for the last three years, rearing three or four chicks annually. It looks as though the spirit of King Arthur is alive and well after all.

Ian Bullock is a freelance biologist who worked for 25 years for RSPB, first at South Stack on Anglesey where he did an MSc on the feeding ecology of the chough. In 1982 he organised the National Census of the chough for RSPB, walking much of the western seaboard of Ireland seeking out breeding pairs. Between 1993 and 2003 he was warden of Ramsey Island Nature Reserve in Pembrokeshire where he devoted much time to the study and management of the island's eight resident pairs. He still lives within earshot of his favourite bird.

Brân Arthur - 'deryn y glannau Celtaidd

Pwy all beidio rhyfeddu at ehediad acrobatig y frân goesgoch, a chael ei gyfareddu gan liw smart a chri unigryw yr aderyn yma – un o adar mwyaf arbennig glannau gorllewinol Prydain. Oherwydd y lliw dramatig fe ymddangosodd ar nifer o arfbeisiau yn y gorffennol, yn enwedig y rhai â chysylltiad Cernywaidd. Trist felly oedd gweld diflaniad yr aderyn o Gernyw yn 1973, a hynny 'n rhan o ddirywiad cyffredinol ers 1800. Darganfuwyd bod y frân hon yn dibynnu'n llwyr, o ran ei bwyd, ar drychfilod sy'n byw o gwmpas gwreiddiau planhigion o fewn haenen 5cm uchaf y pridd. Mae mwy o'r trychfilod hyn mewn cynefinoedd agored gydag amrywiaeth o blanhigion a gwahanol ddyfnideroedd pridd – bydd y brain felly yn bwydo'n bennaf ar dir pori sâl a gweddol sych ar diroedd creigiog arfordirol, er y gall pridd ysgafn ar dwyni tywod a chlogwyni meddal fod yn boblogaidd hefyd. Mae uchder y llystyfiant yn allweddol – bydd y brain yn dewis tyrchu mewn llystyfiant sy'n mesur, ar gyfartaledd,

1.1cm o uchder. Mae sefyllfa'r frân goesgoch wedi gwella, drwy fentrau amaeth amgylcheddol fel Tir Gofal a chynllun Gwarchod y Godir yn Sir Benfro, a hefyd drwy ddarparu nythfannau artiffisial ychwanegol. Bellach, mae'r boblogaeth yn weddol iach gyda 228 pâr yng Ng hymru (yn 2002) ac adar yn dal eu tir mewn rhannau eraill o Brydain ac Iwerddon – ac yn dychwelyd, ers 4 blynedd, i nythu yng Nghernyw.



Mike Alexander



Environment Strategy – a chance for all

All photos Rohan Holt

Rarely do we have the opportunity to influence the scale and direction of environmental policy and action in Wales. In March 2004, the Minister for Environment, Planning and Countryside, Carwyn Jones, set the ball rolling towards delivering an Environment Strategy for Wales which should and must do just that. This was warmly welcomed by all interested in our environment, both in rural and urban areas, and in issues as varied as natural history, resource management and protection, and the health benefits of the environment.

A team, led by the Welsh Assembly Government, was set up which included secondments from CCW, Forestry Commission, Environment Agency and Wales Environment Link, to help draft the consultation paper and then the subsequent strategy. The Minister appointed a Reference Group of representatives from about 20 organisations, covering a wide spectrum of interests, to inform and guide the process. Summer 2004 saw an extensive range of consultation events and activities targeted at the general public, young people as well as those with a professional involvement in the environment. The aim was to identify issues which were of concern to people and should be addressed by the strategy. Since then the ES team, under the guidance of the Reference Group, has been drafting the consultation document: Our Environment – Our Future – Your views.

This has now been completed and it will go out for public consultation in early July 2005 for a three month consultation period to early

*The Assembly's Environment Strategy is often described by policy makers as the last leg of a three-legged stool, the others being the Economic and Social Strategies. All three legs are necessary for the stool to stand up – and strong policies on the environment, as well as the economy and society, are essential if Wales is to meet the challenges of the future, for example by supporting Wales' Sustainable Development Scheme. What will all this mean for nature?
TONY PRATER investigates.*

October. The consultation document provides detailed background information and then, fundamentally, proposes key outcomes that the Assembly considers are important to achieve by the end of the Strategy period in 2025. The purpose of the consultation is to ask whether the right outcomes have been identified and then what actions are required to deliver them in the short, medium and long term.

So, what issues have been included in the consultation? Well, they have been grouped into five broad themes – climate change, the management of our land and sea, sustainable use of resources, biodiversity and quality of life. This wide range of environmental subjects is important because the Strategy will be a key document to deliver the Sustainable Development Scheme. For many years we have had an economic plan for Wales but the environment has been languishing in virtual obscurity. This is a real opportunity to bring the environment centre stage.

What are the key issues? Different organisations and individuals will have different priorities but from my perspective, the way it deals with haemorrhaging biodiversity and the chronic deterioration of sites of nature conservation importance will be critical. When the UK Biodiversity Action Plan assessment was published in 2002, not only were population trends on 45% of species unknown, but 18% were still declining and 7.5% had been lost to Wales! Just 22% were stable or increasing. Habitats fared little better with 46% still declining in extent – but at least none was lost! These are the most special of our species and habitats but there is a huge swathe of other habitats and species which we also value and with which we are much more familiar. These are

monitored less well except for a few surveys such as butterfly transects or the breeding bird survey. They too tend to show that many species, especially in farmed land but also in woodland, have declined significantly over the last ten years. The Countryside Survey, which covers habitats and common plants, does not have a statistically reliable number of samples (yet) from Wales, but it too shows that there are decreases in specialist wildlife and, like birds, shows increases in generalists and particularly in plants which can survive increased levels of nitrogen and management.

Widespread declines of birds, butterflies and plants underline the real problems which can and must be addressed robustly by the Environment Strategy. O that there were a magic bullet which could reverse the losses we have seen and make our urban and rural areas richer again! Sadly, there isn't one. We need to employ a wide range of different mechanisms to do this, often at the local level. Opportunities to make things better are provided by agri-environment schemes, development control, and the management of road verges and hedgerows by local authorities and landowners, for example. Much of this requires a change in approach and philosophy rather than any radical new system.



Agriculture and environment

Take agri-environment schemes: Tir Gofal is potentially one of the most advanced. In the early days the hope was that the scheme would cover 50% of farms within 10 years – as its predecessor, Tir Cymen, did in its pilot areas – in order to achieve the real benefits of scale. Sadly, after five years it has only reached 15% of the land area – miles (or should that be square kilometres) below what is needed to deliver real wildlife benefits, unless species happen to be supported by habitat prescriptions and, consequently, they often get little benefit and no monitoring. So not only do we need better funding to increase its ‘penetration’, the scheme needs to target particular sites, whose owners and managers need support and adequate information if we are to achieve across-the-board biodiversity gains.

Of course, it is not just up to the agriculture sector and the Assembly Government agriculture staff to deliver gains for widespread biodiversity; many others have a major role.

It will be a huge challenge for Local Authorities to deliver gains through their roles in development control, planning and land management. Can the Strategy help to guide such activities? For Welsh biodiversity, it will be essential that it does so. We can all think of many small-scale activities which have reduced the wildlife value of our roadsides, churchyards, woodlands and copses, river banks and numerous other areas. It is the sum total of these activities which has left us the poorer.

From time to time, CCW has been criticised for designating sites of international and national importance for wildlife. These sites are the last bastions of some of our most special and specialist wildlife. They do need the

protection and sensitive management which only designation can bring. However, even in these sites all is not rosy. CCW undertook a rapid review of SSSIs in 2003 and estimated that 70% of the features for which the sites had been designated were in unfavourable condition and, of those, 74% of them were still declining. Getting these sites into favourable condition must be a high priority; we need action to deliver this by the end of the decade. The Strategy covers the period to 2025 and it is essential that targets are set for the short, medium and long term. Many locally important sites also contribute to the richness of our environment; it would be great to see real progress on, and resources for this, signalled in the Strategy.

Paul Allen's contribution to this edition of *Natur Cymru* has looked

at climate change, a major component of the Strategy, so I will not comment on this aspect except to say that many of the factors which are driving climate change also cause significant diffuse pollution. Compounds such as nitrogen oxides and sulphur dioxide are potent pollutants of our waters and land – often acting in a similar way to agricultural fertilizers; hence the increase in nitrogen-loving plants at the expense of specialist ones, or the increase in eutrophication of our waters. It has been estimated that,



in places, up to the equivalent of 15 units of nitrogen are deposited on a hectare of land each year – about one third of the amount which would start to reduce the habitat value. Much of this is generated by power stations, transport and industry, though partly supported by domestic demands. Economic development and environmental degradation are inextricably linked. Can the Environment Strategy deal with this? I doubt it is the place to do that, but the Sustainable Development Scheme certainly is – I will look forward to seeing a sea-change in its approach. As an aside, the revised

economic strategy 'Winning Wales' is due out in draft around the same time as the Environment Strategy. It will be a test of sustainable development to see how well these two strategies dovetail!

There are many outcomes identified in this Strategy which one could and may wish to comment upon. We do have to define actions which will lead to real benefits for our environment. While we have much to appreciate still, the rate of decline of species, sites and habitats is such that we can't just hope. Real action is vital. The Environment Strategy provides us with a mechanism for reviewing the whole range of environmental issues. It is up to us to ensure that when the consultation takes place in the summer, we have our say. It is a chance which we can ill afford to ignore.

Tony Prater has written this as RSPB Cymru's conservation manager. He is a member of the Environment Strategy team, a member of Wales Biodiversity Partnership and chair of Wales Environment Link.

Strategaeth yr Amgylchedd – cyfle euraid neu eiriau gwag?

Yr haf hwn, bydd cyfle i fynegi barn ar Strategaeth yr Amgylchedd ar gyfer Cymru, dogfen a fu ar y gweill ers Mawrth 2004 dan arweiniad tîm a benodwyd gan Carwyn Jones, AC.

Mae 'Ein Hamgylchedd, Ein Dyfodol – Eich Barn' yn trafod themâu sydd wedi dod i'r amlwg drwy drafodaeth eang yn ystod y flwyddyn ddiwethaf: newid hinsawdd, rheolaeth ein tir a'n môr, defnydd cynaliadwy o'n hadnoddau, bioamrywiaeth ac ansawdd bywyd. Bwriad yr ymgynghoriad yw cytuno ar ganlyniadau priodol mewn perthynas â'r themâu hyn a dargan-fod pa weithgaredd sydd eu hangen er mwyn eu gwireddu. Tybed a fydd y strategaeth yn llwyddo mynd i'r afael â diflaniad bioamrywiaeth a dirywiad ein safleoedd cadwraeth arbennig? A

fydd yn gwneud gwahaniaeth i'r myrdd o ddatblygiadau bychain lleol sydd yn cyfuno, yn y pen draw, i greu dinistr amgylcheddol? Yn aml, newid agwedd ac athroniaeth sydd ei angen - yn hytrach system newydd radical.

Bydd gofyn i'r strategaeth hon blethu'n agos gyda'r strategaeth economaidd ddiwygiedig, a hefyd gyda'r strategaeth gymdeithasol, gan mai'r tair gyda'i gilydd a fydd yn sail i gyflawni Cynllun Datblygiad Cynaliadwy y Cynulliad.

Mae'r ymgynghoriad hwn yn allweddol – cyfle i ni gael dweud ein dweud ac i sicrhau mai gweithredu, yn hytrach na gwag-siarad, fydd yn digwydd dros y blynyddoedd nesaf.



A million trees – the tale of a tree nursery

Alongside farming, a host of other green enterprises has gradually become an important part of the Welsh rural economy and community. Getting one going is not an obvious route to prosperity, and its rewards are often as much philosophical as material. VICKY MOLLER explores the personal history behind one such enterprise.



The owners in the nursery

All photos: Kett Seymour

Tŷ Rhos Tree Nursery celebrates its 20th anniversary this year, with around a million trees and shrubs sold to date. But behind this modest success story lies a journey from Oxford's dreamy spires, across a continent, and back to a marshy corner of Pembrokeshire.

Suleyman (then Andrew) Mowat left Oxford university seeking wisdom in the East and met Aisha, from Milan, on a similar quest. They married in Pakistan and farmed there for six years, living with the villagers in the high Swat region, sharing their religion and ways, their first child born in a turf-roofed hut.

The tree line in Swat was retreating. Back in England, Suleyman studied horticulture at Pershore college, hoping to start a tree nursery in Pakistan. But it was the little Steiner School in Pembrokeshire that brought them to West Wales. Here they bought Tŷ Rhos – 'marsh house' – 21 acres of swampy land with an ancient cottage, previously lived in by a solitary wheelwright.



They started with self-sufficiency – a jersey cow, and vegetables on raised beds to avoid the wet. Their children were born at home, the fields were harvested by hand. Suleyman became the first foreman at Castell Henllys, the iron-age fort and visitor attraction on the north Pembrokeshire coast between Newport and Cardigan, in its pioneering days before the National Park bought it and its planning problems ended. I remember him biking to work, tools strapped on, and loosing some along the way. He organised great mudslinging parties to plaster the iron-age huts with a lasting blend of mud and manure, and I recall the spine-tingling moment he lit the home fire in the exact spot where it had last been lit 2,000 years ago.

The tree nursery started from small beginnings. “I had no idea when I started that there was a demand, I was quite surprised when it took off,” Suleyman told me. “We started specialising in trees of local provenance and have expanded to meet all needs.” Tree seed does not disperse widely, so trees evolve to suit their local climate, and wildlife adapts to these ‘ecotypes’.

The nursery is quite unlike most large commercial enterprises, with their vistas of identical specimens in pots. It is like entering a magic garden, a pattern of paths winding through beds and banks containing a



seemingly infinite variety of plants. Walking past this symphony of smells and colours casts a spell even over a botanical illiterate like me; its customers travel across Wales for the experience. Tŷ Rhos has more tree varieties than any nursery I know in Wales. It is an arboretum with the feel of a cottage garden.

It has specialised in fruiting trees. Unfortunately many old apple and pear varieties are now endangered because supermarkets and big nursery chains supply the market with a narrow range of varieties, which are the same throughout Britain. There used to be hundreds of varieties of English and Welsh apples, many unique to their locality. At Tŷ Rhos you can buy traditional apples such as Beauty of Bath, Blenheim Orange, Cornish Gilly Flower, and yesteryear fruits like mulberry, quince and medlar.



THE ANGLO-WELSH SMALLHOLDER

For RS Thomas

Why, going grey,
still the pain,
the immaturity?
What did he gain
brooding by a black stove
sloping out in the rain
to milk a kicking cow,
lay a thinning hedge?

He built his house,
reared 4 kids,
many kittens, many calves,
loved and hurt his wife,
smoked,
drank when he could,
then out
To roar round the fields in third
on the little grey Fergie bach
harrowing, combing the green
hair of our poor pure mother
Earth
into a ball of hay.

There were also the Trees:
He spent seed
on the soft belly
of the mother, that grew
and grew and grew -

Amongst all present living things
Only these trees shall brave
the greenhouse gales
of the twenty-second century.

Only the trees can save us now.
Nor little grey Fergie bach
nor JCB can help our flagging world
regain its atmosphere.
A million arms unfurl
Pathetically perfect prayer flags
Proclaiming without cease
The ninety-nine names of God,
The path of peace.

Suleyman Mowat,
from a longer poem.

The nursery's influence has spread into the landscape: drive around windswept Pembrokeshire and you notice patches of young trees around many salt-lashed coastal homes, creating their own micro-habitats where wildlife can flourish, and people step outside without being blown away. Tŷ Rhos customers often pick a range of traditional hedging species – rowan, dog-rose, guelder-rose, holly, oak and flowering thorns. The resulting mixed boundary hedges give softer edges to the fields and fit them more naturally into the landscape.

Over 20 years the nursery has expanded, providing employment for the Mowat children and young people in the neighbourhood. Now the next door farmer is planning to take on some of the bulk growing, as demand has been boosted by agri-environment schemes which fund the planting of hedgerows.

But Tŷ Rhos Trees is more than just a business. Wandering the paths, you will find not just trees and shrubs in endless subtle variety, but past and future, fun, food and wilderness. There are traditional tools, herb beds, vegetables, pond and tree walks and wildlife areas. Green innovations include reedbed water treatment, a straw bale summerhouse and a drystone walled log store with a turf roof. Unexpectedly you come across seats for peaceful contemplation, a lake, a table for picnics. Their regular visitors from Oxford and Milan think they've found paradise, but life is never that simple. Paradise has to be worked at.

Vicky Moller is a supporter of local green businesses and an Eco-page writer, and has brought up five children on a smallholding.

Tŷ Rhos – tir llwyddiant

Crëwyd paradwys mewn cornel fach o Sir Benfro dros yr ugain mlynedd diwethaf. Ar dir Tŷ Rhos, yng ngogledd y sir, mae Suleyman Mowat wedi llwyddo sefydlu meithrinfa goed llwyddiannus iawn sy'n arbenigo mewn coed ffrwyth. Daw cwsmeri-



aid o bell, nid yn unig i brynu, ond hefyd i fwynhau'r profiad o grwydro o gwmpas yr 'ardd goed' gyfareddol hon sydd wedi ei llenwi â llawer mwy na llwyni. Mae'r lle yn dysteb i flynyddoedd o ymlafnio caled, i ymroddiad ac i hwyl teulu cyfan.

In an Octopus' Garden by the sea



Rohan Holt

*How often do we take the time to appreciate the wonder of nature? The rewards, those awesome moments when you see something truly amazing, come in the most unexpected places, as **MARTIN BARRITT** discovered.*

Shit. Collared dove shit, to be precise. It sticks like glue. Last Friday evening I was on my hands and knees trying to remove the stuff from a slate area, underneath a pergola. On the day following, underneath this structure, a small chamber orchestra would be entertaining a select group of folk at the opening of a new peace garden at the Anglican Chaplaincy in Bangor. The aim was a clean slate, and no mishaps on the day.

The reason I bring the subject up is that I was trying to do this job in an eco-friendly manner. No horrible chemicals in this garden, thank you. Kneeling and scraping and scrubbing for a good hour, I was able to contemplate the nature of things, or more precisely the things of nature.

For instance, why was it that, after twenty years in the business of managing nature, I was scraping shit off a slate? I looked up and saw the collared dove winking at me. How do you create a poo-free seating area under a tree that doesn't involve either erecting corrugated plastic sheeting or shooting the offender? And how do you get rid of the amazingly sticky black residue in a responsible manner? Answers on a postcard, please.

Now, back in the days when I had hair, I used to tear around the nature reserves of north Wales; hacking a willow on the reed beds and marshes, hurling herbicide at nasty invasive plants, shifting stone after stone to make footpaths in the mountains. Exhausting stuff. Aiming to make life easier and going back to my suburban roots, I now build gardens, but try to take the



Shore Crab

Monica Jones

sense of the countryside to the 'shelters between walls', as R. S. Thomas put it in 'The Untamed'. I don't work such long hours these days either.

To be able to find those moments of awe and wonder at nature, whether in a garden or in the wilds, takes time. It is not always necessary to travel far, either. Sure, the sight of a sperm whale diving deep off the coast of New Zealand in February was pretty jaw-dropping. The arctic wastes of north Norway on skis were amazing too; but a recent walk along the Menai Strait was just as exciting, and I didn't have to produce quite so much carbon dioxide to get there. I had decided, on that cold March day, to take the afternoon off to go mountain biking.

As bike time approached, a cloud of lethargy came over me and by early afternoon I was ambling along the shingle and sand on the shore of the Menai Strait with my mate Ollie – much less exhausting. We were turning over rocks and poking in the rock pools like a couple of kids. Butterfish and crabs turned up, the usual stuff, and we were careful to put the rocks back in place. Ollie was attempting to move a large boulder, but my skilled eye saw that he was fighting gravity, getting nowhere. We found the point of balance, and the boulder rolled away easily. What followed was one of those moments of awe and amazement. Like seeing a barn owl at dusk, or a golden eagle above a remote Scottish glen.

In the shallow pool of water we had exposed lay an octopus. I didn't even realise there were such things in these waters. We were transfixed, just staring for a while. I guess the creature thought it was about to become someone's dinner, and it raised itself on its tentacles, flaring its vents to scare us off. At this point it fell on its back, showing off a creamy underbelly, the most amazing eyes and two neat rows of suckers on each of its eight tentacles. We must have watched this creature a good twenty minutes as it found its way back to the safety of deeper water. Once in its natural environment, it glided gently away. We carried on the walk through the Nant Porth



Butterfish

CCW

reserve, where the violets and primroses flower amongst the debris of what was once a Council tip. What a great afternoon.

Incidentally, none of the musicians at the Chaplaincy became a target for that collared dove, but any suggestions for how to discourage it would be gratefully received.

Martin Barritt runs a landscaping business. After a career in countryside management and a spell writing a column on the great outdoors for the Daily Post, he currently spends as much time as possible walking, cycling and enjoying the countryside.

Cyfarfod syfrdanol ar lannau'r Fenai

'Does dim angen hedfan i ben draw byd i fwynhau rhyfeddodau byd natur – a gall tro o gwmpas eich milltir sgwâr fod yn llawer llai o dreth ar yr amgylchedd na thaith i wledydd pell. Ond rhaid cael amser i weld y trysorau lleol hyn – a dyma yw nod yr awdur wrth gydbwyso ei waith dyddiol fel lluniwr gerddi a'i amser hamdden. Mae'n disgrifio yma y profiad anghyffredin o ddarganfod octopws mewn pwll d'ŵr ar lannau'r Fenai yn ystod prynhawn o wyliâu – un o'r cyfarfyddiadau agos hynny gyda byd natur sy'n aros yn hir iawn yn y cof.'



Building a truly Sustainable Wales

Wales has all the ingredients to become a world leader in delivering sustainability; and the Assembly's Environment Strategy, currently out to consultation, will help direct its sustainable development scheme.

The challenge of building a truly sustainable society is daunting, but, as PAUL ALLEN reports, the Assembly has taken a visionary leap in selecting our 'ecological footprint', the ecological impact each of us has, as a key policy indicator.

Actually achieving sustainability will require massive changes, on a scale that no human society has had to implement to date – a political and social challenge not to be underestimated. The essence of policy success in delivering sustainability is to extract, from the literally thousands of environmental, social and economic issues, the really key areas which are absolutely urgent, and to deal with them as a priority. The most urgent problems are those which could become irreversible, or get out of control. Using these criteria, my key sustainability challenges boil down to:

- Climate change
- Biodiversity & habitat
- Social & international equity

Over recent months, climate change has been recognised by senior scientists across the world as a very serious global threat. Professor Sir David King was appointed as the Government's Chief Scientific Adviser and Head of the Office of Science and Technology in October 2000. He says, "There is no bigger problem than climate change. The threat is quite simple; it's a threat to our civilisation." The essence of the scientific argument is that if we carry on releasing greenhouse gases, we may well exceed a critical 'tipping point', which sets us on a future course for abrupt,

accelerated or runaway climate change.

Whether we know it or not, humanity is now conducting a vast experiment with the planet's climate, taking us all into uncharted territory. The key to this experiment lies in the vast tracts of rainforest, which have remained unchanged for millions of years, at least so we thought. The prevailing belief has always been that the world's rainforests, such as those in the Amazon Basin, have long ago reached a steady state. Growth is balanced by decay so, at any one time, the carbon being

locked up equals the carbon being released. Recent research using sonic anemometers and gas analysers has shown this to be far from the truth. The rainforests in the Amazon Basin are in fact growing at a rapid rate. This astounding growth rate is clearly a relatively recent phenomenon, as new growth at such a rate could not be sustained for more than a few decades without reaching physical limits.

Carbon dioxide is one of the basic building blocks from which plants are made; it is in effect their food. This new growth is the rainforests' response to the 30% increase in global carbon dioxide levels that have occurred since the start of the industrial revolution. The new growth has the effect of removing the carbon released annually by burning fossil fuel and locking it away as new timber growth. This has buffered us from the worst effects of the past 150 years of carbon emissions, but in the process we have gradually accumulated a huge and vulnerable reserve. The 5,000 million hectares in



Eco-huts at the Centre for Alternative Technology

the Amazon Basin alone may be 'sinking' three-quarters of the carbon emissions from all the cars in the world – but the question is for how long?

The problem is that the process of forest growth is easily reversible, with severe consequences. New climate models predict that the changes in climate caused by carbon dioxide and other greenhouse gases in the atmosphere could cause droughts and forest fires, which could turn the Amazon Basin from rainforest

into savannah. This would convert it from being a net carbon sink into a huge carbon source, releasing massive amounts of greenhouse gases back into the atmosphere, triggering a widespread change in the world's climate and in particular warming the oceans.

Beneath the oceans there exist vast amounts of an even more potent greenhouse gas, sixty times more powerful than carbon dioxide. Methane formed from the anaerobic decay of organic materials falling to the seabed is held in a semi-solid form as a methane hydrate by the ocean's pressure and low temperatures. These methane hydrates are normally safely stored well below the surface, kept solid by the high pressures and low temperatures. However, as the seas begin to warm, particularly in the shallow, polar waters where the low temperature is the crucial factor, the methane may begin to escape into the atmosphere, causing climate havoc on a massive scale.

So the fundamental shift we must make in our 'world



Sustainable living at CAT

view' is from a model in which the effects of climate change gradually build up until we feel uncomfortable about the effects: we then gradually clean up our act and things return to normal. In the new model, once we exceed a critical threshold, climate change can run away of its own accord, fundamentally changing the world's climate. This could entail massive agricultural losses, widespread economic collapse, international water shortages, massive rises in sea levels, a shutdown of the Gulf Stream and refugee problems on a scale not yet experienced – basically a global catastrophe on a scale that would dwarf the recent tsunami and run for tens of thousands of years. The threat of runaway climate change does not mean that the other priorities of international equity and biodiversity are less important; it means that 'runaway climate change' will make both of them get very much worse very quickly.

Based on our current knowledge, if we are to keep the climate below this crucial tipping point, we must keep the atmospheric concentration of the greenhouse gas carbon dioxide below 400 parts per million (ppm). Before we began to industrialise, CO₂ levels were around 280 ppm, and today they have risen to 370 ppm. So at the current rate of rise we will cross the tipping point in a couple of decades or so. The Royal Commission on Environmental Pollution report *Energy – the changing climate*, and the recent Government Energy White Paper recommends a

target of a 60% reduction from current carbon emission levels by 2050, so that the combined global total is kept to a level which prevents intolerable and dangerous climate change. Achieving the important 60% reduction target will require fundamental shifts in the way energy is obtained and used, and in the associated infrastructure, buildings, transport, business and industrial systems.

A task for the whole community of Wales

Organisations and individuals across Wales are poorly prepared, as yet, to face the immediate and long-term challenge of reducing emissions. Success will require a raft of complementary solutions working together. If it is the way we get our energy which is causing the problem, first and foremost we must do it more rationally, making a concerted effort to reduce our energy demand. Too many years of too cheap energy has led us into some embarrassingly wasteful practices. Our power stations give out as electricity only one third of the energy we put in, the remaining two thirds going up the cooling towers rather than heating nearby homes. And electricity is not the only problem; we must also get to grips with our profligate use of solid and liquid fuels. There are now so many people making single passenger car trips that our roads are literally clogging up. Subsidised cheap air flights are mushrooming and we're still building inefficient, badly designed homes by the thousand. The list is almost endless, and it's not as if our energy-intensive lifestyles are making us any happier. Since the 1970s the UK's GDP has doubled, but our perceived 'satisfaction with life' has hardly changed. The simple fact remains that using energy more efficiently is absolutely essential and must form the cornerstone of any successful policy.

Countering the threat of major climate change is a task for the whole community of Wales. The commercial, public, domestic, education and voluntary sectors will need to play a full part if we are to achieve the goals of reducing emissions whilst improving industrial competitiveness, social justice and quality of life. People and organisations need to be made aware of the way in which their use of fossil fuels is contributing to climate instability,

encouraged to take responsibility for their own reductions, and to take positive action in their homes, schools or places of work. In order to begin, we must first deliver a thoroughgoing change of outlook and culture within our society. A Wales-wide 'solutions driven' public education programme is needed:

- To raise awareness of the 'robust' science behind climate change and of the urgent and serious nature of the threat posed both nationally and internationally by changes we are making to the natural carbon cycles;
- To create a low carbon vision for Wales to 2050 – promoting the opportunities raised through the efficient use of energy and new forms of energy generation such as renewable energy;
- To engage all stakeholders in an ongoing discussion about climate change and new energy solutions;
- To encourage and enable the 'social cohesion' required to successfully embrace such changes;
- To provide a support and education framework to foster practical action;
- To ensure this support is made accessible to all sectors of society;
- To create lasting links between partner organisations and agencies to effectively bring about changes in attitudes and behaviour in the widest possible audiences.

Enabling action

Focusing first on raising awareness and changing attitudes, the programme then feeds clients on to substantial support frameworks to enable practical action. What is needed most urgently for such a national programme to have a real effect is access to a network of real life models, showing how such development can take place. It requires live demonstrations of the complex interaction between land-use planning, food production, energy, buildings, transport, waste management and all aspects of human society, on a carbon-lean basis. Inspiration and information will be turned into action through a new network of innovation and demonstration centres, offering access to training, education, innovation, research and on-going advice appropriate to each locality. These should also link directly to the

agencies and programmes offering on-going advice and grant support to ensure this programme is an effective and potent agent of change.

The educational work should build on the work done to date by a range of relevant partners to create a national resource which will provide inspirational and informative resources for both school-based and adult learners alike. Resources for schools would be developed by working with teachers of differing ages and curriculum areas. Special emphasis should be made to support both community and corporate champions, who hold the potential to set trends, inspiring many others in their communities to take up the challenge.

Conclusions

Those who are old enough to remember liken our current situation to how they felt in 1939 Britain. We know something big is just over the horizon, we know that it will be a harsh challenge, and we are not sure how our society is going to cope. Yet in 1939, when push came to shove, the various factions pulled together in a single united response. This is what we need most urgently now, but on a global rather than national scale, and Wales is in a strong position to take the lead. A shift of energy policy, from the current inefficient use of fossil and nuclear fuels to energy efficiency and renewable energy sources, is not only imperative for keeping us below the tipping point, it is also vital to our international security. The choice is clear: if a minority of powerful nations continue to favour an economic system underpinned by centralised technologies and vulnerable supply lines, they will need to protect it with a huge world-wide police force at enormous expense and risk to all our civil liberties. On the other hand, if we all begin a shift to a decentralised world economy based on equitable and efficient use of renewable energy sources, and localised supply systems, we can create communities that no terrorist organisation can easily threaten and, perhaps more importantly, which threaten no one else.

Given the scale of the changes experienced over the past half-century, it's not unrealistic to suggest that

equally profound changes could also occur over the coming decades. The energy is out there, Wales has the renewable resources, the technological base, the skills and the offshore technologies. What we need now is visionary politics, uniting the various factions in a radical new initiative, echoing the enthusiasm and fervour of the 1960s Apollo programme, linking international agreements, economic policy, technological innovation, academia, research and development, public education, international trade and the new media into a single 'programme' to keep humanity below the tipping point.

Wales has all the ingredients for success, the Assembly's selection of the ecological footprint as a key policy indicator is nothing short of a visionary leap. Sustainable Development requires us to both understand and manage material and energy flows. The Wales Footprint Project is undertaking a detailed analysis of these flows, the efficiency of this process and the subsequent outputs (i.e. waste and emissions) for Wales, Cardiff and Gwynedd. From

this information it will then be possible to construct credible scenarios and evidence based policy. If the learning outcomes from the footprinting process could drive and inform an integrated development team including WDA, WTB and ELWA, Wales would be in a strong position to take its place as a world leader in actually delivering sustainability.

Paul Allen is Development Director at the Centre for Alternative Technology. (All copyright retained by CAT).



Cymru Gynaliadwy – cyrchu at y nod

Nid ar chwarae bach y cyflawnir cynaladwyedd. Mae taelo'r tri phrif her i'n planed, sef newid hinsawdd, bioamrywiaeth a chydaddoldeb cymdeithasol a rhyngwladol yn gofyn am newidiadau aruthrol. Rhaid sylweddoli y gall newid hinsawdd, unwaith iddo gyrraedd lefel dyngedfennol, fynd y tu hwnt i'n rheolaeth. Gallai arwain at golledion amaethyddol enfawr, dadfeiliad economaidd, prinder d'ŵr rhyngwladol, newidiadau yn lefel y môr a phatrymau ceryntau a phroblemau cymdeithasol enbyd. Trychineb fyd eang a fyddai'n para am ddegau o filiynau o flynyddoedd. Dau ddegawd sydd ar ôl cyn i ni gyrraedd y lefel di-droi'n ôl yma o CO₂.

Yma yng Nghymru rhaid wynebu'r her drwy leihau ein defnydd o ynni, adeiladu'n fwy effeithiol a sefydlu rhaglen addysgiadol sy'n canolbwyntio ar ganfod atebion. Er mwyn galluogi pobl i weithredu fel rhan o raglen genedlaethol rhaid cael esiamplau ar hyd a lled y wlad i ddangos sut mae modd datblygu yn gydnaws ag anghenion ein byd - i egluro sut mae modd cynnal y berthynas gymhleth rhwng cynllunio defnydd

tir, cynhyrchu bwyd, ynni, adeiladau, cludiant, rheoli gwastraff a chymdeithaseg mewn ffordd sy'n garbon-ysgafn, ac i sicrhau darpariaeth o hyfforddiant, addysg, ymchwil, cyngor a nawdd.

Mae'r erthygl yn galw am wleidyddiaeth weledigaethol i alluogi hyn i ddigwydd. Er bod angen gweithredu yn gydweithredol ar lefel fyd eang, mae Cymru mewn safle cryf i arwain y gad. Rhaid cysylltu polisïau economaidd, cytundebau rhyngwladol, newydd-deb technolegol, academiaeth, ymchwil, addysg gyhoeddus, masnach rhyngwladol a'r cyfryngau newydd a'u cyfuno yn un rhaglen a fydd yn cadw'r ddynoliaeth o dan y pwnt di-droi'n ôl.

Roedd mabwysiadu'r ôl-troed ecolegol gan y Cynulliad yn weledigaeth. Bydd yr wybodaeth a gesglir yn sgîl hyn yn fodd i greu polisïau yn seiliedig ar dystiolaeth, ac yn sail i sefydlu fîm datblygu integredig i sicrhau cynaladwyedd.

A bees' nest of activity

What could be nicer than lying in the long grass, in a field of flowers, watching bumblebees going about their business? When those bumbles have numbers on their backs, and you have to watch their nest for hours on end recording every detail of their activities, quite a lot of dedication is called for.
ANNIE HAYCOCK
describes her unexpected role as bee-watcher extraordinaire, observing the only shrill carder bee nest ever found in Britain.

Shrill carder bee *Bombus sylvarum*

Ted Benton

The nest itself was something that you would hardly notice – Claire had stumbled on it by chance a couple of days before. It wasn't even busy – in the two hours that we watched it, only a dozen bees came and went. Claire was catching each bee and gluing a tiny numbered tag to its back. Each time a bee arrived at, or left the nest, we recorded the time and its number, and details such as whether or not it was carrying pollen. By the following day Claire had tagged twenty-one bees – pretty much all the workers in that nest – and I would be spending four to six hours, twice a week, staring at the nest, continuing to log the comings and goings, for the next couple of months.

Shrill carder bees get their name from having a slightly higher-pitched buzz than other bumblebees. Once more widespread, they are now a rare British species, and were only discovered on Castlemartin Range in 1999. In summer 2000, Claire Carvell began to study this site, along with Salisbury Plain and a couple of smaller sites such as Kenfig where they had also been found. Claire was only a day or so from the end of her fieldwork when she found the nest. As this was the first nest found in Britain it had to be studied carefully, and I just happened to be the



muggins who had shown an interest in bumblebees, and lived reasonably close to the site.

Time passed slowly out on the army range. My sessions were dictated by the firing timetable, as civilians weren't allowed out there when guns were blazing, so all was quiet and peaceful most of the time. Well, perhaps not so quiet, with the constant buzzing of insects, a few skylarks still singing, the twitterings of linnets and other finches, the calls of choughs and other sounds of nature. As the range hasn't been ploughed, or sprayed with herbicides, insecticides or fertilisers for sixty or so years, it is full of flowers and invertebrates, and things that feed on invertebrates.

Ironically, this part of the range had been dismissed as relatively unimportant by botanists. It is effectively a vast meadow of wildflowers, dominated by

knapweed and other Compositae, and birdsfoot trefoil. As the knapweed dies back, devil's bit scabious comes into full bloom, providing a feast of nectar late into the autumn. While our six common species of bumblebee can survive, with gardens and roadsides providing small patches of nectar, the eight rarer species seem to need much larger areas with plenty of nectar. Five of the rarer species have been recorded on the range, and the only two other Pembrokeshire sites for shrill carders are organic farms only a few kilometres away.

After a bit of practice, I could recognise the buzz of an approaching bee. Then I would stare at the nest, hoping to get the number of the bee before it disappeared inside. And then again as it came out. On one occasion, I heard a bee coming, but the

sound seemed to stop in mid-air. After a few seconds I looked up, and discovered bee number 13 suspended in mid-air – in the web of the spider *Araneus diadematus*. I rescued her (on the end of a pencil) before the spider got to her, removed some bits of web and left her on a knapweed flower next to the nest. She carefully cleaned herself, and flew off after a minute or so, returning into the nest a few minutes later. Perhaps as a naturalist I should let nature take its course, but I was becoming fond of these bees, and there weren't so many of them that I could afford to lose one.

Two weeks later, bee number 9 wasn't so lucky. She had been in the web for a while before I arrived, and the spider was in attendance, cutting the dry body away from the attached threads. Later that day two



bees returning together were almost caught in same web – the first managed to get herself free, while the second was possibly alerted to the danger by the first bee and made a detour over web.

Generally it was a pleasant job. The bees came and went, usually singly, with only one or two in the nest at a time. Often there were gaps of half to three-quarters of an hour with nothing happening at all. Slowly, a pattern began to emerge. Some bees foraged within sight of the nest, spending an hour or two visiting knapweed flowers before returning, and leaving within twenty minutes minus their load of pollen and/or nectar. Other bees were regularly away for several hours at a time, while number 16 never seemed to leave the nest at all. She would come out to greet returning bees, sometimes almost dragging them inside.

Honey bees are known to pass nectar directly from one bee to another, but this has never been recorded in bumblebees. That doesn't mean it doesn't happen. One day in September, number 13 returned without any pollen and went into the nest. Then she seemed to be grappling with number 16 just under the surface. The two bees were rolling over slowly, so that I saw their numbers alternately appearing through the entrance hole. Number 13 left within three minutes, and I followed her going from trefoil flower to trefoil flower but lost her 25 metres from the nest. When I returned, number 16 was rearranging grass around the entrance hole again, as if trying to make it less obvious.

Another day when I arrived, number 23 was busy rearranging the 'roof' of the nest. The roof previously sloped down from left to right (as seen from my



Annie Haycock

Number 8 feeding on knapweed



Gwyllo'r gwenyn

Treuliodd **Annie Haycock** wythnosau yn gwyllo nyth y cardwenynen wichlyd ar glogwyni Castell Martin – y nyth cyntaf i gael ei ddarganfod ym Mhrydain. Dyma ardal na chafodd mo'i haredig na'i chwistrellu gyda chemegolion ers 60 mlynedd, ac mae'r erwau eang o blanhigion fel pengaled, tamaid y cythraul a phys y ceirw yn darparu'r ehangder o flodau neithdar sydd ei angen ar ein gwenyn prinnaf. Mae Annie yn disgrifio ei gweithgaredd dyddiol fel gwyllyw y gwenyn, yn cofnodi symudiadau'r 21 wenynen a farciwyd ac yn nodi eu hymddygiad wrth iddynt chwilio bwyd a chribinio deunyddiau o gwmpas y nyth. Un o'n gwenyn hwyr yw'r cardwenynen wichlyd, ac ar ôl eu gwyllo drwy gydol Awst a hanner Medi, daeth y prysurdeb i ben; diwedd oes i'r gweithwyr a'r gwrywod, ac amser i'r frenhines hedfan i fwrdd i chwilio am rywle diogel i gysgu dros y gaeaf.



Annie Haycock

regular observation point), but was now much flatter. The bee was carding (combing) material – scrabbling it up with her front legs, while semi-anchored by her back legs and gradually moving across the nest, then walking back to the beginning (the right side) and carding across again. She worked ceaselessly for the next two hours, by which time the roof was noticeably higher on the right side. During this time, at least three other bees returned to the nest, and had difficulty finding their way in! Each of these bees wandered over the nest, sometimes bumping in to 23, but there was no indication that she helped them find the way in – they just kept wandering around until they found an entrance. Number 17 came back with pollen, and took a minute or so to get in the first time. She then left and was away for 44 minutes, coming back without pollen. She landed on the nest, seemed confused, flew up about 20cm, re-orientated and tried again. Repeated the process, bumped into 23, and eventually tried to dig her way in. Number 23 seemed to take offence at this, buzzed a couple of times, then flew off: 17 eventually found her way in after 4 minutes of trying. She went on another foraging trip, returning at dusk, and this time going straight in.

I didn't see number 23 again, but she probably died of old age near the nest. Typically what happened was this: an aging bee would crawl out and spend an hour or so on top of the nest, usually very lethargic but more active when another bee landed nearby. At this point, she would attempt to climb nearby vegetation, falling back and trying again. Eventually she would work her way to a metre or so from the nest, and remain there. These bees would not be seen again.

Shrill carders are one of the late season bees, with the queens often not seen until May, the workers in June, and the drones (males) and new queens at the end of August. My observations started in early August, and only perhaps one or two 'new' workers appeared at this nest. By mid-September activity was noticeably decreasing. One day I saw nothing at all happening during my first hour of observation, so I leant over the nest and blew on it. Number 16 stormed up to the surface, and stood as if with hands on hips, demanding to know what the disturbance was. Satisfied that there was nothing to worry about, she went back inside. A week later, there was no response to blowing on the nest, all the bees were gone. Although there were still workers on the knapweed and scabious flowers, they had no reason to return to the nest once the drones and new queens had emerged.

The drones and queens mate, and then the drones, like the workers, die. The queens are left to find a safe place, perhaps an old mouse hole, to hibernate, and then start the sequence again in the spring.

Annie Haycock is a naturalist and wildlife photographer.

Adar a Chymunedau Cymru

Bras melyn / Yellowhammer

Pob ffoto: RSPB

Erbyn hyn mae bwyd adar yn gwerthu'n dda yn ein canolfannau garddio a'n siopau anifeiliaid anwes. Mae hadau a chnau i'w gweld, hyd yn oed, yn ein harchfarchnadoedd dros fisoedd caletaf y gaeaf. Dywed tua dwy ran o dair o boblogaeth Prydain eu bod yn darparu bwyd ar gyfer adar, a gwn am lawer sy'n fodlon gwario ffortiwn fechan bob mis yn denu eu hymwelwyr pluog i'w gerddi.

Does dim dwywaith felly bod unigolion ledled y wlad yn gweithredu er lles adar. Ac fel fy hunan, mae'n debyg, maen nhw'n ymwybodol ers dyddiau ysgol pa mor bwysig yw hi i gynorthwyo'r adar bychain yn ystod oerfel y gaeaf. Ond i ba raddau tybed gallwn ddweud, yn ffyddiog, bod yr ymwybyddiaeth leol a phersonol o anghenion adar yn golygu bod cymunedau'n gweithredu er mwyn adar?

Mae codi ymwybyddiaeth y cyhoedd am yr adar o'u cwmpas yn rhan o nod eang prosiect 'Adar Campus Cymru!'. Mae hwn yn brosiect a dyfodd o'r angen i weithredu er lles adar ffermdir. Yn dilyn llwyddiant prosiectau ar gyfer y frân goesgoch a'r rugiar ddu, penderfynwyd y dylai RSPB Cymru ystyried llunio prosiect ehangach er budd adar tir fferm. Yn ddefnyddol roedd angen parhau a'r prosiectau a oedd eisoes ar y gweill, ond roedd yna'n amlwg rywogaethau eraill a oedd yn wirioneddol haeddu sylw, felly mae targedau cadwraethol pendant iawn i'r prosiect hwn.

Yn ystod y 30 mlynedd diwethaf, o'r 24 rhywogaeth sydd wedi dioddef dros 50% o leihad yn eu poblogaethau, adar tir fferm oedd dros hanner

Penodwyd GWEN THOMAS i weithio ar un o brosiectau diweddaraf yr RSPB, sef 'Adar Campus Cymru'. Yma mae'n disgrifio amcan y prosiect ac yn trafod, yn fwyaf arbennig, yr her o geisio estyn allan at gymunedau a'u cynnwys mewn gweithgaredd cadwraethol, fel bod y prosiect nid yn unig o fudd i adar ond hefyd yn werthfawr, yn y tymor hir, i bobl Cymru.





Gwaith gwarthod er mwyn golfan y mynydd / Local volunteers with tree sparrow boxes

ohonynt. Mae'r mwyafrif o'r tir o'n cwmpas ni yma yng Nghymru yn dir sy'n cael ei ffermio mewn rhyw ffordd neu'i gilydd, ac mae nifer sylweddol o rywogaethau adar wedi addasu dros y canrifoedd i'w galluogi i fyw fel rhan o'r tirlun hwn. Yn anffodus, mae llawer o newidiadau wedi effeithio ar y tir hwn yn ystod yr hanner can mlynedd diwethaf; newidiadau syfrdanol na fedr bywyd gwyllt o reidrwydd ddygymod â hwy. Ac felly y daeth y bras melyn, coch y berllan, golfan y mynydd, y gornchwiglen, y betrisen lwyd, a'r gyflfinir i fod yn ganolbwynt y prosiect newydd yma i RSPB Cymru a'i bartneriaid.*

Roedd yn amlwg y byddai angen i'r prosiect weithio gyda thirfeddianwyr a ffermwyr er mwyn cyflawni gwaith cadwraethol y prosiect, ond roedd y Gymdeithas hefyd am gymryd y cyfle i weithio fwyfwy â chymunedau gwledig Cymru. Hefyd, fel prosiect sydd wedi cael arian gan Ewrop i weithredu mewn ardaloedd Amcan 1, mae disgwyl iddo ddatblygu yn brosiect cynaliadwy. Y gobaith oedd y byddai annog y gymdeithas gyfan i gymryd rhan yn y prosiect, a'i wneud yn brosiect o'u heiddo nhw eu hunain, yn sicrhau hirhoedledd y prosiect. Byddai hynny yn amlwg yn beth positif ar gyfer y gymuned leol a'r adar hynny y byddai pobl yn gweithredu ar eu cyfer.

Erbyn hyn mae hanner oes y prosiect wedi diflannu.

Mae nifer o wersi wedi'u dysgu, ac eraill yn dal yn peri poen meddwl i ni! Er bod amser wedi gwibio, mae gwaith staff, gwirfoddolwyr, tirfeddianwyr, a ffermwyr i'w weld dros y wlad. Blwch nythu fan hyn a chnwd fan draw, fel y byddech chi'n ei ddisgwyl o bosib. Yr hyn sy'n fwy anodd i'w weld yn amlwg, hyd yma, yw gwaith, ac yn wir gwerth, y prosiect yn y gymuned.

Oherwydd i aelodau newydd o staff gael eu penodi yn arbennig er mwyn hyrwyddo 'Adar Campus Cymru!', mae'r prosiect wedi cael tipyn go lew o sylw yn ystod y deunaw mis diwethaf. Trwy drefnu

digwyddiadau a sgysrsiau, drwy fod yn bresennol mewn digwyddiadau lleol, a thrwy weithio gyda nifer fawr o gymdeithasau, grwpiau, ac ysgolion, a chael croeso cynnes, bob tro, mae'r prosiect a'i staff yn sicr wedi llwyddo i dynnu sylw cynulleidfa newydd at yr adar o'u cwmpas. Mae hyd yn oed ambell i boster yn golygu bod RSPB Cymru, y prosiect, a'n gwaith yn fwy amlwg. Gobeithiwn y bydd hyn, erbyn diwedd oes y prosiect tair blynedd, yn golygu bod gan fwy o bobl well dealltwriaeth o'r hyn y mae'r Gymdeithas yn ceisio ei gyflawni.

Un o'r anawsterau a wynebwr wrth geisio gweithio gyda'r cyhoedd, wrth gwrs, yw ceisio dal sylw ac ennyn diddordeb ystod eang o bobl: yr hen a'r ifanc, adarwyr, naturiaethwyr, a hyd yn oed y rheiny na fydd fel arfer yn meddwl rhyw lawer o gwbl am y byd naturiol o'u cwmpas. Er mwyn gweithio gyda chymuned yn llwyddiannus, dylai bod pob aelod o'r gymuned honno gael y cyfle i fod yn rhan o'r prosiect. Mae creu prosiect sydd yn cynnwys rhywbeth fydd at ddant pob unigolyn yn amhosib, ond mae hyd yn oed ceisio darparu ar gyfer amrywiaeth o grwpiau o fewn cymuned yn dipyn o her ac yn golygu coflaid o waith. Mae'n weddol hawdd cynnwys y rheiny sydd eisoes yn ymddiddori mewn adar a bywyd gwyllt, ac mae gan yr RSPB brofiad go helaeth o weithio gyda phlant ifanc o fewn



Ynylon caeau o sudd i adar Field margins help birds

a thu allan i ysgolion. Denu cynulleidfa newydd sydd yn profi i fod yn waith caled.

Ond trwy gydweithio gyda grwpiau amrywiol mae'r prosiect wedi llwyddo i ddod i gysylltiad, o leiaf, â chynulleidfaeoedd newydd. Yr hyn sy'n anodd wedyn, yn aml iawn, yw cynnal cysylltiad tymor hir gyda grŵp. Heb fod ganddynt ddi-ddordeb mawr, mae'n anodd eu tynnu i fewn i fod yn rhan o brosiect cadwraethol. Erbyn hyn, mae'r prosiect yn canolbwyntio mwy ar ymwneud â grwpiau sydd yn byw'n agos at y mannau lle mae prosiectau cadwraethol yn digwydd, er mwyn ceisio annog y berthynas hirdymor honno. Yn anffodus, tydi hi ddim bob amser yn bosib dod o hyd i bobl sydd â diddordeb yng ngwaith y prosiect yn yr ardaloedd hynny. Ac ar y llaw arall, ar rai adegau, mae swyddogion cymunedol y prosiect wedi cael ymateb gwych gan gymunedau, ond wedi bod heb brosiect lleol i'r bobl hynny ymddiddori ynddo!

Agwedd arall o'r prosiect sydd wedi bod yn anodd yw dod o hyd i ffordd o gynnwys cymunedau yn y prosiect heb i'r prosiect wedyn fynd ar grwydr. Mae'n rhaid i brosiect gael amcanion clir ynghylch sut mae'n bwriadu gweithio gyda chymuned. Beth fedr y prosiect ei gynnig i gymuned? A sut yr hoffai prosiect fel 'Adar Campus Cymru!' weld ei berthynas â'r gymuned leol yn datblygu? Oherwydd cyfyngder amser

ac adnoddau, mae angen i brosiect cymunedol fel hwn wybod sut mae cadw'r ddysgl yn wastad. Mae'n rhaid cyflawni'r gwaith cadwraeth, ond yn ddefnyddol mi fyddai cymuned yn rhan o'r broses honno. Un ffordd y mae prosiect 'Adar Campus Cymru!' wedi sicrhau bod cymunedau lleol yn cymryd mwy o ran yn y prosiect ehangach yw creu cyfleoedd gwirfoddoli.

Gan fod hwn yn brosiect cadwraeth amaethyddol, mae'n rhaid i lawer iawn o'r gwaith ar y tir gael ei wneud gan ffermwyr neu gcontractwyr. Mae ffensio, aredig, a chynaeafu oll yn golygu gwaith eithaf trwm neu ddefnydd o beiriannau. Hefyd, rhaid cyflawni llawer o'r gwaith ar adegau arbennig o'r flwyddyn. Ar y llaw arall, mae hen ddigon o dasgau ymarferol i'r rheiny sydd â diddordeb mewn cymryd rhan, ac i bobl sydd ddim efallai'n teimlo'r angen i fod yn rhan o brosiect gwirfoddoli rheolaidd. Hyd yn hyn mae gwirfoddolwyr wedi cynorthwyo i blannu gwrychoedd, sefydlu prosiectau blychau nythu, a chasglu data pwysig. Heb gymorth gwirfoddolwyr lleol ni fyddai hanner gymaint o waith y prosiect wedi medru cael ei gyflawni. Mae'r cymorth y maen nhw'n ei roi o ran y gwaith monitro wedi bod yn anhygoel o bwysig hyd yn hyn, gan sicrhau ein bod ni'n medru cyfiawnhau y gwaith sy'n cael ei wneud, ac yn gallu monitro sut effaith mae'r prosiect yn ei gael ar boblogaethau o adar prin. Er enghraifft, gwirfoddolwyr sydd wedi gwneud y rhan fwyaf o'r





Dolfan y mynydd / Tree sparrow

Aren't Welsh Birds Brilliant?

As one of RSPB's recently appointed officers for the 'Aren't Welsh Birds Brilliant?' project, **Gwen Thomas** has had to grapple with the challenge of ensuring community involvement and benefit in the delivery of this Objective 1 funded work. The main focus of the project is the recovery of some of Wales' declining farmland birds. The RSPB has sought to involve communities through a range of activities, although much of the practical habitat management inevitably falls to individual landowners. The experience, to date, has been positive but some important lessons have been learnt; the need for clear thinking about the meaning of 'community' in the context of this project; the value of having a defined activity or focus for engagement; being realistic about people's expectations and about the effort involved in community work; and above all, the importance of enjoying the opportunities and outcomes that emerge from this kind of work.

gwaith ar brosiect blychau nythu golfan y mynydd yn ne Ynys Môn. Erbyn hyn mae deg ar hugain o flychau yn cael eu monitro, eu glanhau, a'u hatgyweirio pan fo angen.

Mae gwirfoddolwyr y prosiect hefyd wedi bod weithgar yn tynnu eraill i mewn i fod yn rhan o'r gwaith. Wrth i'r prosiect fynd yn ei flaen, mae staff a gwirfoddolwyr oll wedi dod i ddeall mwy ynglŷn â pha mor bwysig yw hi i greu diddordeb ymysg y gymuned leol. Trwy gyfeillion a chysylltiadau lleol sydd yn bodoli eisoes, trwy gnocio ar ddrwsau a bod allan yn y gymuned, mae'r gair am y prosiect wedi lledaenu. Yn ystod y deunaw mis diwethaf mae staff a gwirfoddolwyr wedi ymweld â sawl neuadd bentref i gynnal diwrnod o hwyl neu rhoi sgwrs gyda'r hwyr; wedi eistedd a sgwrsio dros lawer i banad; ac wedi cerdded cae ar ôl cae yn chwilota am adar a thrafod newidiadau. Ar ddiwedd y dydd, mae'n ymddangos mai'r ffordd orau i weithio gyda chymunedau mewn prosiect o'r fath yw dod yn rhan neu o leiaf yn ymwelydd cyson â'r gymuned honno. Mae hynny wedi bod yn un o'r elfennau mwyaf gwerthfawr o'r prosiect hefyd - cael croeso a chael cyfle i fod yn rhan o gymunedau amrywiol Cymru.

Gyda phrosiect 'Adar Campus Cymru!', ceisio cynnwys cymunedau yn y gwaith o adfer poblogaethau adar tir fferm yr ydym ni. Gobeithiwn yn fawr bod y drysau i'w gweld yn llydan agored i unrhyw rai sydd eisiau cael eu cynnwys, a diolchwn yn fawr i bawb sydd wedi bod yn rhan mor werthfawr o'r prosiect hyd yn hyn; yn dirfeddianwyr, yn ffermwyr, yn staff o'r cyrrff sy'n bartneriaid swyddogol ac answyddogol i ni, yn wirfoddolwyr, ac yn gynulleidfaoedd. Mae ein diolch hefyd i'r rheiny sydd wedi galw neu ysgrifennu i roi gwybod i ni am bresenoldeb adar allweddol y prosiect yn eu hardaloedd, ac rydym yn gwerthfawrogi'n fawr eu bod nhw mor fodlon i wario'u harian i annog rhai o'r adar hynny i'w gerddi.

**Mae 'Adar Campus Cymru!' yn cael ei redeg gan RSPB Cymru mewn partneriaeth â Chyngor Cefn Gwlad Cymru, Comisiwn Coedwigaeth Cymru, Swyddfa Gyllid Ewropeaidd Cymru (Amcan 1), ac Enfys (Cyngor Gweithredu Gwirfoddol Cymru). Ariennir y prosiect am y flwyddyn nesaf, ac mae'n cael ei redeg mewn saith ardal Amcan 1, ledled Cymru*

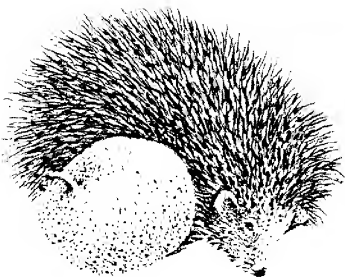


Cornchwigen / Lapwing



The hedgehog – a prickly character

What is spiny and rolls into a ball when alarmed? Most of us know the answer. But how much do we really know about hedgehogs, which we welcome into our gardens as friends and allies? There is much more to these fascinating mammals, as PHIL MORGAN explains.



The hedgehog, *Erinaceus europaeus*, is an ancient creature, first emerging as a distinctive species around 15 million years ago. The European hedgehog is found throughout most of Europe, although other hedgehog species occur in Asia and Africa. Hedgehogs have no close relatives, although there are links with the moles and shrews.

The title hedgehog is a relatively recent one, dating back perhaps five hundred years. Even today you will sometimes hear people referring to them by older names such as hedgepig. In Welsh they are called draenog, which means 'horrible one'.

Hedgehogs are popular animals with the general public and have been immortalised in story by many authors over the years, typified by Beatrix Potter's Mrs Tiggywinkle. More recently, in the guise of 'Sonic the Hedgehog', they have even invaded the world of computers! Apart from the badger, they are the only British mammal with a conservation body set up exclusively for them, in the shape of the British Hedgehog Preservation Society, a group which has been supported in the past by a crisp manufacturer which sold 'hedgehog flavoured crisps'.

Hedgehog hospitals abound, none more famous than St Tiggywinkles (Beatrix Potter strikes again), and reflect the fact that hedgehogs have



Shane Farrell

An adult hedgehog is typically about 26 cm in length, males being slightly larger than females. Because hedgehogs hibernate they are subject to tremendous weight differences, and can weigh up to 1.5kg in the autumn, losing nearly a third of this during the hibernation period, when their normal body temperature of 34°C drops to around 5°C or even lower.

Food and feeding

Many people consider hedgehogs to be the gardener's friend; although they do eat a wide variety of garden pests, surprisingly slugs are not a major part of their diet. It seems that earthworms, beetles and caterpillars are more popular.

their share of problems, from eating poisoned slugs to being squashed on our roads; indeed many county records for the species result from such road kills.

Identification

There can be few British mammals as easy to identify as the hedgehog. It is, after all, just about the only mammal in Britain with spines. I say just about, because in some parts of Britain you can find short-tailed porcupines, which have escaped from private collections. Nonetheless these are much larger animals, and far less common.

Hedgehogs have been observed eating carrion and are known to take eggs and chicks of small birds. In folklore they were reputed to drink milk direct from the cow and to carry fruit on the spines on their back. These were widely believed tales, but there is no evidence to suggest that they do either.

However, on the assumption that we are dealing with a visitor from another planet, the following will probably suffice, when read in conjunction with the vital statistics above. Hedgehogs are short, rather rotund mammals, covered in several thousand sharply pointed spines. The legs are quite short and are often not obvious at all. Hedgehogs have a short tail and are, most importantly, able to roll into a defensive ball when under threat.

According to folklore they will kill and eat snakes, being largely immune from attack because of their spines. No one in Britain has witnessed this, although snake remains have been recorded in hedgehog droppings. As an additional defence, hedgehog blood contains macro-globulins which inhibit the haemorrhagic effects of adder venom, so perhaps there is some truth in the tale.

Footprints are distinctive, consisting of five claw marks, but to the non-expert these can be confused with rats, squirrels, and other species. Hedgehog faeces tend to be rather long and thin, between 15 and 50mm long by 5 to 10mm in width. They are dark grey or black in colour, containing insect, earthworm and slug remains.

Social organisation

A solitary species, hedgehogs are most often seen together when mating or fighting. They seem to establish home ranges or territories although it is far from clear how a territory is defined as they do not appear to use urine or faeces marking to indicate boundaries. They are not normally vocal creatures so calling is unlikely to be a factor, and it may be that

age, sex and condition are all elements in establishing home ranges. Males generally have larger home ranges than females, and several female ranges may be found within one male home range. Several animals may actually use the same area to forage, but they tend to use that area at different times, thereby avoiding conflict.

Fights do occur and are usually accompanied by a great deal of screaming. I know from personal experience how shocking this can be when heard for the first time. It sounds like a howling banshee has been let loose in your garden. Whilst both sexes will fight if provoked, it is the males that tend to indulge in conflicts, usually at the time of mating.

A home range may encompass gardens, fields and woodland. Gardens are popular with hedgehogs with the many feeding opportunities that they present. Fences and walls generally present no obstacle to them as they are excellent climbers. Similarly water will be crossed if required, where a hedgehog can demonstrate an even higher turn of speed than when on land. Despite this ability in water many hedgehogs do drown in garden ponds or swimming pools simply because they have no way to climb out.

Aspects of hedgehog behaviour which are not clearly understood include the practice of self-anointing, when the animal will twist itself into quite remarkable shapes in order to cover itself in saliva. This can go on to the exclusion of all else for up to twenty minutes, leaving the animal looking as though it is covered in soap suds. Quite why it does this is still a mystery but it may be a way of renewing its scent.

Home

Hedgehogs build nests throughout the year and for different reasons. During the summer months, adult males and non-breeding females may build loose nests from grass, bracken and leaves, which involve little effort.

Breeding females, on the other hand, take a great deal more time to construct a nursery nest, again using grasses and leaves. The whole thing is woven

into a tightly knit ball in which the young can be born in safety.

During the autumn, in preparation for hibernation, hedgehogs build winter nests. Each animal may build several nests, but in the end will choose the one that seems to suit it best. On what basis this selection is made is not clear, but insulation properties are undoubtedly a factor. The hibernation nest is made up of a collection of dry leaves, which are pushed together. The animal then enters the pile and moves around and around until the leaves become tightly packed around it.

If possible this hibernation nest will be located under a hedgerow, bramble patch, garden shed or pile of sticks. Unfortunately bonfires are just the sort of place they are looking for and so on the 5th of November many will be at risk unless someone takes the care to search through the stick pile prior to lighting it.

Pat Morris



Many hedgehogs die on roads

Breeding

Although the answer to the time-honoured joke "How do hedgehogs make love?" is "Carefully", in practice

they don't appear to have problems. Hedgehogs usually get amorous between April and August. The first pregnant females are usually found in May.

They do not pair up as such and both males and females will mate with several partners during the spring. Mating involves the male repeatedly circling the female issuing loud snorting cries. Before actual mating the female presses her stomach to the ground and arches her back away from her mate, and the spines on her back will lay down, presumably in order to avoid injuring her suitor. Again, hedgehog mating really is a very noisy affair and can be quite unnerving if it happens in your garden; you may think you have a rottweiler panting in the shrubbery. The noise may in turn attract other males and fighting will often result.

The babies are usually born around 34 days later, with between four and six to a litter. The young, who weigh around 120g, are pink with no spines. Small white spines emerge within hours of birth, and shortly after other, darker spines begin to emerge. Their eyes open after 14 days and they are usually weaned within four to five weeks. The sex ratio is roughly equal. Early summer litters put on

weight quickly, which usually enables them to hibernate successfully. Late summer litters on the other hand are unlikely to survive hibernation.

Predators and threats

Chief amongst the hedgehog's predators is the badger. When you think of it the hedgehog has a pretty formidable defensive array, the spines being more than enough to put most predators off. However, badgers learn to unroll hedgehogs and bite into their soft underside. On occasions foxes will also learn this skill, but beyond that the hedgehog has little to worry about in the natural world.

Nonetheless they do face major threats, some of which we have already touched upon. Historically they were considered to be pests and church wardens would pay out a couple of pence for a snout or a tail, but in 1863 they came off the pest list and seem to have become popular with the general public since then.

One of the reasons for this popularity is perhaps our guilt at the many thousands of hedgehogs we squash

on our roads each year. Pesticides also kill many hedgehogs indirectly, getting into them via the pests which we target with insecticides.



Jean Matthews

Michael D. Smith



Cattle grids can be death traps for hedgehogs; although they are accomplished climbers they cannot climb out without the aid of a ramp of some sort. The edge of the pit in normal circumstances is too high for them to reach and the side too smooth. As already related, garden ponds can often cause similar problems.

What can we do to help?

Although hedgehogs are widespread throughout Wales, they face more threats than ever these days, not least from vehicles on the road. We can all do our bit by driving more carefully. Gardeners can help out by being careful in the way they deal with slugs and snails. If you must use poisonous pellets, place them in a safe container, which the slugs can get into, but the hedgehog can't. Better still, use more natural alternatives such as a bowl of beer: the slugs should die happy and the odd inebriated hedgehog should not be too much of a problem. If you have the space in your garden, why not get yourself a hedgehog house; they're simple to make, or you can always buy one. Hedgehog observations and records are always valuable, so it is well worth passing these on to your local Wildlife Trust and other relevant organisations; and it should be fun finding out more about this charming, enigmatic creature.

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Michael D Smith

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Pat Morris

Y Draenog – cyfail y garddwr

Ers i'r draenog gael ei dynnu oddi ar y rhestr o greaduriaid pla nôl yn 1863, mae wedi cynyddu mewn poblogrwydd. Creadur hynafol yw hwn: fe ymddangosodd fel rhywogaeth tua 15 miliwn o flynyddoedd yn ôl a does 'na'r un anifail arall yn perthyn yn agos iddo. Mae'r draenog yn byw ym mhob rhan o Gymru ac mae'n hawdd i'w adnabod; ond cawn ddysgu llawer mwy yn yr erthygl hon am olwg, olion ac ymddygiad yr anifail, a hefyd am ei arferion bywyd a'i hoff gynefinoedd. Bydd draenogod wrth eu bodd mewn gerddi ac nid yw ffensys, waliau na dŵr yn eu rhwystro rhag crwydro. Mae garddwyr yn eu croesawu am eu bod yn helpu gwared gwllithod – er mai chwilod, mwydod a lindysod yw eu prif fwyd. Os clywch chi sŷn sgrechian arallfydol yn nyfnder nos, mae'n ddigon posib mai draenogod fydd wrthi'n ymladd yn eich gardd, yn enwedig ar adeg paru. Byddant yn adeiladu nythod drwy'r flwyddyn am wahanol resymau – y rhai mwyaf crefftus yw'r rheiny lle byddant yn geni rhai bach. Does dim llawer yn bygwth draenogod – moch daear yw'r ysglyfaethwyr pennaf, ond gall gridiau gwartheg, pyllau dŵr serth – a cherbydau wrth gwrs – ladd nifer ohonynt bob blwyddyn.

Fforwm Carreg Cymru

Eglwys Llandybie - y holl cerrig wedi dod o'r chwarelau Hen Tywodfaen Côch Pebbly Brownstones Sir Gâr.

Pob foto: John H. Davies

*Yn rhinwedd ei swydd
mae **JOHN DAVIES** yn
cyfrannu at ddatblygiad
a gweithgaredd Fforwm
Cerrig Adeiladu Cymru ac
ef, ar hyn o bryd, yw'r
Cadeirydd. Yn yr erthygl
hon mae'n disgrifio'r
cefnidir i'r fforwm ac yn*

*sôn am beth o'r
gwaith sydd wedi
bod yn
digwydd yn
ystod y tair
blynedd
diwethaf.*



Ydych chi wedi cael eich diflasu erioed wrth weld deunyddiau estron yn cael eu defnyddio i godi adeiladau newydd, neu i gynnal a thrwsio hen rai - a gweld, o ganlyniad, peth o naws a chymeriad ardal yn diflannu?

Dyma, yn rhannol, oedd wrth wraidd sefydlu Fforwm Cerrig Adeiladu Cymru (Fforwm Carreg Cymru) nôl yn Ebrill 2002, ar ddiwedd cynhadledd genedlaethol Gymreig a drefnwyd ar y cyd rhwng CADW, Cyngor Cefn Gwlad Cymru ac Amgueddfeydd ac Orielau Cenedlaethol Cymru. Yn ystod y gynhadledd hon bu cryn drafod ar bob math o agweddau ar y defnydd o gerrig cynhenid – yn y gorffennol, yn y presennol ac yn y dyfodol. Cyflwynwyd papurau ar amrywiaeth eang o bynciau yn ymwneud â cherrig adeiladu a gallwch weld y rhain ar wefan Amgueddfeydd ac Orielau Cenedlaethol Cymru (www.nmgw.ac.uk - chwiliwch am 'Fforwm Carreg Cymru').

Roedd yn benderfyniad unfrydol i sefydlu'r Fforwm, gan ddilyn ôl troed yr Alban lle'r oedd Grŵp Cyswllt Cerrig wedi cael ei sefydlu ddwy flynedd ynghynt. Erbyn 2004, roedd newyddion am ddatblygiad a gwaith y fforwm yng Nghymru, ac am waith y grŵp Albanaidd, wedi mynd ar led yn Lloegr a chafodd cynhadledd debyg ei chynnal yn Efrog ym mis Mawrth eleni. Yn y gynhadledd hon, penderfynwyd unwaith eto y dylid sefydlu fforwm tebyg yn Lloegr i sbarduno a chydlynu'r gwaith o gasglu gwybodaeth a hybu'r defnydd o gerrig adeiladu cynhenid.

Roedd y rhesymau dros sefydlu Fforwm Carreg Cymru yn niferus a chymhleth. Fel y crybwyllwyd, roedd pryder am yr arfer ymhlith adeiladwyr o ddefnyddio briciau Clai Swydd Rhydychen (rhai'r 'London Brick Company') wrth godi ystâdau tai newydd mewn pentrefi gwledig, waeth beth oedd natur y deunydd adeiladu lleol. Sylweddolwyd hefyd bod tueddiad i lyfrau sy'n disgrifio hanes pensaernïol adeiladau – gan gynnwys cyhoeddiadau ynglŷn â henebion CADW – anwybyddu neu i fod yn niwlog ynglŷn â natur y cerrig a ddefnyddiwyd i godi'r adeiladau hynafol hyn. Nid yw archeolegwyr chwaith bob amser yn llwyddo deall arwyddocâd cerrig adeiladu arbennig wrth geisio dehongli tystiolaeth ynglŷn ag economi a systemau cludiant y gorffennol. Ac wrth ystyried rheolaeth Safleoedd o Ddiddordeb Gwyddonol Arbennig (SoDdGA) daearegol, bu tueddiad yn y gorffennol i anwybyddu'r ffaith bod nifer o'r chwareli SoDdGA hyn wedi cynhyrchu cerrig adeiladu arbennig a fu'n gyfrifol am gyflwyno elfen o hynod rwydd i hen adeiladau. Er enghraifft, codwyd Coleg Llanymddyfri gyda cherrig o'r Cwar Glas, yng ngheunant Sawdde, Llangadog – safle sydd o ddiddordeb gwyddonol arbennig oherwydd y pysgod ffosil cynnar a geir yno. Felly mae angen i reolaeth SoDdGA roi sylw dyledus i'r ffaith bod gan y safleoedd hyn, o bosib, ddiddordeb hanesyddol arbennig fel ffynonellau o gerrig ar gyfer

henebion. Pan fydd swyddogion cynllunio Parciau Cenedlaethol yn nodi bod angen defnyddio carreg adeiladu leol, rhaid iddyn nhw fod yn benodol iawn am yr hyn y maen nhw'n ei olygu wrth 'lleol' a rhaid iddyn nhw fod yn siwr ei bod yn bosib o hyd i gael gafael ar gerrig penodol, a phriodol, o chwareli gweithredol. Does fawr o bwynt, er enghraifft, i fynnu bod angen defnyddio Hen Dywodfaen Coch ym Mharc Bannau Brycheiniog, pan fo'r chwarel agosaf sy'n cynhyrchu'r garreg honno yn Mitcheldean, swydd Caerloyw, a phan fo lliw y garreg o'r chwarel honno yn goch gwahanol i'r hyn a geir yn ardal Brycheiniog.

Mae'r fforwm yn cynnwys criw o ddaearegwyr, penseiri, archeolegwyr, cynllunwyr, gwarchodwyr adeiladau, seiri maen a chwarelwyr sydd yn cyfarfod i drafod gwahanol agweddau ar y defnydd o gerrig. Cynhaliwyd cyfarfodydd maes yn ystod y ddwy flynedd diwethaf i drafod y defnydd o gerrig adeiladu mewn adeiladau cyffredin mewn gwahanol rannau o Gymru. Trefnwyd rhai o'r cyfarfodydd hyn er mwyn trafod pynciau arbennig, fel y defnydd o gerrig arbennig ar gyfer cofebion Eglwys Gadeiriol Llandaf, neu'r broblem a drafodwyd uchod ym Mharc Cenedlaethol Bannau Brycheiniog.

Mae Adran Ddaeareg Amgueddfeydd ac Orielaeth Cenedlaethol Cymru yn creu casgliad o ddeunyddiau adeiladu cynhenid ac estron a ddefnyddiwyd mewn adeiladau hen a chyfoes yng Nghymru. Mae'r casgliad yn cynnwys sbesimenau o giwbiau cerrig, 10cm o faint, yn ogystal â thrawsoriadau tenau er mwyn gallu adnabod petrograffeg manwl (natur a chyfansoddiad) y graig. Datblygwyd bas data hefyd er mwyn ceisio cysylltu unrhyw garreg arbennig a ddefnyddiwyd mewn adeilad gyda'r chwarel y daeth ohoni.



Cwar Glas yn ceunant Sawdde SSSI

Yn ystod y ddwy flynedd ers sefydlu'r fforwm, rydym wedi casglu cryn dipyn o wybodaeth ynglŷn â'r defnydd o gerrig adeiladu gan wahanol aelodau o linach frenhinol Cymru yn ystod y



canol oesoedd. Yn y 12fed Ganrif, roedd yr Arglwydd Rhys yn defnyddio carreg Dundry o ardal Bryste mor bell i'r gogledd ag Abaty Ystrad Fflur yng Ngheredigion, a chanrif yn ddiweddarach daeth Llywelyn Fawr â Charreg Grit Môn i'w defnyddio yn yr union un adeilad. Rydym yn dechrau creu map sy'n dangos y defnydd o garreg Sudbrooke yn neddwyrain Cymru, carreg Sutton ar hyd arfordir de Cymru, Hen Dywodfaen Coch llawn cerigos yn eglwysi Sir Gaerfyrddin - ac, wrth gwrs, y defnydd o garreg grit Môn yn adeiladau gogledd orllewin Cymru. Daeth carreg nadd* arall i'r golwg yn ystod y ddwy flynedd diwethaf, sef carreg nadd Egrin, o geunant Egrin i'r gogledd o'r Bermo ; defnyddiwyd hon gan Edward 1af yng nghastell Harlech a chyn hynny gan dywysogion Cymreig yn Abaty Cymer.

Beth yw goblygiadau'r gwaith yma o gasglu a rhannu gwybodaeth ar draws gwahanol ddisgyblaethau? Gallai'r canlyniadau fod yn bellgyrhaeddol iawn : o safbwynt helpu cynnal a gwarchod daeareg a thirluniau, creu cyflogaeth leol a hybu defnydd o gerrig wedi eu cloddio â llaw o chwareli bychain lleol. Mae'r wybodaeth yn rhoi'r cefndir angenrheidiol i ni fedru adnabod y deunyddiau sy'n hanfodol wrth geisio trwsio neu godi adeiladau sy'n cydweddu â'u lleoliad a'u hamgylchedd.

Yn wahanol i chwareli agregadau, nid yw chwareli cerrig adeiladu yn swnllyd na chwaith yn cynhyrchu llawer o lwch. Nid oes angen llw o lorïau na threnau ar gyfer cludiant cyson ac nid ydynt yn creu creithiau mawr yn y tirlun. Maen nhw hefyd yn creu cyflogaeth leol ar gyfer gweithiwr medrus, un ai yn y chwarel ei hunan neu fel rhan o ddiwydiant adeiladu lleol ac maen nhw hefyd yn gwarchod amrywiaeth a hynodrydd lleol. Mae parhad y chwareli bychain hyn yn rhywbeth y dylai cyrff fel y Cyngor Cefn Gwlad ei gefnogi, a dylem hefyd geisio annog yr arfer o ailgylchu cerrig, fel y gwnaeth ein cyndeidiau, yn hytrach na chwalu ein hadeiladau ac anfon yr hen gerrig i safleoedd tirlenwi.

Cyn bo hir, mae'n debyg y bydd Fforwm Carreg Cymru yn cyflwyno dogfen allweddol i Gyngor Cefn



Gwlad Cymru ; bydd hon yn cynnwys argymhellion ar gyfer gwarchod ffynonellau o gerrig adeiladu fel rhan o strategaeth ehangach ar gyfer gwarchod y tirlun gyda'i holl amrywiaeth bywydegol, daearegol a dynol. Gobeithir y bydd y ddogfen yn un y gall y tri chorff cyhoeddus sy'n aelodau o'r Fforwm ei chefnogi ac y bydd hefyd yn sail i bolisi y gall Llywodraeth y Cynulliad ac awdurdodau cynllunio lleol ei ystyried wrth wneud penderfyniadau ynglŷn â datblygiadau ar hyd a lled ein gwlad.

Os am ymuno â'r Fforwm cysylltwch gyda Dr.Tim Palmer, Sefydliad Astudiaethau Daear, Prifysgol Cymru, Aberystwyth, SY23 3DB, tjp@aber.co.uk neu gyda'r adran ddaeareg yn Amgueddfa Genedlaethol Cymru, Caerdydd www.nmgw.ac.uk

John H. Davies yw Daearegwr Rhanbarthol y Cyngor Cefn Gwlad Cymru ym Mhowys.

* 'freestone' – sef carreg y gellir ei naddu ym mhob cyfeiriad



Llandaf Cadairlan - taith y Fforwm



Colyfnat
Ystrad Fflur

Welsh Stone Forum

The Welsh Stone Forum was established in 2004, partly as a result of growing concern over the use of non-local materials in building projects across the breadth of Wales. **John Davies**, regional geologist with the Countryside Council for Wales and current Chair of the Welsh Stone Forum, describes the research and advisory work of the forum to date and illustrates some of the typical issues encountered in relation to the sourcing and use of stone in construction and repair work. The article emphasises the importance of recognising the socio-cultural relevance, as well as the economic value of scientifically important quarries, and explains the need for a new policy to ensure the protection and appropriate use of building stone in Wales.





Walking on Moonwort

Moonwort with spore-bearing frond enlarged

Fraser Simpson

Moonwort... moonwort... roll the word around your mouth a bit. Nice, isn't it - a round, friendly sound.
KAREN RAWLINS
eulogises about this choice and delightful inhabitant of a habitat under threat.



So what is moonwort? Well, it's a wonderfully descriptive name which conjures up other-worldly images of a weird and wonderful plant, maybe like something off 'The Clangers'. Literally, its scientific name, *Botrychium lunaria*, derives from the Greek word 'Botrys' meaning grape and the Latin 'Luna' meaning moon – Moon grapes! It doesn't disappoint either, when you finally find the thing, but that really is the tricky part. It is a diminutive little fern, typically found growing low amongst the grasses and herbs of old, unimproved hay meadows and on sand dunes in spring and early summer – around about now, in fact.

Sadly, these traditional meadows are increasingly rare these days and as a consequence, so is this little fern (another rare and bizarre-looking little grassland fern with an equally descriptive name, the adder's tongue, is often found in association with moonwort and requires the same sort of habitat).

Modern farming methods employed since the Second World War, such as the heavy use of artificial fertilisers, increased mechanisation and the reseeded of species-rich grassland, mean that species such as moonwort, which need low nutrient soils, are lost to more vigorous, high nutrient

demanding species such cock's-foot grass, white clover, perennial rye grass and thistles; moonwort simply cannot compete with them. It's a similar story for many of the meadow species we treasure, such as the finer grass species like quaking meadow grass, fescues, common bent and wavy hair grass, and flowers like the primrose, cuckoo flower, bird's-foot trefoil, eyebrights, salad burnet, field scabious, burnet saxifrage, betony, ox-eye daisy and lady's mantle, together with orchids like the butterfly orchid, common-spotted orchid, pyramidal orchid and northern marsh orchid.

They all depend on low nutrient situations where they can exist together in a 'chilled, non-competitive scene'...like so many colourful hippies. Give peace a chance – none of this high-testosterone competition for them! Good examples of these grasslands and meadows usually survive because they are still managed – grazed lightly and cut for hay – in traditional ways, by sympathetic farmers, and they are often protected sites; Sites of Special Scientific Interest (SSSIs), for example, or Local Nature Reserves.

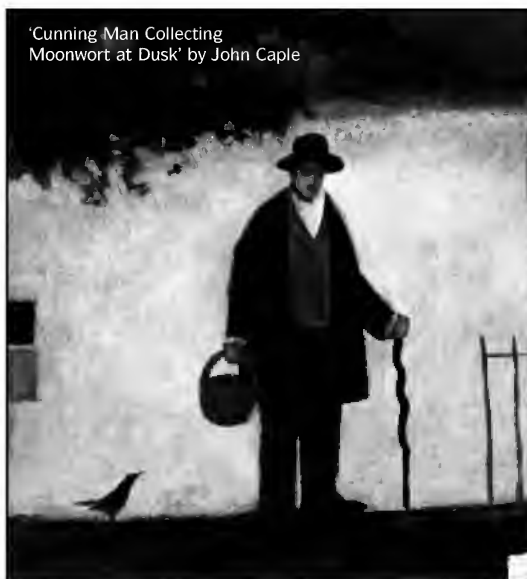
Moonwort is not easy to spot even if you know where to find it, being a yellowish to grass-green colour, and barely protruding above the height of the turf, but once you have your eye in for it, suddenly it sticks out like a sore thumb. It has a robust quality to it; sturdy and slightly fleshy, and its single frond curls around its spike of spores rather like a lobster's tail. Mind you, lobsters are a bit big for this analogy, so maybe I'm thinking of a prawn, and the spores are like the prawns eggs, although they're not pink! Think raw prawns, not cooked. The spores are slightly yellow, like perfect little translucent pearls artfully arranged on an elegantly branched spike; a lady might well covet such a dainty, delicate necklace. Luckily, I'm no such lady, and they look better on the plant, anyway!

The odd and slightly mysterious appearance of this little fern has provoked interest in it at least since historical times, and the many associated myths and rich folklore give it an added layer of interest. From early times, those with a more active imagination, perhaps, believed in fairy folk, and these fairy folk needed transport just like us, and travelled by

horseback. Moonwort was believed to spring up in the turf wherever a magical horse's hoof had touched the ground. A rather more sinister belief was that this plant had magical powers, which, if gathered by moonlight, could be used by necromancers in their incantations to raise the dead!

Altogether an intriguing plant - happy moonwort hunting!

Karen Rawlins is CCW's Senior Conservation Officer for north Gwynedd and the Llŷn Peninsula.

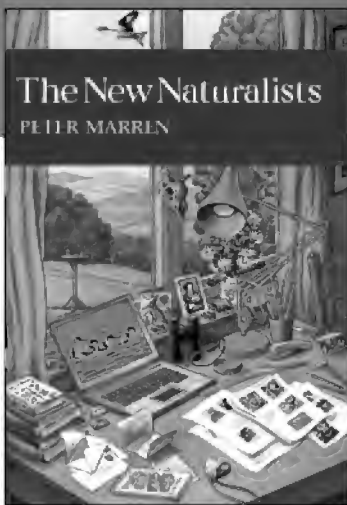


'Cunning Man Collecting Moonwort at Dusk' by John Caple

By kind permission of John Martin of London

Y Lloer-redynen – planhigyn swyn

Mae angen llygaid craff, a thipyn o lwc, i weld y lloer-redynen y dyddiau hyn. Mae'n tyfu'n dalsyth, ond yn ddim mwy na maint bys, mewn hen weirgloddiau ac ar dwyni tywod – cynefinoedd digon prin bellach. Anodd i'w gweld efallai, ond hawdd i'w hadnabod! Planhigyn cryf a rhyfedd yr olwg, gyda'r ffrond unigol yn cyrlïo o gwmpas sbrigyn o sborau melyn. Aferai rhai gredu ei fod yn tyfu lle mae carnau ceffylau tylwyth teg wedi cyfwrdd â'r ddaear, a bod ganddo b'ŵer i godi'r meirw. Chwiliwch amdano – mae'n werth ei weld!



THE NEW NATURALISTS

Peter Marren

HarperCollins 2005

£40.00 hardback

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There is a touch of the book collector in most of us, and plenty of series to collect – I got hooked on *Britain in Pictures* – but none has the cachet of the New Naturalists Library. Born, by one account, in an air raid shelter in war-torn London, it was the brain child of a publishing luminary, Billy Collins, in the dark days of 1942; the early titles achieved massive sales with the outbreak of peace.

Towards the end of its fifth decade this stylish and authoritative series was faltering, so publication of a volume about The New Naturalists came at a critical time. It reminded both public and publisher of the 'pedigree' of the series. Published as number 82, it has just been revised and re-published. You get extra forwards, some wonderful notes, and a chapter covering the last ten years. This includes material the author missed from the first volume (a riveting account of the writing of *British Birds of Prey*); a revealing analysis of the author's own

Green Bookshelf

contributions to the series; a timely appraisal of Robert Gillmour's beautiful dust jacket designs, a new one of which adorns this volume; and much more. Since this book first appeared ten years ago, in a pitifully small print run, the series has been restored to health, and a burgeoning crop of titles has just emerged or is now gestating. I have no doubt that The New Naturalists has contributed significantly to this change of fortunes.

The publishers kindly invited me to attend a celebratory party to mark sixty years of the series, and the publication of the new *New Naturalists*. It was a real pleasure to be in the company of such a distinguished gathering of, it has to be said, naturalists past their first flush of youth. Will the series still be new after a century, I wonder?

Peter Marren has written a wonderful book, indeed one of the most readable titles in a remarkable series. He has distilled the appeal of the whole lot into one volume. I commend it in the strongest terms to bibliophiles and naturalists alike. If you buy no other title in the series, buy this. Having bought it, you will find it hard to resist collecting the others. And don't Collins – the old name has been restored to the book's spine – just know it!



FIELD GUIDE TO THE BUMBLEBEES OF GREAT BRITAIN AND IRELAND

**Mike Edwards &
Martin Jenner
Ocelli 2005
0-9549713-0-2**

What could be easier than learning the names of the bumblebees which visit your garden in summer? The answer in the past has been almost anything: bumblebees never stay still, species often resemble each other, they lack agreed common names, they come as queens, workers and males and they can be annoyingly variable. But help is at hand.

To brush up on my rusty knowledge of the common bumbles, and put the new Guide through its paces, I collected three bumblebees from my greenhouse. The first I looked at had two yellow bands on the thorax, one on the abdomen and a white tail. The decider, though, was its face. The Guide offers three diagrammatic faces to choose from: round, triangular or long and narrow, and mine was the last of these - the garden bumble – a positive ID! The second bumble had a yellow band at the front of the thorax, one sandwiched between two black bands on the abdomen, and a gingery-orange bottom. This quickly narrowed it down to the early bumblebee. I learnt that my third, the buff-tailed bumblebee, was capable of great variability, not always having a buff tail.

In all, the Guide worked well, although I have a few caveats. The worked example of how to use the quick identification chart gave the wrong column and row, which I found confusing. The book's design and layout did not make it particularly easy to get at the wealth of information it contained. There was a critique of English common names, where I would have liked the Guide to offer some standard ones to go

Silff Lyfrau Amgylcheddol

with the species accounts. These are minor quibbles, which should get ironed out at the next printing.

Don't be put off: this handy, pocket-sized Guide offers everyone the chance to achieve accurate, quick identifications of bumblebees. The text is excellent, the diagrams and symbols generally work well, and the concept has lasting value.

THE RED KITES OF WALES

Tony Cross and Peter Davis
Subbuteo Natural History Books
2005, £4.95, 1-905268-00-9



It is one of the most inspiring conservation stories of the last century anywhere in the world. A handful of red kites survived in a few remote valleys in mid Wales,

against all the odds, a tiny remnant population of a once common British bird waiting for better times, which have at last arrived. This did not happen by chance, but as a result of the most remarkable dedication of a few committed individuals. The tale deserves telling and re-telling, for it has many lessons for conservationists, including the rather unfashionable lesson of hope – things are possible, they can be done.

This new edition of a booklet first published in 1998 combines much recent information, bringing the story up to date, with an unrivalled account of how these graceful birds

came to be conserved as a native species, in Wales at least. You get a free copy if you join Friends of the Red Kite, and help the work of The Welsh Kite Trust; contact: 01597 825981; www.welshkitetrust.org.

James Robertson

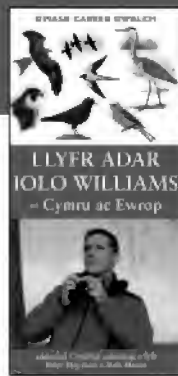
LLYFR ADAR IOLO WILLIAMS – CYMRU AC EWROP

[Addasiad Cymreig arbennig o lyfr Peter Hayman a Rob Hume – a special Welsh adaptation of the book by Peter Hayman and Rob Hume.]

Gwasg Carreg Gwalch 2004,
£9.99, 0-86381-907-9

Flwyddyn diwethaf cawsom lyfr godidog Peter Hope Jones a Paul Walley, Adar Môn. Dyma achlysur arall ym myd adarydda Cymreig. Mae'r gyfrol ddeniadol a hwylus hon yn llenwi bwlch ar silff lyfrau adarwyr, ac unrhyw un sydd â gronyn o ddi-ddordeb mewn adar, yng Nghymru. Fel llawer yn arall mae'n siŵr, bŵm yn ychwanegu enwau Cymraeg yn fy llawlyfrau Saesneg dros y blynyddoedd. Mae'r gyfrol hon wirioneddol yn lyfr poced y gellir ei gario o gwmpas yn ddi-drafferth.

Addasiad yw'r gyfrol o lyfr Peter Hayman a Rob Hume; mae safon y lluniau yn uchel ac maent yn dangos nifer o amrywiaethau. Er engraifft, mae'r dudalen ar wylan y penwaig yn dangos, yn ogystal ag adar flyyddyn gyntaf a llawn dwf, amrywiaethau Llychlyn a Gorrlewin Ewrop. Yn achos y siff-saff, yn ogystal â phlu llawn dwf gaeaf a gwanwyn, dengys amrywiaethau (neu is-rywiogaethau) Iberia a Siberia.



Ychydig o adarwyr, dybiwn i, fydd yn gyfarwydd â'r holl enwau ar rannau corff aderyn, sydd yn ymddangos

ar ddechrau'r llyfr. Trefnir teuluoedd yr adar yn ôl categorïau cyfarwydd: adar dŵr; rhydwyr; teloriaid a gwybedogion; ac yn y blaen.

Disgrifir yr adar yn gryno mewn iaith lafar. Mae Iolo yn llwyddo i gyfleu y peth annelwig hwnnw sef yr argraff mae'r aderyn yn ei greu ar yr olwg gyntaf. Mae'r pwyslais ar ddisgrifio nodweddion corfforol yn y testun, ar draul disgrifiad o ymddygiad, a rhagor o fanylion am gynefin yr adar. Er bod yna symbolau yn gosod yr aderyn yn ei gynefin buasai rhagor o fanylion am gynefin yn y testun yn ddefnyddiol. Er ei bod yn arferol mewn llyfrau cyffelyb mewn Saesneg i gynnig disgrifiadau o alwadau, mae Iolo yn egluro ei resymau dros beidio ceisio gwneud hyn yn ei gyflwyniad. Beth bynnag, mae cryno ddisgiau o ganeuon adar bellach yn hawdd i'w cael. Rhestrir enwau eraill nifer o'r adar, fydd wrth fodd llawer o ddefnyddwyr y gyfrol. Efallai y dylid fod wedi cynnwys yr enwau gwyddonol, yn ogystal â'r Saesneg.

Bydd y gyfrol hon yn diwallu anghenion amrywiaeth o ddarllenwyr sydd am adnabod adar a dysgu mwy amdanynt trwy gyfrwng y Gymraeg. Llongyfarchiadau i'r awdur a Gwasg Carreg Gwalch.

Iestyn T Harris



Cymru a'r byd

Nawr bod yr Etholiad Cyffredinol a'r etholiadau lleol yn hen hanes, mae sylw'n troi unwaith eto at y materion gwleidyddol rhyngwladol pwysig. Un mater sydd heb gael fawr o sylw yw'r agenda Lisbon bondigrybwyll; ond mae gan y model o dwf economaidd sy'n ganolog i'r agenda hwn oblygiadau mawr ar gyfer yr amgylchedd.

Yn 2000, nod yr UE oedd bod "yr economi mwyaf deinamig a chystadleuol sy'n seiliedig ar wybodaeth yn y byd". Byddai'n cyflawni hyn drwy Strategaeth Lisbon, sef creu rhagor o swyddi a swyddi gwell, a mwy o gydlyniant cymdeithasol. Nodwyd pen-blwydd y strategaeth yn bump oed gydag adolygiad hallt a oedd yn barnu bod y dull yn methu. Yn ôl yr arbenigwyr a fu'n adolygu'r strategaeth, roedd angen symud y pwyslais i dwf economaidd sy'n seiliedig ar ymchwil, entrepreneuriaeth a llai o fiwrocratiaeth.

Mae'r Comisiynydd Barroso yn arwain yr ail-lansio dan y faner 'twf a swyddi'. Mae hyn wedi creu rhai gelynyddion ymysg y rhai sy'n gwrthwynebu'r dull neo-ryddfrydol. Yng Nghyngor arweinwyr Ewrop ym mis Mawrth, roedd yr Arlywydd Chirac ar flaen y gad yn y frwydr yn erbyn rhyddfrydoli economaidd. Mae ei wrthwynebiad i gyfarwyddeb i agor y farchnad ar gyfer gwasanaethau yn arwydd o bryder gydag agenda Thatcheriaid a allai niweidio safonau cymdeithasol yn ei farn ef.

Ond siawns y bydd cael datblygu cynaliadwy fel fframwaith trosfwaol i holl bolisiau Ewrop yn helpu i ddiogelu'r amgylchedd? Mae hyn yn wir ar yr wyneb. Mae Barroso, mewn ymgais i leddfu pryderon amgylcheddwyr o bosib, wedi dweud bod datblygu cynaliadwy yn sail i Strategaeth Lisbon. Ond mae yna ond, ac ond go fawr yn ôl pob golwg. "Heb dwf, heb economi deinamig, ni fydd datblygu cynaliadwy" oedd y ddadl.

Felly dyma ni yn 2005, yn dadlau unwaith eto a oes yn rhaid i'r economi ddatblygu'n gyntaf fel y gallwn ni fforddio poeni am yr amgylchedd. Roedd safbwynt Mr Barroso yn glir pan gymharodd y sefyllfa gyda gofalu am blant. Os oes un o'ch meibion yn sâl, meddai, rydych yn rhoi mwy o sylw a gofal arbennig iddo fe ond nid yw hyn yn golygu nad ydych yn caru'ch meibion eraill lawn cymaint. Mae'r economi yn sâl, mae Mr Barroso yn sychu'i dalcen, ac mae'r amgylchedd a chyfiawnder cymdeithasol yn chwarae yn y gornel. Ni allwn ni ond gobeithio nad yw'r salwch, beth bynnag ydyw, yn heintus.

Tra bod Barroso yn nyrsio'r economi, mae Gweinidogion yr Amgylchedd wedi awgrymu efallai y dylai gofio am bob un o'i feibion - tair elfen datblygu cynaliadwy. Maent yn awgrymu y bydd cost economaidd a chymdeithasol uwch i'w thalu os yw'r amgylchedd yn cael ei anwybyddu. Ond mae Barroso a'i griw yn gweld yr amgylchedd o safbwynt economaidd i raddau helaeth, gan ganolbwyntio ar yr elw y gellid ei wneud o eco-dechnoleg ac effeithlonrwydd ynni. Tra bod hyn yn

parhau, mae'n ymddangos y bydd y nod o atal dirywiad bioamrywiaeth erbyn 2010 yn llithro i waelod yr agenda.

Mae llygedyn o oleuni ar ffurf yr adolygiad o Strategaeth Datblygu Cynaliadwy'r UE, sydd hefyd yn cael ei gynnal eleni. Hyd yn hyn, mae'r adolygiad wedi cydnabod, yn ddi-flewyn ar dafod, y pwysau y mae tueddiadau anghynaliadwy yn ei roi ar yr hinsawdd, bioamrywiaeth ac adnoddau naturiol. Mae'n cydnabod "ni ellir sicrhau datblygiad os nad yw twf economaidd, cynhwysiant cymdeithasol a diogelu'r amgylchedd yn mynd law yn llaw", sy'n hollol groes i farn Barroso.

Mae'r ddwy farn sylfaenol wahanol hyn o'r UE yn bwrw datblygu cynaliadwy oddi ar ei echel. Os yw pethau fel y dylent fod, a bod datblygu cynaliadwy yn sail i holl bolisiau Ewrop, efallai nad oes sail i'r ofnau. Ond mae'n hynod debygol y bydd yr agenda ar gyfer twf yn cael y gorau ar waith a fyddai o fudd i ansawdd yr amgylchedd a bioamrywiaeth.

Pan fo cystadleuaeth rhwng rhoi cyfoeth yn gyntaf, a phwysleisio'r angen am agwedd wirioneddol integredig at ddatblygu cynaliadwy, mae'n rhaid credu nad bioamrywiaeth, yr hinsawdd ac ansawdd yr amgylchedd fydd ar eu colled. Er bod Barroso yn rhoi ei sylw i fab rhif un, rhaid gobeithio bod yna Mrs Barroso i roi pob gofal i feibion dau a thri.

HANNAH PITT

Swyddog Gwybodaeth y Cynulliad Cyswllt Amgylchedd Cymru

Now that the General Election and local elections are well behind us, attention is turning once again to the big international political issues. One of these which has passed relatively unnoticed is the so-called Lisbon agenda; but the model of economic growth at the heart of this agenda has major implications for the environment.

In 2000 the EU adopted the aim of becoming "the most dynamic and competitive knowledge-based economy in the world". It would achieve this through the Lisbon Strategy of creating more and better jobs and increased social cohesion. The strategy's fifth birthday was marked by a stinging review which found the approach to be failing. Experts reviewing the strategy suggested a re-emphasis on economic growth driven by research, entrepreneurship and reduced bureaucracy.

Commissioner Barroso leads the re-launch under the banner 'growth and jobs'. This has created some enemies amongst those opposed to the neo-liberal approach. At the March Council of European leaders, President Chirac led the charge against economic liberalisation. His opposition to a directive to open the market for services is a sign of concern with a Thatcherite agenda which he fears will harm social standards.

But surely sustainable development as the overarching framework of all European policies will help protect the environment? On the surface this is the case. Barroso, perhaps in an attempt to appease environmentalists, has said that sustainable development underpins the Lisbon Strategy. But

there's a but, quite a big one it seems. "Without growth, without a dynamic economy, there will be no sustainable development" was the qualifier.

So here we are in 2005, arguing again over whether the economy must develop first so we can afford environmental concern. Mr Barroso made his view clear when he compared the situation to caring for children. If one of your sons is sick, he said, you give him extra attention and special care but this does not mean you love your other sons less. The economy is sick, Mr Barroso is mopping its fevered brow, and the environment and social justice are left playing in the corner. Let's hope that whatever the illness is, its not contagious.

Whilst Barroso plays doctor to the economy, Environment Ministers have suggested that perhaps he should remember all of his sons – all three elements of sustainable development. They suggest that if the environment is neglected there will be higher economic and social prices to pay. But Barroso and Co. see the environment in highly economic terms, concentrating on the profit potential of eco-technology and energy efficiency. Whilst this is the case, the objective of halting biodiversity decline by 2010 looks set to slip way down the agenda.

Hope must lie with the review of the EU Sustainable Development Strategy, also taking place this year. The review has so far acknowledged, in no uncertain terms, pressures on climate, biodiversity and natural resources from

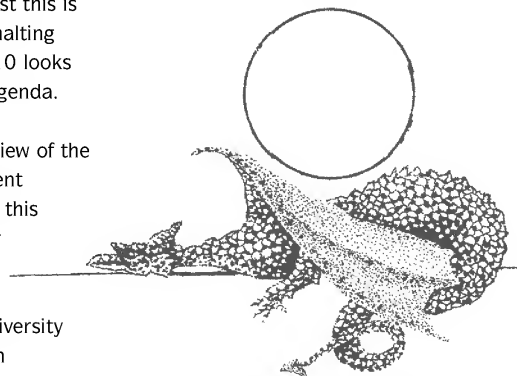
unsustainable trends. It recognises that "development can only be achieved if economic growth, social inclusion and environmental protection go hand in hand", the very opposite of Barroso's view.

These two fundamentally opposed views from the EU strike at the core of sustainable development. If things are as they should be, and sustainable development underpins all European policies, then concern may be unfounded. But there is a very real chance that the growth agenda will overwhelm work to benefit environmental quality and biodiversity.

When it comes to competition between the prosperity first approach, and that stressing the need for a truly integrated approach to sustainable development, you have to trust that biodiversity, climate and environmental quality will not be the resounding losers. While Barroso's attention is devoted to son number one, here's hoping there is a Mrs Barroso to take good care of numbers two and three.

HANNAH PITT

Assembly Information Officer for Wales Environment Link





Our Environment – Our Future – Your Views

Environment Minister CARWYN JONES explains why we all need to have our say on what should be in the *Environment Strategy*.

The environment is central to every aspect of life, from the water we drink and the air that we breathe, to the natural beauty that inspires us and refreshes our spirits, but our actions can harm the environment and push natural systems beyond their ability to cope. We must act now if future generations are to enjoy the benefits of a clean, healthy and biologically diverse environment.

The Welsh Assembly Government's consultation document *Our Environment – Our Future – Your Views* brings together, for the first time, information on the main environmental issues facing Wales and what we're doing to address them. It sets out our vision for 2025 and we really want to hear your comments on what needs to happen to deliver this vision.

The document follows a pre-consultation and a research period carried out last year. It has been developed working closely with a range of organisations through a steering group I chair.

The basis of the consultation is that, if we are to build a sustainable future for Wales, we need to manage the pressures we place on our environment more effectively and address new challenges like climate change.

The principle of Sustainable Development is already deeply embedded in the Welsh Assembly Government's policies. In line with this commitment, we now want to set a clear vision for the future of the Welsh environment.

The document outlines the environmental issues facing Wales under six themes:

- climate change
- managing the land and sea
- sustainable use of resources and ecosystem services
- biodiversity
- quality of life
- making the connections

Our Environment – Our Future – Your Views highlights why the environment is so important to everyone in Wales and is written in an easy-to-understand, informative and readable way. With the information available in the document, I would encourage everyone to take part in the three-month consultation, which begins on Wednesday, 6 July and ends on Monday, 3 October. Whatever your

wish for the future, whether it is something close to home or an issue with a global impact, I want you to help us decide what goes into our Environment Strategy.

The Environment Strategy, due to be completed in early 2006, will provide a coherent, long-term framework for the environment. I look forward to hearing all your ideas and assure you that all responses will be carefully considered.

Our Environment – Our Future – Your Views is available on our website at

<http://www.countryside.wales.gov.uk/environmentstrategy>

You can also send your comments or request a copy of the document by writing to:

Claire Bennett, Environment Strategy, Tŷ Cambria House, 29 Newport Road, Cardiff CF24 0TP

or by emailing: envstrategy@wales.gsi.gov.uk or calling **029 20 466138**.





At the end of March 2005 more than 130 mammal fans, researchers and conservationists got together to discuss mammal work in Wales. **The Wales Mammals Conference**, a two-day event held at Aberystwyth University, gave those of us concerned with the fortunes of our mammals a chance to learn from each other, share information and have a good time.

A total of 13 speakers talked on issues ranging from action to conserve mammals at the local level, through research projects in Wales, to generic issues concerning wild deer, bats and cetaceans. Most talks, though, were about individual species, such as feral goats, pine martens, otters, polecats, water voles and dormice. It was impossible to cover all our mammal species and the programme tried to reflect areas where there is a lot of work being undertaken or particular current issues. Talks covered as broad a range of species as possible to give a flavour of their current distribution and abundance and an insight into conservation work and research. It is hoped that in the future

we will be able to look at some of the other species not included this time.

The conference provided an opportunity to get people together to discuss the idea of setting up a Wales Mammal Group and to this end we held a very useful discussion forum during the evening of the first day. There was a general consensus in favour of setting up a Group, although speakers were keen that it should work with and alongside existing groups and mechanisms to avoid duplication of effort and waste of scarce resources.

The idea is to affiliate the Group to the Mammal Society, and run it much along the lines of the very good county mammal groups that exist in some areas of England. The Group will collate and update a directory of mammal work in Wales, produce a newsletter and hold conferences,

probably every two years, as well as acting as a focal point for mammal issues.

The Conference had a real buzz to it, and participants were able to network and swap information on good practice. The steering group which organised the conference, made up of individuals from statutory, voluntary and independent organisations, has drawn up a proposal for the Group, based on all the comments made at the conference meeting. This will be the subject of further discussions.

All in all, feedback on the event was very positive. With so many people actively involved, the future looks good for mammals, and their admirers, in Wales. Good contacts were made, old friends caught up with and generally a good mammally time was had by all!

For further information please contact:

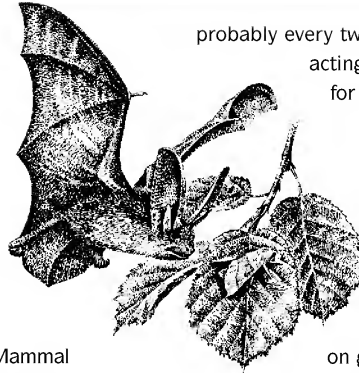
Kate Williamson

kate.williamson@eryri-npa.gov.uk
01766 772255

or

Geoff Liles

gliles@otterconsultancy.freeserve.co.uk
07879 818700





Hysbysfwrdd / Noticeboard

If you would like your wildlife event to feature on this page please contact Mandy Marsh on 01248 385574 or email m.marsh@ccw.gov.uk

SHARED EARTH TRUST AT DENMARK FARM

19 Jun OPEN DAY 11-4pm

COURSES:

22 Jun Creating Wildlife-rich Grasslands

23 Jun Recording Changes in Grasslands

5-7 Jul Identifying Grasses, Sedges & Rushes

19-21 Jul Restoring Biodiversity to Farmland

11 Aug Creating Woods for Wildlife

21 Sep Gardening for Wildlife

5 Oct Ponies for Pastures

Tel: 01570 493358, email:

set@denmark-farm.freeserve.co.uk or

see www.shared-earth-trust.org.uk

Carmarthenshire LBAP Partnership CARMARTHENSHIRE WILD WEEKENDS CESIWN WYLLT SIR GŶR

Dewch i nabad ochr wyllt Sir GŶr. Rydyn ni'n gwneud gwaith cadwraeth angenrheidiol tra'n bod ni'n mwynhau digonedd o awyr iach, wynebaw newydd a'r boddhad o gwblhau'r gwaith yn drwyadl. Mae 'na rywbeth i bawb. Dewch i roi tro arni!

Get to know the wild side of Carmarthenshire. We carry out essential conservation tasks whilst enjoying plenty of fresh air, new faces and the satisfaction of a task well done. There's something for everyone. Come along and give it a go!

Cysylltwch â / contact Susan Bogue

01558 825 913 / 823 902

ebost/email:

susan.bogue@nationaltrust.org.uk

Newport City Council

EVENTS

23 Jul *Bats and Moths.*

Join experts Steve Pickering and Roger James at Allt-yr-Ynn Nature Reserve for this evening walk.

7 Aug *Canals and Hay Meadows.*

Discover more about this historic transport route and associated wildlife, returning through Allt-yr-Ynn Nature Reserve to view the spectacular flowers of a traditionally-managed hay meadow. For full details contact the Countryside Service on 01633 233362 or 232144.

LACEY LECTURE 2005

'Life and the Earth: interwoven histories'

4 Nov 7.30pm John Phillips Hall, University of Bangor.

This year's lecture will be given by Professor Aubrey Manning, OBE, FRSE., FIBiol., Emeritus Professor of Natural History at Edinburgh University.

North Wales Wildlife Trust

ARFON BRANCH

2 Jul Coastal and Lowland Heath visit to Mynydd Tir y Cwmwd, Llanbedrog.

Leader: Jan Sherry.

17 Sept Ferns and Fungi Woodland Walk. Tel. Kate Gibbs 01248 681936

Fenn's, Whixhall & Bettisfield Mosses

SUMMER EVENTS

9 Jul 12.30pm *National Moth Hunt* – day flying moths.

www.nationalmothnight.info

31 Jul *Woodcarving on the Mosses* – to celebrate International Bog Day www.bwa-woodcarving.fsnet.co.uk

7 Aug *Dragonfly Day*

10 Aug *Bog Creatures Biodiversity Workshop for children.*

11 Sept *Creative Writing on The Mosses* tutored by Gladys Mary Coles, author of 'The Echoing Green'. £1.50.

25 Sept *Fungal Foray*

All events are free unless stated and MUST be booked in advance. Contact Joan Daniels on 01948 880362

(weekdays) or 07974 784799

(weekends). email

joan.daniels@english-nature.org.uk or visit www.english-nature.org.uk

Marcher Apple Network

APPLE DAY

23 Oct 2-5pm Baskerville Hall, Clyro, nr Hay-on-Wye. Discover old apples and bring your own for identification. Call Sheila Leitch for full details 01497 847354.

Butterfly Conservation

EVENTS 2005

For an events programme please phone 0870 770 6153 or email wales@butterfly-conservation.org

Local Biodiversity Advisory Group ANNUAL SEMINAR

University of Wales, Aberystwyth

6 Sep *Biodiversity delivery and agriculture*

7 Sept *Biodiversity action for the sea and coast.*

Great networking opportunity for all those involved in biodiversity action on the ground. £80 including accommodation.

Full details from Gaynor Ainscough.

g.ainscough@ccw.gov.uk or visit WBP website: www.biodiversitywales.org.uk or www.bioamrywriaethcymru.org.uk

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Meh/Jun 28–1 Gorff/Jul *Rheolaeth a Chadwraeth Cynefin Afonol ar gyfer Dyrwyn a Llygod Dŵr Riparian.*

Habitat Management and Conservation for Otters and Water Voles.

Gorff 4-8 Jul *Rheolaeth Gadwraethol ar gyfer Coedlannau.*

Woodland Conservation Management.

Gorff 11-15 Jul *Dosbarthiad Llystfiant Cenedlaethol Uwch.*

Advanced National Vegetation Classification.

Medi 12-16 Sep *Monitro ar gyfer Gwarchod Natur.*

Monitoring for Nature Conservation.

Medi 13-15 Sep *Creu Prif Cynllun Dehongli.*

Interpretative Master Planning

Medi 20-23 Sep *Hybu Bioamrywiaeth drwy Arddio Bywyd Gwyllt a Phlannu Mwynderol.*

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