



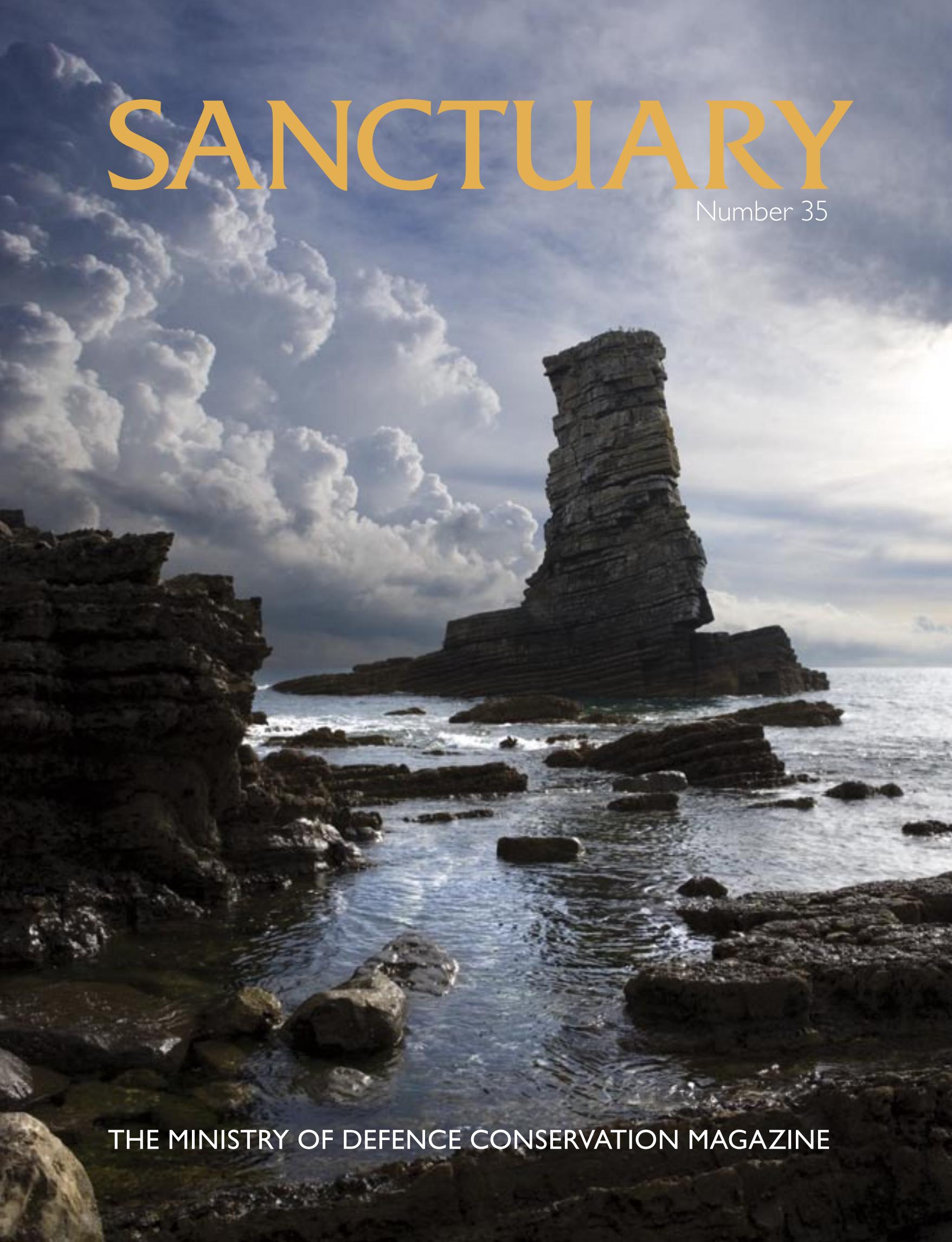
Number 35, 2006

THE MINISTRY OF DEFENCE CONSERVATION MAGAZINE

SANCTUARY

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The 30 mile march on Dartmoor. Part of Royal Marine recruit training
at Commando Training Centre, Lympstone LA (Phot) Angie Pearce

The Ministry of Defence
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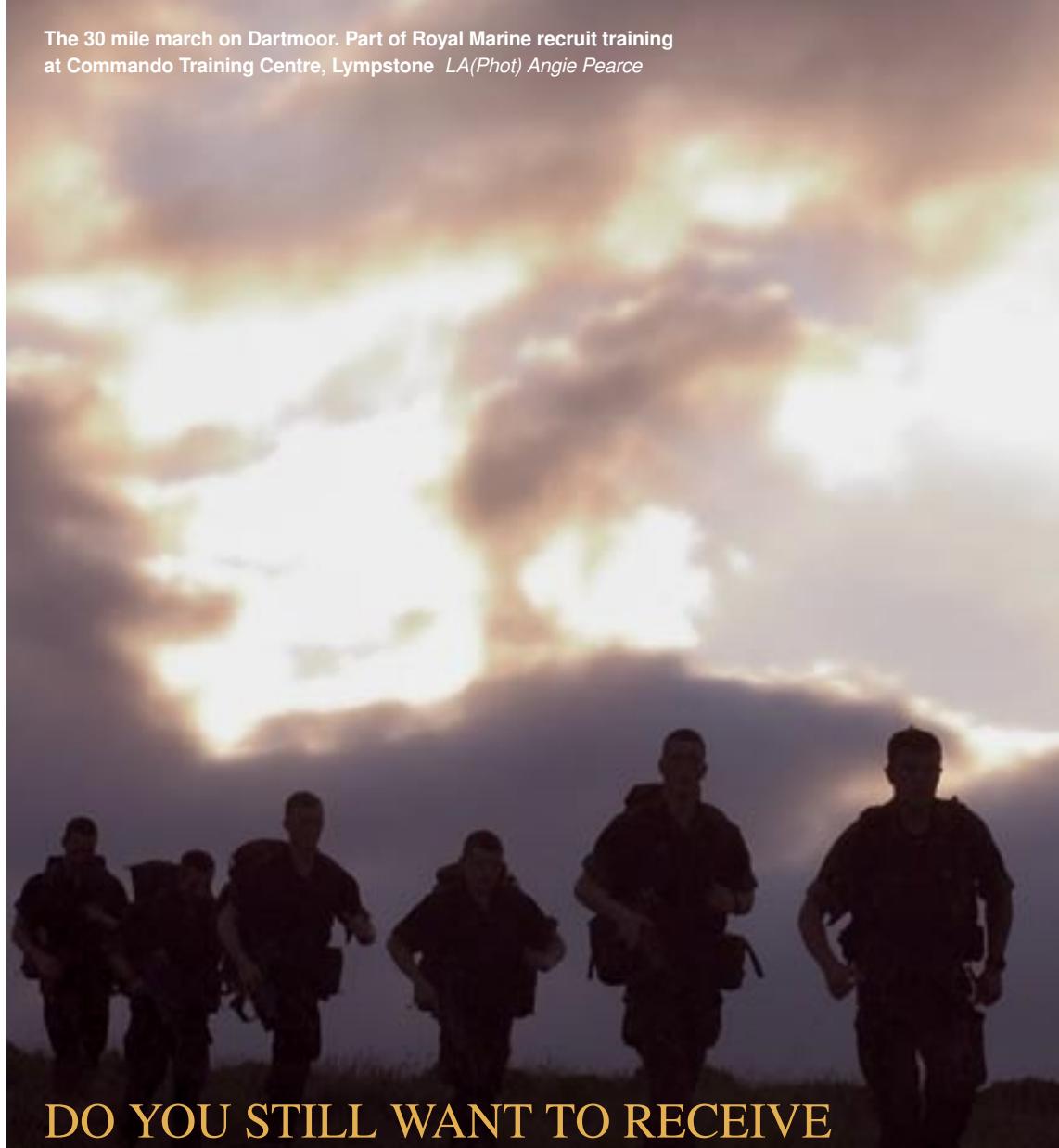
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Sanctuary Magazine is an annual publication about conservation of the natural and historic environment on the Defence Estate. It illustrates how the Ministry of Defence (MOD) is undertaking its responsibility for stewardship of the estate in the UK and overseas through its policies and their subsequent implementation. It is designed for a wide audience, from the general public to the people who work for us or volunteer as members of the MOD Conservation Groups.

It is produced for the MOD by Defence Estates, the land and property agency of the MOD.

Cover Image

Allan House DGMC DPR (Publicity) Photography
Elegug Stack, Stack Rocks, Castlemartin Range



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with your name and address and how many copies you would like to receive.

Failure to act means that you will be removed from the mailing list for 2007!

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Editorial proposals should be e-mailed to the editor.

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The Estate Strategy & Policy Directorate maintains the long-term strategy for the estate and develops best practice guidance on estate management issues. It is the policy lead for sustainable development, including the MOD-wide Sustainable Development Strategy. The Directorate is responsible for Sanctuary Magazine and the Annual Stewardship Report on the Defence Estate.

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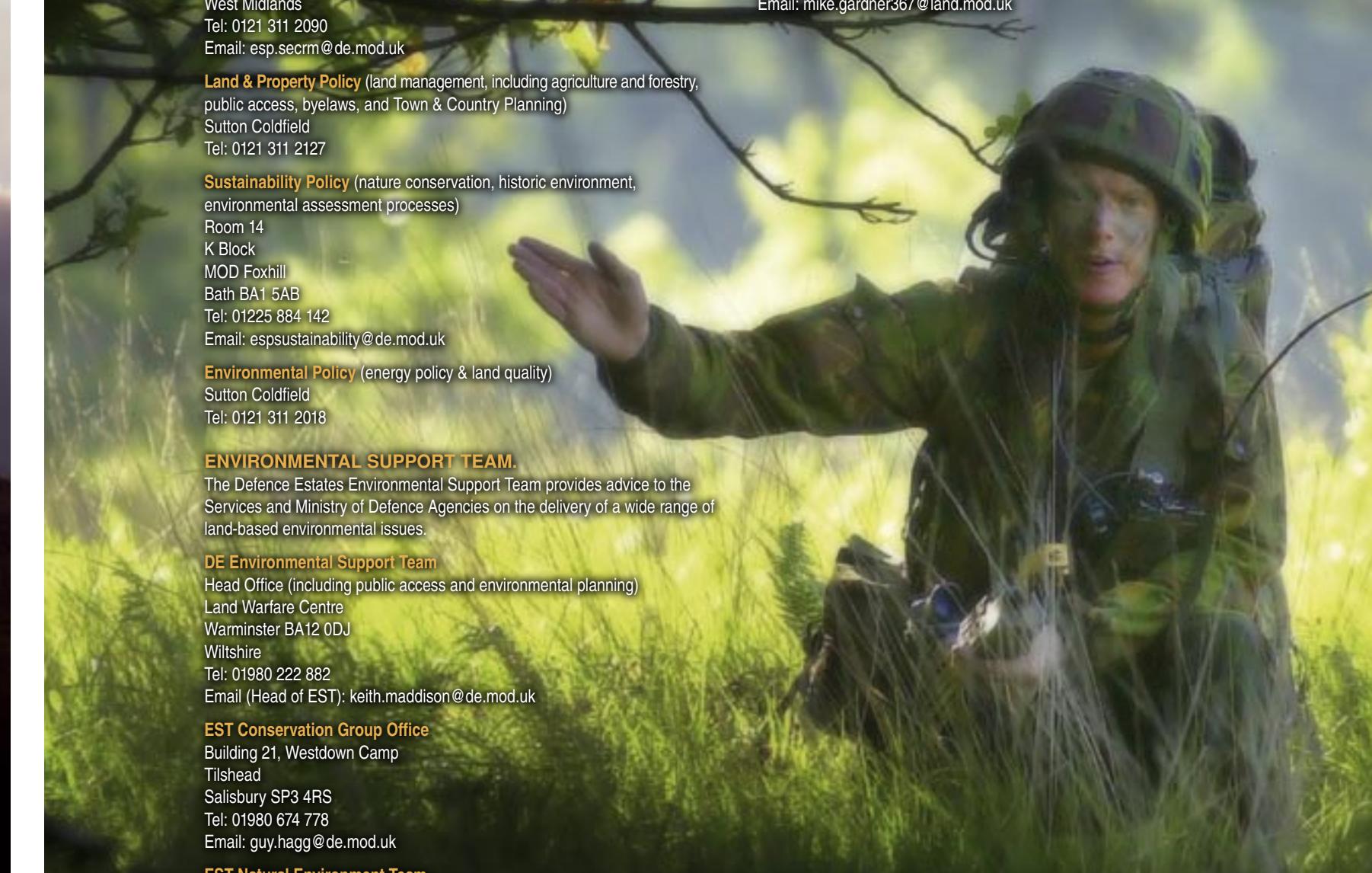
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DE
DEFENCE ESTATES
Delivering Estate Solutions to Defence Needs

Foreword

VICE ADMIRAL PETER DUNT CB
Chief Executive Defence Estates



I am pleased and proud to introduce the 2006 edition of Sanctuary. I spend much of my time visiting facilities across the defence estate and when I meet Service personnel in training or back from operations I am reminded of the vital role that the estate plays in helping them to maintain the high standards they set themselves and achieve. It is essential that we make sure that the Armed Forces receive the best training to meet operational commitments. To do this, we must ensure that the Ministry of Defence looks after its estate in a sustainable way, and we achieve this by protecting the land to maintain or enhance its special features while at the same time continuing to meet operational requirements. In parallel, we make sure that wherever possible the land is made available for public access and recreation.

Sanctuary Magazine is now well into its fourth decade. It provides a marvellous showcase for us all to see and share in the remarkable diversity of our estate. I am always heartened by the enthusiasm shown by those involved – both in the Ministry of Defence and beyond - with maintaining it in a sustainable way. Sanctuary helps to broadcast how we look after a magnificent national asset, and I hope it helps us maintain your confidence that our stewardship is robust.

My thanks go to all those who do so much on our estate, in whatever capacity. I hope they - and you - enjoy reading this edition and that many of you take the opportunity to access the defence estate and see for yourselves how we look after it on behalf of the Nation.



Vice Admiral Peter Dunt CB
Chief Executive Defence Estates

Sanctuary Magazine is printed on Greencoat Plus Velvet, which is 80% recycled fibre, 20% virgin pulp, and is totally chlorine free.

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For details on public access to the Defence Estate go to

www.access.mod.uk

The aim of the Sanctuary Awards is to encourage group and individual efforts that benefit wildlife, archaeology, or community awareness of conservation on land that the MOD owns or uses, in the UK or overseas. All projects, big or small, are given equal consideration.

As a mark of recognition the winner holds the Silver Otter Trophy for a year and receives £500 to support further conservation work. Runners-Up receive £250 and Highly Commended entries receive £150.

SANCTUARY AWARDS

The Sanctuary Award Board

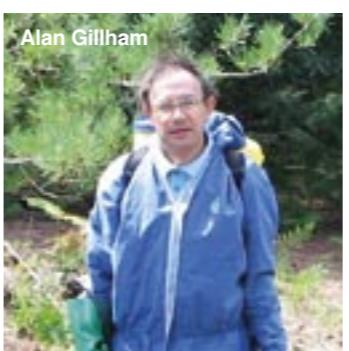
The Board members for 2006 were Marcus Yeo, Director of Resources and External Affairs, Joint Nature Conservation Committee, Keith Maddison, Head of the Environmental Support Team, DE and Martin Coulson, Head of Land and Property Policy, DE.

Marcus Yeo said: "I am astonished once again by the variety of conservation efforts reflected in the Awards and delighted that contributions by individuals have been recognised this year. The awards are an excellent illustration of how a government department can encourage both volunteers and professional staff to achieve outcomes that provide significant benefits to the natural and historic environment."

Special Contribution Award

A new category for this year was the inclusion of a Special Contribution Award for individual achievements. This attracted four submissions, all of which were considered worthy of an award.

Alan Gillham has been a member of Pippingford Park Conservation Group since 1996. He joined when he took on the unpaid voluntary post of warden for the adjacent Old Lodge Nature Reserve (Sussex Wildlife Trust). He has planned and managed joint MOD conservation events



with Sussex Wildlife Trust since 2001. Work has included pond clearance, pond creation, scrub clearance and river bank improvement, all of which have contributed significantly to biodiversity enhancement.

Clare Hetherington is employed by Defence Estates at the Warcop Training Area, Cumbria, as an Estate Surveyor. In addition to the 'day job' of managing the agricultural estate Clare has worked outstandingly hard and effectively on the promotion of nature conservation, heritage protection and public access on the training area. This has involved work in the evenings and weekends with volunteers and stakeholders from a wide range of external organisations.

Colin Kirby was employed by Qinetiq at Boscombe Down as an armourer. However, this award is for his dedication as the voluntary archaeologist for Boscombe Down Conservation

Group, Wiltshire. For the past 18 years Colin has developed an understanding of the historic environment which has shown that the site contains a wealth of archaeology. Perhaps his greatest achievement was the discovery of the 'Boscombe Bowmen' whose burial is dated to 2300 BC. Colin retired in July 2006 after a 40-year career supporting the RAF at Boscombe Down.

Michael 'Bungy' Williams is an ex-Royal Marine, employed by Clinton-Devon Estates as Senior Commons Warden for Woodbury Common, Devon, which is leased to MOD as a Training Area and Range. Over the past 15 years, with minimum resources, he has transformed the 2,800 acres from a scrubby, unproductive area into heathland that English Nature now recognises as a 'beacon of excellence' with designations of SSSI, SPA and SAC under the UK Habitats Regulations.

SANCTUARY AWARD

Of the projects submitted for the Sanctuary Award Silver Otter Trophy, the Board found, yet again, that it was exceptionally difficult to judge between them. After deliberation they decided on an outright Winner, joint Runners-Up, and two Highly Commended awards.



The Winner

Holcombe Moor Heritage Group

The winner for 2006 is the Holcombe Moor Heritage Group for their work of historic landscape assessment at Holcombe Moor Training Area, Bury, near Manchester.

The work, which was initiated by the Conservation Group, has brought together local historical groups, the civic society and the local community to improve understanding of the history and heritage of Holcombe Moor. (See *The Historic Landscape of Holcombe*, page 48.)



Joint Runners-Up

A joint award is made to two very different projects, one focussed on nature conservation, the other on re-creating an Iron Age cornfield as part of a heritage study.

SSSI improvements at Predannack

The judges were impressed with the innovation and dedication to the improvement of the Site of Special Scientific Interest at the Royal Naval Air Station Predannack in Cornwall. It was also an exciting opportunity to show how the Royal Navy, Defence Estates, the MOD Conservation Group and the new Regional Prime Contract (Debut) worked together with the National Trust, Cornwall Wildlife Trust and English Nature to deliver significant environmental improvements. This involved the introduction of cattle to graze fenced-off areas, thereby improving the unique coastal heathland. The problem of a lack of water was solved by drilling a borehole and installing a pump powered through solar panels. (See *Grazing the Lizard*, page 26.)

Leconfield Carrs Conservation Group Yorkshire.

The group has worked closely with the East Riding Archaeological Society to promote a greater understanding of the Iron Age and Romano-British history of their area, and the way of life of people at those times in their site at Arram. Archaeological investigations have shown that particular types of grain were grown at this site, and the group established trial plots using historic varieties supplied by plant scientists at the independent John Innes Centre, Norwich. They held an open day, attracting 500 visitors, with demonstrations of excavations and historic crafts and foods – including pigeon and snail dishes! The project is now engaged on growing sufficient grain to be able to bake bread and brew mead. The judges were particularly impressed by the enormous enthusiasm and detailed scientific work behind the project. (See *Iron Age Cornfields and Beehive Querns*, page 46.)



Highly Commended

The judges awarded two certificates for projects which are excellent examples of the effective delivery of environmental improvements, both will enhance biodiversity and increase public understanding and involvement in conservation.

A certificate goes to RAF Wittering Angling Club for their work to restore their Balancing Reservoir to a valuable resource for recreation and the environment, with advice from the Environment Agency. (See *Balancing Reservoir*, page 88.)

The other certificate goes to the Catterick Area Conservation Group for the Stainton Valley Native Woodland Project, the creation of new native woodland at Bellerby Ranges. This work was supported by the MOD tenant and English Nature.



In last year's Sanctuary we started to show you how the Government's strategy for sustainable development 'Securing the Future', and the targets set, provide a significant challenge for the defence estate. You may be familiar with the Framework for Sustainable Development on the Government Estate (if not, www.sustainable-development.gov.uk will tell you all about it). New targets were issued in June this year, setting stretching requirements against which all Government Departments have to report on an annual basis.

The framework is designed to drive the delivery of Sustainable Development (SD) across Government. It is the main vehicle for improving performance on the government estate against a range of environmental criteria, such as improving biodiversity, reducing energy consumption, reducing the production of waste, and addressing the impacts of climate change.

Overarching SD priorities and MOD perspective

Our vision for the defence estate encapsulates the MOD approach to SD: "to have an estate of the right size and quality to support the delivery of defence capability, that is managed and developed effectively and efficiently in line with acknowledged best practice and is sensitive to social and environmental considerations."

We hold land solely to support the business of Defence. However, as we hope Sanctuary magazine has illustrated over the years, military use and biodiversity are not mutually exclusive; and habitats, species and landscapes have all been protected by the MOD's ownership and careful management.

SD themes and Defence Estate work

We are working to ensure the sustainable development of our estate, alongside the imperative of our Defence functions. We have already made considerable headway improving the stewardship of our estate with initiatives like the MOD SSSI Project discussed in last year's edition, and we are building upon these achievements.

The following paragraphs highlight some of the activities we are undertaking across a number of the SD framework themes, some of which are discussed in more detail in later articles.

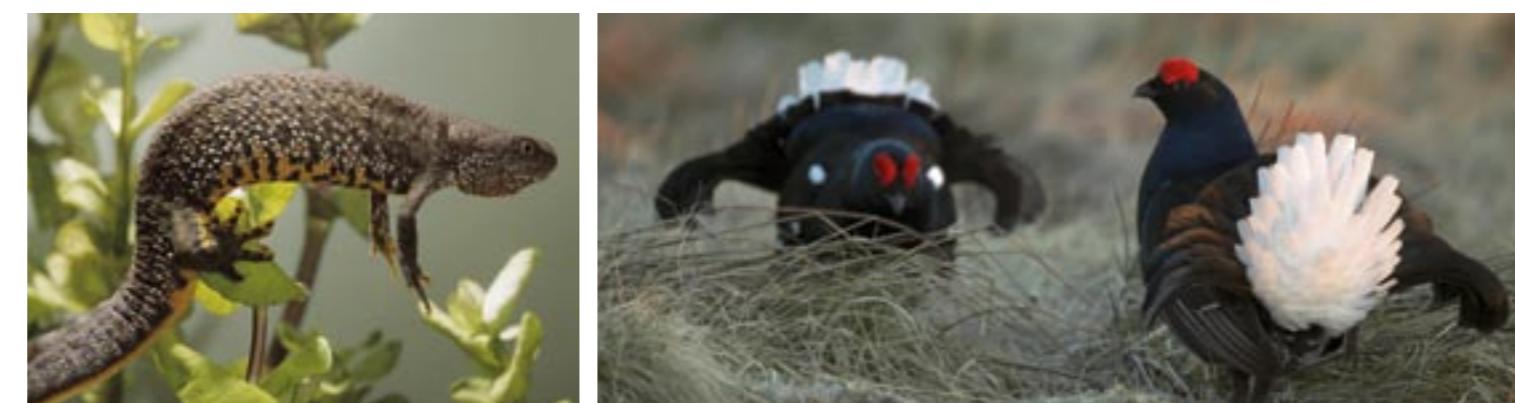
Appraisals and Assessments: It is MOD policy to carry out appropriate environmental appraisals of new or revised policies, equipment acquisition programmes, new projects and training activities. To help us do this, we have developed a hierarchy of appraisal tools. These include guidance for Strategic Environmental Assessment and a handbook for Sustainability and Environmental Appraisals on the estate. This hierarchy of assessments and appraisals informs our management planning for sites.

Environmental Management Systems: We have Integrated Land Management Plans for many of our major training areas and rural sites. These plans comprise a suite of component plans to address specific issues, such as biodiversity, cultural heritage, public access and recreation, and the interests of tenant farmers. They are used to manage day-to-day issues on the rural estate. The articles on Dartmoor (page 8) and Fylingdales (page 12) discuss the value of the Integrated Land Management Plan for estate management in more detail.

Energy: The nature of our estate and our business means that we use a lot of energy. The efforts to reduce our energy consumption support our contribution to reduction in greenhouse gases and to climate change. We have pilot projects developing best practice for energy efficiency. We have an established partnership agreement with the Carbon Trust to help us improve energy efficiency, and are developing an energy strategy on reducing emissions and increasing the use of renewables. The Department currently purchases 7% of its electricity from renewable sources and aims to increase this to 10% by 2010.



Sustainable Development on the Defence Estate



Water: MOD's net annual consumption of water in Great Britain is estimated to be 24.2 million m³. This water is used for many different purposes - domestic, office, industrial, aircraft washing, vehicle washing, swimming pools, testing tanks, and fire fighting. The article on water (page 35) shows how our partnership with industry is delivering renewal and leak reduction within the MOD's extensive water and drainage infrastructure systems.

Estate Management: Estate Management targets cover a range of topics, from management of cultural heritage, to adaptation to climate change, disposal of surplus land, and contaminated land. The refreshed Estate Strategy *In Trust and On Trust* (published in March 2006) provides the overarching direction for our estate management. We have also published the MOD *Historic Environment Strategic Statement* this year, which details our approach to managing our historic environment, and recognises its importance in promoting military ethos and heritage protection. The article on Silk Hill (page 42) describes one aspect of our management of cultural resources. Work is also underway into how we can adapt our estate management to meet the predicted impacts of climate change. We hope to be able to report this to you in a future edition.

Biodiversity: We own one of the most varied and highly designated estates in the UK, so biodiversity interest has been a particular focus of activity for a long while. It will continue to be so. Our SSSI Project is improving the condition of our SSISIs, with SSISIs in favourable or 'favourable recovering' condition in England up from 53% to 78%, as well as improvements to our SSISIs in Wales, Scotland and Northern Ireland. Later on in the magazine you can read about some of the other work currently underway, how we are assessing our contribution to wider UK Biodiversity Action Plan targets (page 22) and about further integration of biodiversity management into our site management systems. The 'Around the Regions' section illustrates the continuing efforts and valuable contribution of the MOD Conservation Groups and other partner organisations. This year we have invited one of our Prime Contract partners, Debut Services, to share how they are helping us achieve biodiversity objectives on less designated sites (page 28), in addition to articles on some of the amazing species to be found on the estate.

Social Impacts: With about 4,000 MOD sites in the UK, social impacts and the ongoing interest of stakeholders in access to the estate is a major area of work for us. The social, economic and environmental impacts on communities are many and varied, as illustrated by the article on the South Yard Enclave in Plymouth (page 50). MOD has developed strategic objectives which aim to integrate the issue of social impacts into our estate management, and a public access strategy to ensure that opportunities for safe access are provided within the delivery of defence capability. The publication of information about access opportunities on the internet (www.access.mod.uk) provides a window onto the estate for the public. The article on public access in Scotland discusses the challenges and benefits of our efforts to ensure good quality public access where we can (page 17).

All these areas of work contribute to the Government's SD goals and, in particular, support the SD principle of 'living within environmental limits'. Many of the articles and case studies show you how our activities are enhancing biodiversity and supporting the wider stewardship of our estate. As Chief Executive I am proud of the achievements of our staff, volunteers and partners in our estate delivery organisations. Our primary role is to provide facilities for the armed forces to train for peace-keeping and peace-enforcement – and defending the environment goes hand in hand with promoting peace and security.

Vice Admiral Peter Dunt, Chief Executive Defence Estates

Sustainable military training on Dartmoor



1.

Striding out from Okehampton Camp across the high moorland of Dartmoor, it is easy to feel you could not be further from government targets and contemporary environmental management systems.

The sweeping rugged landscape, with its characteristic granite tors, reveals glimpses of archaeological remains and is host to specialised moorland plants and animals, many protected by law and highly treasured by the local community, visitors, and the military alike.

As a tenant, landowner and landlord on the moor, MOD is fully aware that a continued presence on Dartmoor brings significant responsibilities in caring for the moor and towards those who use it. A recent independent study, commissioned by MOD, confirmed that Dartmoor continues

to provide a challenging and essential training environment for light forces such as the Royal Marines; consequently the Defence Training Estate will be looking to renegotiate its licences to train across the moor. In response to these requirements, and with due regard to its statutory responsibilities and agreements¹, Dartmoor Training Area (DTA), part of the Defence Training Estate South West², has established a comprehensive and strategic approach to the management of its environmental and social responsibilities across the training area.

DTA's local relationships and environmental objectives have evolved in recognition of MOD's growing responsibilities, from a turbulent period in the 1950s when environmental thinking was less developed and concerns over National security were different, to current management practices where the DTA team works hard to be recognised as an integral member of the Dartmoor community.

While MOD environmental management standards have risen, environmental legislation has increased in scope, complexity and, more recently, sharpened

¹ MOD takes full regard of the National Park purposes: responsibilities are formalised through its Declaration of Intent with the Association of National Parks Authorities, and as a relevant authority (Department of the Environment, Transport and the Regions, Circular 12/96, Environment Act 1995, Part III, National Parks S.19).

² From 1 April 2006, DTA has been managed by a new Defences Estates Directorate, the Defence Training Estate (DTE). DTE was recommended by the Defence Estates Committee to separate the demand and supply of the training estate for all three services in line with MOD's Smart Acquisition initiative. DTE represents the 'supply' side while Land Warfare Centre provides the requirement organisation. DTE encompasses all of what was previously known as the Army Training Estate as well as additional training areas from all three Services. Within this organisation DTA is part of the DTE South West region.

1. Setting out to clear livestock, Dartmoor
MOD Copyright
2. Training on Dartmoor
Copyright DLO
3. Ger Tor and Hare Tor
Mike Kerby, MOD Copyright
4. Ring Ouzel
Paul Turner, Landmarc Support Services
5. Tavy Cleave, South West Dartmoor
Mike Kerby, MOD Copyright



3.



4.



5.



2.



with stiles and gates, and will benefit shortly from a self guided walk leaflet.

Moving forward, the next major land management tool to impact the defence estate has been the arrival of Environmental Management Systems (EMS) established to ISO 14001. This environmental management tool has enabled MOD to take full account of all its environmental effects across DTA using a risk based approach. EMS, like many management tools, is rich in environmental techno-language, yet usefully the system covers all of DTA's operations to give one clear picture of the effects of military activities and enables environmental risk to be

managed, mitigated and reduced, as well as identifying opportunities for enhancements. DTA have taken the EMS one step further by considering its social and economic effects, recognising the important role that the military have within the Dartmoor community.

DTA was one of the first army training areas to establish its EMS. With a mature

its teeth taking conservation from a "nice to have" to a mainstream business consideration for MOD. Yet legislation is only the beginning; environmental considerations are further supported by Government objectives such as Sustainable Development in Government Targets (SDiG) and MOD's own Estate Strategy for the Defence Estate 2006, all directing MOD as a land user to take full account of its environmental and social impacts.

So what are the tools and how has DTA responded to the sustainability challenge? Six years ago Willsworthy Training Area, the only land owned freehold by MOD on Dartmoor, drew together its first Integrated Land Management Plan (ILMP). This was one of the first to be established in the UK and is shortly being reviewed for its second iteration. The ILMP draws together and integrates the military use of the area with the needs of the natural and historic environment, agricultural use, water

system now in place, DTA has had the EMS externally audited by professional environmental consultants, RPS Group plc. They verified the process through consultation with other key stakeholders. This transparent approach to the way DTA now runs its business has encouraged many local organisations to contribute to, and critically appraise, the military use and management of Dartmoor.

The EMS is supported by a series of management plans to drive forward improvements, including landscaping Okehampton Camp, protecting the original buildings dating from 1893, saving energy, reducing waste, and ensuring that DTE Dartmoor's social and environmental responsibilities to Dartmoor are achieved. The EMS and the plans are developed with the relevant stakeholders, especially the landowners from whom the military licence its right to train. The plans are also subject to consultation within the Dartmoor Steering Group which is a forum of local representatives of the Statutory Bodies with an independent chairman. It reports to the Secretaries of State for Defence and the Environment. The EMS and these plans are, and will continue to be made available for public scrutiny.

Working closely with local people has been vital to the smooth running of MOD training areas. In 1981 Willsworthy Conservation Group was formed, immediately providing DTA with a more detailed understanding of the plants, animals and archaeology across the training area. DTA's newly named Dartmoor Conservation Group has now extended its remit beyond Willsworthy offering their highly valued support across the entire Training Area.

To manage modern training areas properly MOD must continually build its understanding of the site and the needs of those that live on and adjacent to the area. Technical studies recently undertaken include a landscape review of Okehampton Camp; mapping the botanical assemblages across the training area using the National Vegetation Classification process; a breeding bird survey and a ring ouzel survey with RSPB; an economic and tourism study by Tourism Associates of Exeter University, and further archaeological studies through English Heritage. To complement this array of data, aerial photos and geographical information systems are used to prepare sensitivity maps, guide training and monitor habitat change.

Communicating with local people and visitors about the military use of the moor and how public access can be maximised, is taken seriously by DTA staff. Communication is facilitated through a number of initiatives,

the enhanced www.dartmoor-ranges.co.uk website being the latest tool. Linked to the main www.access.mod.uk website, this local site provides: a map of the live firing ranges; details of guaranteed public access times; firing times six weeks ahead of training and includes access to technical reports. Plans are afoot to extend the information provided.

A new information centre located within Okehampton Camp Headquarters, adjacent to a footpath, provides both soldiers and visitors with the opportunity to learn more about the military history of the moor, together with the archaeological and natural diversity to be encountered. The centre provides a unique insight into the historical military use of Dartmoor. One old photo shows how the Territorial Army, then mainly comprised of local farmers, were frustrated by the Army's flighty horses and brought their tractors with them to pull the artillery, forming possibly the first Territorial Army mechanically drawn artillery!

In conclusion, MOD only owns a small portion of Dartmoor; for the most part, MOD is a tenant and is grateful for the strong support of its landlords, grazing commoners and the local communities. DTA faces an ongoing challenge to provide well-managed training areas that meet the military need and integrate the objectives and requirements of local people. In achieving these aims, DTA contributes to partnership projects such as the Dartmoor Wader project, led by the Duchy of Cornwall, the Dartmoor Vision, led by the Dartmoor National Park Authority and the emerging revised Dartmoor National Park Management Plan.

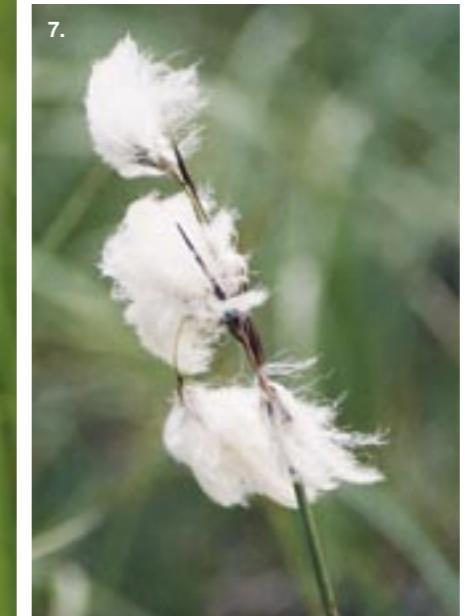
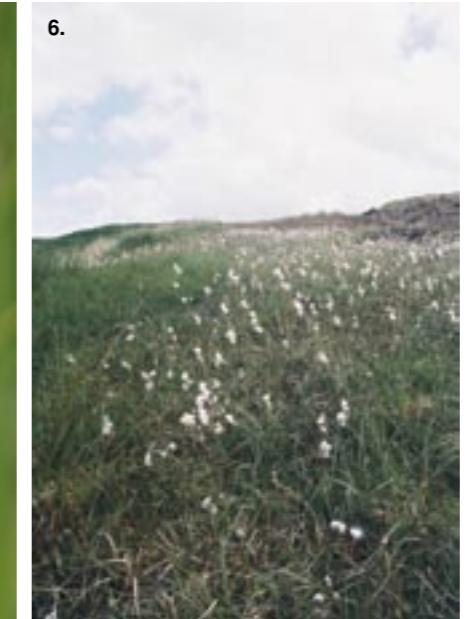
The rigorous work by DTA in developing management systems such as EMS and ILMP, supported by evidential data from recent technical studies, provides MOD with the capability to deliver sustainable military training. We are turning high level Government strategy into tangible action that can be seen on the ground, for the benefit of us all now, and into the future.

Richard Snow, DE EST Environmental Adviser, with assistance from Major Marcus Braithwaite-Exley DTE SO2 Environment, Lt Col (Retd) Tony Clark Commandant DTE Dartmoor, John Loch DE Senior Estate Surveyor South West, Mike Kerby DE Estate Surveyor South West and Jane Hallett DTE Assistant Director Training Estate Delivery.

For further site information visit:
www.dartmoor-ranges.co.uk



1. Beautiful Damoiselle *Calopteryx*
 2. Small Pearl-Bordered Fritillary *Boloria selene*
 3. Sundew *Drosera rotundifolia*
 4. Southern Marsh Orchid *Dactylorhiza praetermissa*
 5. The restored Devon Banks of Reddafford Farm, Willsworthy
 - 6 - 7. Bog Cotton
 8. Foxgloves *Digitalis purpurea* and mature Hawthorne *Crataegus monogyna*
- All photos taken on Dartmoor by Mike Kerby, MOD Copyright



Under the watchful eye of the “giant toaster” Managing heather moorland at **Fylingdales**

RAF Fylingdales is a large site, covering some 800 hectares, with panoramic views across the heather moorland of the North York Moors National Park. However, it is famous to most people over the age of 30 for the ‘golf balls’ that housed the Cold War radars. These have now been replaced by a modern Ballistic Missile Early Warning Station that looks for all the world like a giant toaster.

The RAF Fylingdales Integrated Rural Management Plan (IRMP) was launched in 2005. It contains comprehensive information about the special features of the site and MOD’s legal and policy obligations. Public rights of way run through the site, which has a wealth of historical and landscape features. Staff at RAF Fylingdales work closely with the RAF Fylingdales Conservation Group, which is very active in providing advice and survey data on a wide range of topics. The Group is made up of representatives from the Statutory Bodies, the National Park Authority, adjoining landowners and private individuals with a love of natural history.

The estate management undertaken at RAF Fylingdales strongly demonstrates MOD’s commitment to delivering the objectives of the Environment Act 1995, in particular, Section 62(2):

- conserving and enhancing the natural beauty, wildlife and cultural heritage of National Parks
- promoting opportunities for the understanding and enjoyment of the special qualities of National Parks by the public.

The IRMP is a very useful management tool to help integrate military requirements and the special qualities of National Parks. This commitment reinforces the Declaration of Intent signed between MOD and the Association of National Park Authorities in 2005. Both parties agree that the existing uses of land in National Parks, such as military training, will continue and the land will be managed in such a way as to achieve the best practicable integration of military requirements and conservation of the natural beauty. Only 2.6% of the National Parks in England and Wales are occupied by the MOD, but this small percentage contains some 30% of the MOD’s military training land and a few key facilities such as RAF Fylingdales.

Military use at Fylingdales commenced with an artillery range soon after WWII and



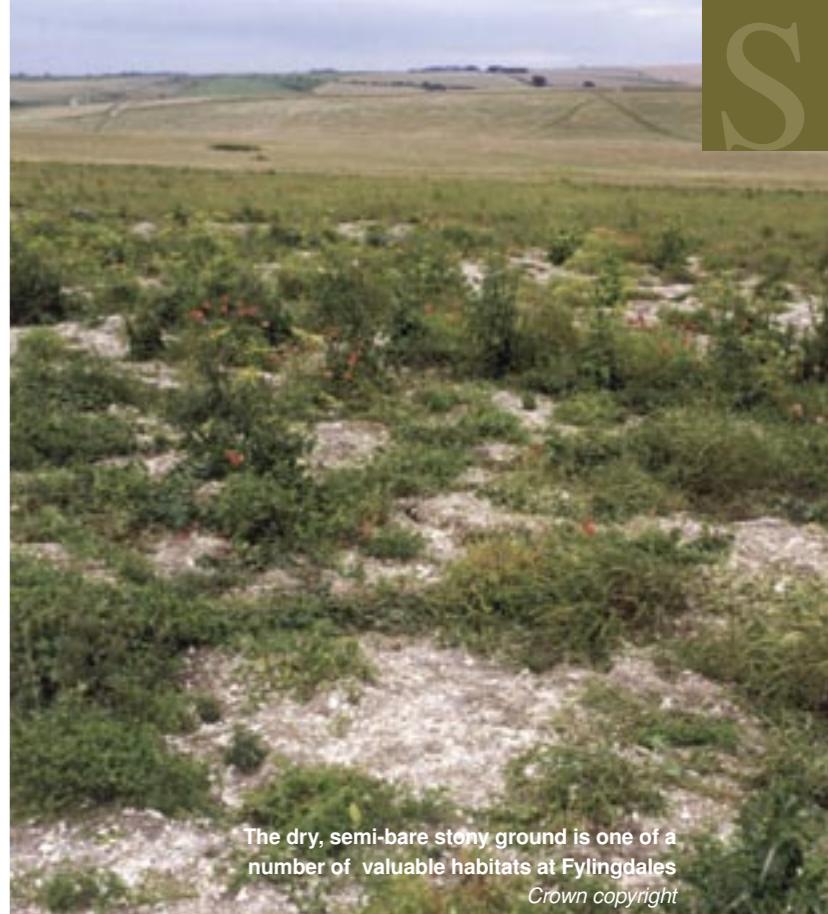
The Wheatear is a nationally declining species which favours open country
Crown copyright



Typical heathland at Fylingdales with the “giant toaster” in the distance
Crown copyright



One of the many streams or becks running through this upland heath
Jez Kalcowski



The dry, semi-bare stony ground is one of a number of valuable habitats at Fylingdales
Crown copyright

continued with the construction in the 1960s of the Tracker Site with the famous three golf balls which sheltered the radar infrastructure. These were demolished in 1994 and the land has reverted to semi-natural habitats. Upgraded radar facilities were constructed between 1991 and 1993, dominated by the Solid State Phased Array Radar (SSPAR) or ‘tea toaster’ triangular building.

The moorland outside of the HQ site is held primarily for security reasons and has had a ‘light touch’ to management over the years. This has resulted in a wilderness feel with mixed-age stands of heather and scattered broad-leaved trees along Eller Beck. This wilderness atmosphere is so important in National Parks – and it was enhanced during 2003, when the RAF agreed that lower security light technology could be installed which allowed them to meet their operational requirements but reduced the amount of light entering the night skies by 75%. Not only has this made a huge difference to the night skyline, but it causes less disruption to migrating birds.

About 170 million years ago, Fylingdales Moor was part of a sub-tropical coastal plain where dinosaurs roamed, and footprints can be seen along parts of Eller Beck. Early man started to clear the post glacial ‘wildwood’, and the onset of cold and wet climates encouraged the formation of peat bogs and the moorland landscape of today. Forest clearance and seasonal use continued from the Neolithic, or New Stone Age circa 4000 BC through to the end of the Anglo-Saxon period in 1066 with the construction of distinct monuments such as barrows on watersheds.

On the RAF boundary, at Lilla Howe, there is a fine Christian Cross marking the grave of Lilla, chief minister to King Edward of Northumbria. He saved the King’s life by throwing himself between his master and an assassin, tragically receiving fatal wounds from a poisoned dagger.

The North York Moors is a statutorily protected nature conservation area for nationally and internationally important habitats and bird populations. It is a SSSI, a Special Area of Conservation (SAC) and Special Protection Area (SPA). The Moors form the largest continuous tract of heather moorland in

England and are internationally important for merlin and golden plover, having more than 1% of the population in Great Britain.

In addition, there is a rich upland bird assemblage which includes short-eared owl, peregrine, hen harrier, redshank, red grouse, wheatear and nationally important populations of curlew and lapwing. RAF Fylingdales is currently preparing a moorland management plan in co-operation with experts in the Conservation Group. The aim is to agree the small areas that require beneficial burning or cutting to promote breeding merlin as well as supporting extensive sheep grazing.

There are other valuable habitats such as the intimate mosaic of dry, semi-bare stony ground and wet boggy flushes found on previously disturbed ground of the former golf balls. This area has ‘naturally’ regenerated and has uncommon plants such as adder’s tongue fern, lichens and mosses. Lapwings nest in the brown/green mosaic of the ground which provides camouflage for their eggs and chicks, and feed on insects attracted to the soft muddy edges of the shallow ponds.

The Eller Beck, with its steep banks, pools and riffles is a strong-hold for water vole and otter, and its scattered willow and alder scrub, rush, sedges and grasses provide a niche for invertebrates and birds such as reed bunting.

Access onto the Site is carefully controlled in the interests of security. The MOD is working closely with the North York Moors National Park Authority to expand the level of public access. In 2005 the MOD completed the dedication of a new bridleway across RAF Fylingdales, along the route of the Lyke Wake Walk. The bridleway forms part of a route first established in 1955 as a ‘challenge’ walk. The challenge is to walk west to east across the North Yorkshire Moors from Osmotherley to the coast at Ravenscar, covering some 40 miles in less than 24 hours. Further opportunities to increase public and recreational access are currently under consideration with the National Park Authority.

Sarah Jupp, Senior Environmental Adviser, Defence Estates

If the CAP fits...

The Reform of the Common Agricultural Policy



Salisbury Plain Training Area
Stephen Davis

British agriculture has experienced a huge change in financial support. From 2005, British Farmers no longer receive payments for what they produce; they now receive a single payment based on historic claims and how many hectares they farm.

The crucial difference with this new scheme is that farmers receiving this payment do not have to physically produce anything. However, to be eligible to receive the Single Payment the farmer must meet a set of conditions; this is called "cross compliance". If any of the cross compliance conditions are broken, then part or all of the payment will be withdrawn depending on the severity of the breach.

How does this reform of the CAP encourage conservation?

Obligations within cross compliance are being used as a mechanism to ensure that this new scheme does assist

conservation. The obligations cover three broad areas - the list below is a flavour of what is covered and is not exhaustive.

Statutory Management Requirements

To manage in accordance with designations such as the EU Directives on Wild Birds, Groundwater and the Habitats Directive as transposed into UK law.

Good Agricultural and Environment Condition

- Carry out soil management measures to limit soil erosion
- Maintain habitats and landscape features
- Manage with consideration of Sites of Special Scientific Interest, Scheduled

Monuments, Public Rights of Way, the Control of Weeds Act, stone walls and other landscape features.

Protection of Permanent Pasture

To gain permission before ploughing grassland that has not been ploughed for at least 5 years.

The measures described above are the minimum measures that farmers must follow to ensure they can receive the Single Payment. However, the wider aim is to encourage as many farmers as possible to enter into environmental schemes: the mechanism to do this is called Environmental Stewardship and it has three elements.

Entry Level Stewardship

The aim is to encourage a large number of farmers across a wide area of farmland to deliver simple yet effective environmental management. For these extra responsibilities farmers receive £30 per hectare across their whole farm.

When applying for this scheme, farmers need to complete a Farm Environment Record which records all the distinctive features on their holding. They then choose from a range of management options e.g. hedgerow management, low input grassland, buffer strips, management plans and options to protect soil.

If ELS is taken up across large areas of the countryside it will help to:

- Improve water quality and reduce soil erosion
- Improve conditions for farmland wildlife
- Maintain and enhance landscape character
- Protect the historic environment

Organic Entry Level Stewardship

Organic entry level stewardship is basically the same design as ELS, but the crucial difference is that it is only open to farmers who manage either only organic land or a mix of organic and conventional land.

Higher Level Stewardship

This is the highest tier and will be combined with ELS or OELS options. It aims to deliver significant environmental benefits for some of our most endangered species and habitats.

Payments will be dependent on the options chosen from a wide range of possibilities. Every applicant will be required to prepare a Farm Environment Plan to identify the most important features on the farm and to highlight the best opportunities to help wildlife.

Richard Norris, Senior Estate Surveyor, Defence Training Estate



Brown Hare
Bob Glover

Environmental Stewardship Schemes in practice

The implementation of the new Environmental Stewardship Schemes is acting as a spur to make farmers consider how their farming businesses can develop. The challenge is to keep a viable business, whilst bringing about definite benefits to the environment. This article looks at how a tenant farmer on MOD land has risen to the challenge.

DTE Salisbury Plain

The Defence Training Estate Salisbury Plain is the largest of all the DTE's training areas at 38,000 hectares. DTE Salisbury Plain provides a unique range of training facilities and it is the only UK area capable of sustaining free manoeuvre by armoured vehicles and major military formations. This activity takes place on an environmentally sensitive site, the largest area of calcareous grassland in North West Europe, rich in archaeology and fauna and flora.

Court Farm

Court Farm, located on the north-east corner of Salisbury Plain is a 1,600 ha mixed farm. The farm's main enterprises are 800 ha of arable crops and a 220 cow organic dairy herd and young stock, running over 800 ha of organic grassland. The farm is run by Mrs Valerie Gordon and her two sons Richard and Chris, who have decided to enter the following schemes.

Entry Level Stewardship

Management of Hedgerows

Hedgerows are an important part of the landscape both as a historic feature and essential habitat for wildlife. The hedgerow management option will preserve and enhance the hedges and, importantly, will be maintained to a manner which is customary to the local landscape. They will be cut to a minimum 1.5 m high every other year as opposed to annually, with a range of heights and widths to offer the maximum benefit to wildlife. No fertilizers or pesticides will be applied within 2 m of the hedge.

Arable Management (Non Organic)

Farmers can take a number of measures within the new stewardship scheme to provide greater areas of habitat and food sources for wildlife in arable farms. The schemes that Court Farm have chosen to implement are:

Crop Protection Management Plan

A management plan must be completed during the first year after signing up to the Stewardship Options. The aim is to record the decision-making process on the holding for the management of crops. Farmers must demonstrate that the plan has been drawn up in conjunction with a qualified agronomist and it must be site specific and updated annually. In essence, the plan looks at the whole enterprise and considers farm location, soil type and cropping rotations. It also requires the Gordons to consider non chemical options for the control of pests and diseases and that they inspect crops regularly and minimise environmental impact by considering which spray to use, to use targeted sprays and not blanket controls, and not to spray near hedges and watercourses.

This is not the entire list of elements that must be in their management plan but does illustrate what is expected.

Over-wintered Stubbles

This option concerns the Gordons' management of land following the harvesting of a crop such as oilseed rape, linseed and cereals. Land left as stubble provides a good source of food for seed-eating birds and habitat for the brown hare.

Once the crop has been harvested the straw has to be baled and removed and the field must not be cultivated, grazed, mown or sprayed until the following spring where it must be followed with an arable crop such as spring barley.

Organic Entry Level Stewardship

As approximately half of Court Farm is registered as organic they are eligible to sign up to measures within this scheme. Some of the options that the Gordons have elected to undertake are as follows:

Undersown Spring Cereals

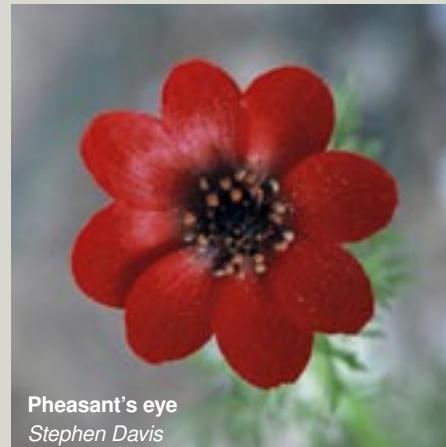
This is the sowing of a grass/legume mix as an understory to the cereal crop. This helps to assist the creation of a more diverse habitat within the field and will therefore benefit farm wildlife. In particular, farmland birds such as the yellow hammer will benefit as these measures will help to halt their decline in numbers over recent years.

Brassica Fodder Crops followed by Over-wintered Stubbles

Brassicas are grown to be grazed by stock. Once the crop has been grazed the fields will not be cultivated and the residues left to be overwintered, thereby providing an important food source for small seed-eating birds. The fields must be left until at least 15 February and then sown with a spring arable crop.

Higher Level Stewardship

The Gordons' HLS application will enhance the biodiversity of their farm. The main areas they wish to address are the species-rich calcareous grasslands, wet meadows and pastures and arable fields producing habitat and feeding opportunities for farmland birds. Species of priority interest would include stone curlew, lapwing, grey partridge and breeding and wintering waders.



Pheasant's eye
Stephen Davis



Chris Gordon and Richard Norris
Charlotte Cross



Lapwing
Bob Glover



Corn marigold
Crown copyright

As stock numbers have generally declined and the profitability of agriculture has reduced, the more marginal areas of land have not been farmed. On Salisbury Plain this has meant that the steeply sloped dry valleys that were once grazed by sheep have not been as heavily grazed as in the past. This has led to an invasion of scrub which in turn destroys the grassland as the scrub shades out the grass and slowly encroaches on to other areas.

Species-rich Calcareous Grassland

The grass banked area of the farm will be entered into the HLS as a commitment to restore species-rich, semi-natural grassland. These grasslands support a much higher level of flora and fauna than single species grassland and they improve the characteristically pictorial landscape. They are also the most important feature of Salisbury Plain as it is the largest area of chalk grassland in Northern Europe and designated as a SSSI.

The Gordons have also signed up to a scrub management plan which is of double benefit to Defence Training Estate. In the past the costs to control scrub have fallen to the MOD and we have had to employ contractors to do this work for us. Now we are looking to farmers to sign up to a scrub management plan and agree to clear certain area of scrub. In return we will not look to increase rents to take account of the additional income the farmers will gain by entering the stewardship schemes.

Management of Wet Grassland

The aim of this option is to continue the management of existing seasonally wet grassland thus recognising its importance for birds and rewarding farmers who actively manage it. The land in question at Court Farm is permanent grassland within the flood plain of a river and thus attracts lowland breeding waders.

The Defence Training Estate strongly supports applications from its tenants and licensees to sign up to the Stewardship schemes. DTE's tenants are an extremely important stakeholder within the Estate. It is essential that the farms remain financially viable so that they can continue to manage their businesses, comply with the statutory designations and, of course, continue to enable military training to take place on the estate. After all, that is the most important reason for MOD's ownership of the Defence Training Estate.

Public Access on the MOD's Scottish Estate

On the side of Capelaw Hill, looking directly south at Turnhouse Hill and Carnethy Hill
David Henniker

On 9 February 2005, Part 1 of the Land Reform (Scotland) Act 2003 - LR(S)A - came live. This Act gives everyone statutory access rights to most land and inland water in Scotland for a wide range of recreational activities and pastimes. The Act relies heavily on responsible behaviour by both the visiting public and land managers. In the last copy of Sanctuary, Richard Brooks, the Access and Recreation Adviser for Defence Estates and Designated Officer for LR(S)A, touched upon work being undertaken by MOD in the infancy of this legislation. He now expands on the work undertaken over the past two years.

In hindsight, the introduction of access rights under LR(S)A have had a positive influence on access management across the estate. Our original fears of bands of walkers, riders, cyclists, canoeists etc forging across MOD ranges and property claiming their new rights and ignoring military signs and advice simply did not happen. The message of responsible behaviour and activity as laid out in the Scottish Outdoor Access Code (SOAC, or the Access Code as it is now generally known) was respected and, on the whole, adhered to – all credit to the general public and common sense!

Of course additional credit must be given to the promotion and publication of the Access Code by Scottish Natural Heritage (SNH) and the Scottish Executive. Ensuring that this code was freely available, concise and easy to understand, has been paramount in the success of this wide-ranging access legislation.

The inclusion of a section on Military Lands within the Access Code enabled the MOD to outline the hazards of such areas and to point out the additional responsibilities that members of the public assume when entering the defence estate. Equally, it highlights our responsibilities as landowners to our visitors. This section of the Access Code (highlighted on the following page) has been the driving force behind our access and recreation work in Scotland.

The introduction of this legislation made us take a long look at access provision and management in Scotland. An access audit was undertaken of the main sites to see how the legislation would affect the site, its operations and infrastructure. Certain MOD establishments were clearly unaffected: buildings and their immediate curtilage, military bases, military infrastructure and storage areas are not covered by the access rights. Airfield infrastructure is also excluded. The audit demonstrated that

our rural estate on the whole fell within the type of landscapes and habitats for which this legislation was intended.

The legislation and the Access Code make it clear that access in certain areas can be further restricted by byelaws. Military byelaws therefore enable us to allow hazardous military training to be undertaken without any risk to the public and maintain the defence requirement in areas such as live firing danger and impact areas. Recognising military activity as a land management activity also allows us to direct the public away from high intensity dry training and other training where this is judged to be necessary. This approach is clearly laid down in the guidance within the Access Code.

However, in order for us to fully comply with the legislation and to ensure that we fulfilled our responsibilities within the Access Code, we found ourselves in somewhat of a dilemma over signage.

There is a requirement for anyone entering onto military land to assume the additional responsibilities laid down in the Access Code as above... but in order for the public to know that they are entering upon military land there is a responsibility for us to ensure that this is obvious. As much military land

RESPONSIBLE BEHAVIOUR BY THE PUBLIC

► MILITARY LANDS

The Ministry of Defence has a presumption in favour of safe public enjoyment of its estate wherever this is compatible with operational and military training needs, public safety and security. The MOD needs to carefully manage access when active military training is under way, and where there are unexploded munitions.

Always take note of advice from range staff, troops and from warning signs. If in doubt, look for an alternative route or turn back. Red flags (in daytime) and red lamps (at night) indicate live firing areas, which might not be fenced. Do not enter a range if flags are raised or lamps lit. Be careful when crossing the land as there could be trenches or voids, and never pick up objects as they could be harmful. Be prepared for sudden noises that can startle people and horses.

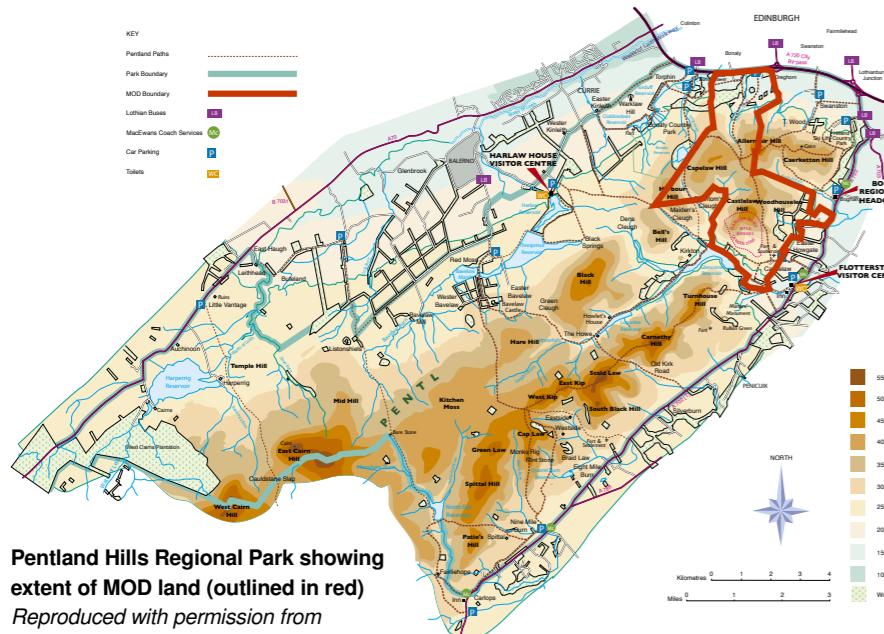
RESPONSIBLE BEHAVIOUR BY LAND MANAGERS

Provide as much information as possible, in advance, on access arrangements where this does not put safety or security at risk. Ensure that signs give a clear indication of where the public may go and explain why some precautions, such as red flag/lamp procedures, are necessary. Keep the duration of these precautions, and the area affected, to the minimum required.

Reproduced with permission from Scottish Natural Heritage, 2005

looks similar to non-military land (especially in upland areas) this left us with something of a problem. How do the public know when they are within a military training area?

The answer – simple, we thought – was to put some signs up informing the public when they come through our boundary. So we have devised some access information point signs that highlight the extent of our holding, with any specific routes on a map as well as highlighting the major risks associated with accessing that particular area – such as sudden noises, vehicle movements etc. These boards also enable us to advise of any additional access restrictions on the area. They are to be situated at the main access points to each of the large training areas.



But the public do not necessarily have to enter our estate through recognised access points. The code enables visitors to access any land via any responsible method, and this can include climbing fences. Many of our training areas are only surrounded by stockproof fencing – or indeed, in some cases, no fence at all. So how do we ensure that these visitors are aware that they are entering military lands?

The original advice led us to believe that we would have to sign intervisibly around the boundary. Furthermore, these signs should not only advise that the land within the boundary was a military training area, but also highlight any risk within the boundary. We were left with the notion that

we would have to place large, bright signs around the boundary every 50 metres (if that is intervisible in Scottish weather!).

This was something that we did not relish in terms of cost, landscape impact and the physically problems associated with getting the signs in place. After much discussion with the authorities we reached a pragmatic balance of placing boundary signs where a local assessment of access patterns

led us to believe that the public may be drawn to our boundary. Obvious examples are lay-bys and places where existing linear paths run alongside our holding.

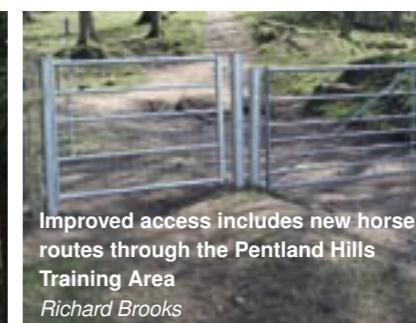
Both the access point signs and boundary signage have now all been agreed and are currently springing up across the main training areas.

The access audit highlighted areas where our access provision could be improved to fall within the spirit of the legislation. An example of this was highlighted in my Sanctuary update last year where horse routes have been provided across the Pentland Hills Training Area on the outskirts of Edinburgh. These routes minimise the safety risks associated with intensive troop training and access on horseback. These routes are now open and are very heavily and successfully used with no major issues to date. The routes are included within a horse riding guide to the Pentland Hills produced jointly by the British Horse Society and the Pentland Hills Regional Park. Copies of this leaflet can be gained from either organisation.

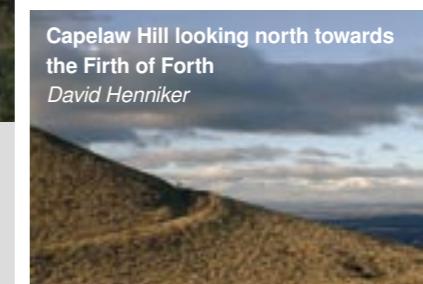
At Kirkcudbright Training Area (KTA), on the Dumfries and Galloway coast, there has been access only by prior arrangement with the



Rob Boswell, Landmarc Rural Estate Surveyor and Mark Johnson, DE Estate Surveyor for Pentland Hills Training Area were both involved in planning access routes and signs
Richard Brooks



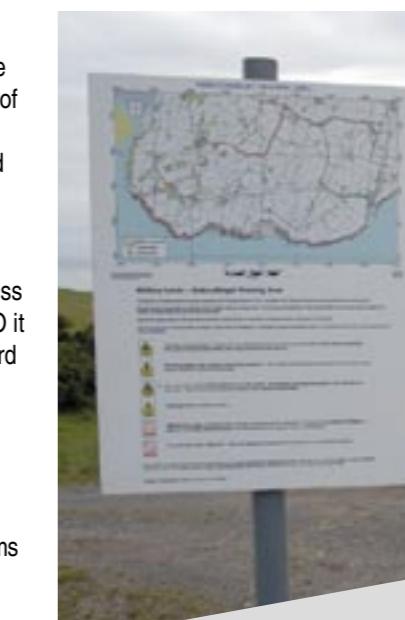
Improved access includes new horse routes through the Pentland Hills Training Area
Richard Brooks



Capelaw Hill looking north towards the Firth of Forth
David Henniker



A walker studies the new access at Kirkcudbright Training Area
David Crosbie



Miss Jennifer Picken riding her horse on the hard track public access path. The access sign shows which areas are open to the public when red flags are not being flown
David Crosbie

Know the Code before you go ... Enjoy Scotland's outdoors - responsibly!



SCOTTISH OUTDOOR ACCESS CODE

Everyone has the right to be on most land and inland water providing they act responsibly. Your access rights and responsibilities are explained fully in the Scottish Outdoor Access Code.

- take responsibility for your own actions
- respect the interests of other people
- care for the environment

Find out more by visiting www.outdooraccess-scotland.com or phoning your local Scottish Natural Heritage office.

Richard Brooks, Access and Recreation Adviser for Defence Estates and Designated Officer for LR(S)A

Fingringhoe Ranges

A haven for birds

The county of Essex is one of the most densely populated areas in the British Isles. It is therefore quite surprising that its coastal belt still contains some sizeable chunks of natural wilderness that has not changed much over the centuries.



Written and illustrated by
Richard Hull

The MOD owns several such areas, including the firing ranges four miles south of Colchester at Fingringhoe. This establishment consists of some 1,600 acres of coastal marsh, saltings, rough grassland, scrub, mixed woodland, extensive shallow pools and reed lined fleets. During the past thirty-five years it has been my pleasure to study and paint the bird life on these ranges and during this period I have recorded two hundred and fifteen species, of which eighty-one species regularly breed.

During the winter months thousands of shorebirds and wildfowl are present. At high tide waders gather in huge numbers on the saltmarsh known as the 'Geedons'. This roost consists of up to 800 grey plover, 600 black-tailed godwits, 400 avocets, 600 redshank, 5,000 dunlin and 400 oystercatchers, whilst the shallow pools attract up to 1,000 wigeon, 1,500 teal as well as smaller numbers of

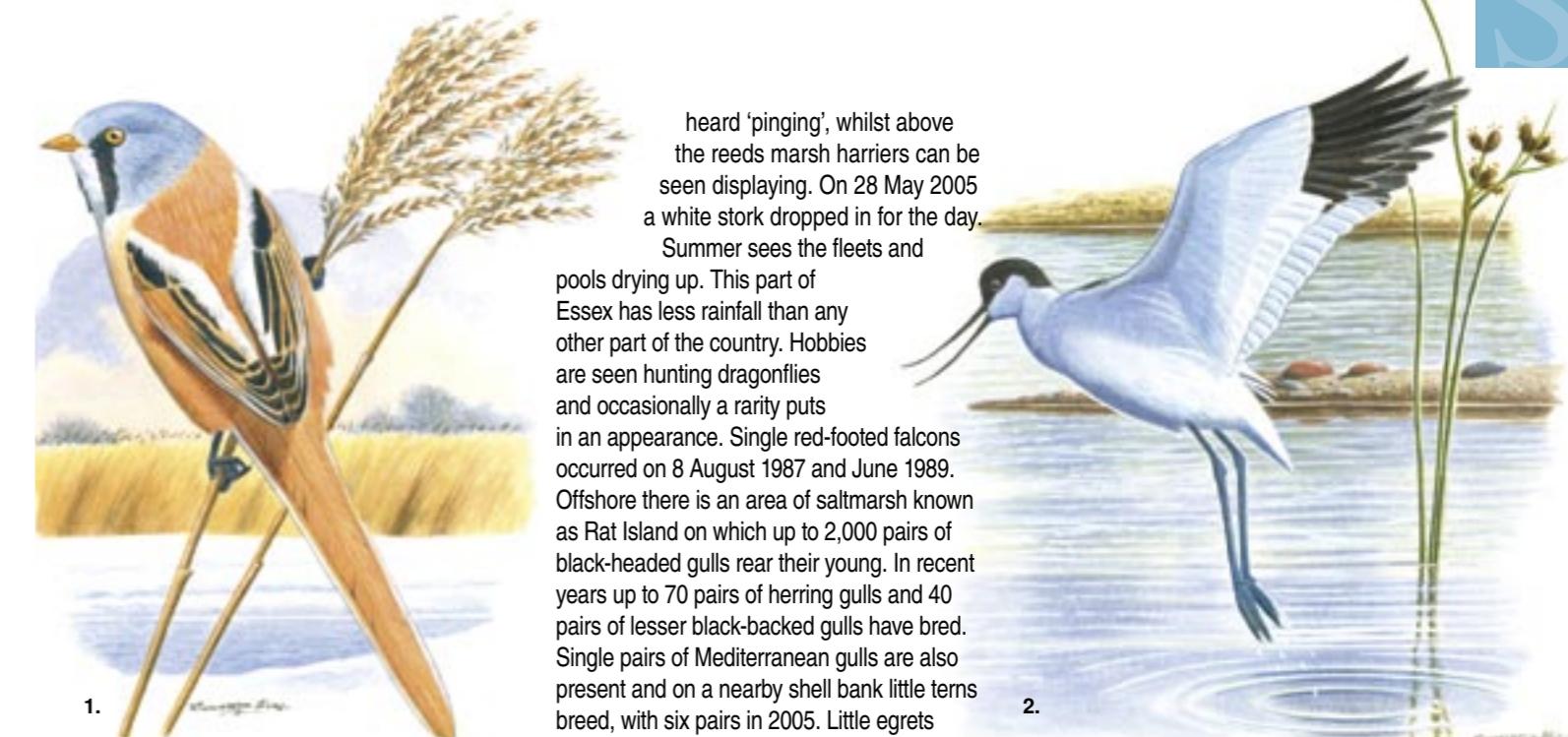
pintail, pochard, shoveler, tufted duck, mallard and gadwall. Occasionally Bewicks and whooper swans are also present.

The area holds up to 3,000 Brent geese, which were accompanied by a red-breasted goose during the winter of



1996. Short-eared owls, barn owls, and marsh and hen harriers can be seen hunting over the rough grassland, which contains a large population of voles.

In the Pyefleet Channel that separates the mainland from Mersea



Island, small numbers of goldeneye and red-breasted Mergansers gather and in some winters scaup and long-tailed ducks are seen. Single red-throated, black-throated and great northern diver have also been observed. The blackthorn and hawthorn scrub, of which there are sizeable clumps, sometimes attract a roost of long-eared owls and a great grey shrike was present between October 2001 and March 2002.

Spring sees the arrival of migrants from the south. Wheatears are usually the first to arrive and small numbers can often be found on the sea wall. Ruff, greenshank, spotted redshanks and whimbrel stop to feed and rest before continuing their journey northward. Others such as avocet, redshank, snipe and lapwing stay to breed. A pair of black-tailed godwits raised a chick here in 1992, this being the only breeding record for this species in this county. Wildfowl such as garganey, wigeon, teal and pintail also breed most years. The reeds at this time of year are full of the song of reed warblers; the marsh contains over 100 pairs. Bearded tits can be





Black Grouse male displaying at lek to another. MOD is a partner in the North Pennines Black Grouse Recovery Project
Andy Rouse (ARWP)

Conservation of Biodiversity and MOD Biodiversity Strategy

What is Biodiversity?

Biodiversity is biological diversity, the “variety of life” including micro-organisms, plants, animals, their habitats and genetic variation. It is the rich variety of life and living things that surrounds us every day and includes rare and threatened species and also the more commonplace. It includes life associated with the built as well as the rural environment.

The term biodiversity has been increasingly used since the signing of the *Convention on Biological Diversity* at the The Earth Summit at Rio de Janeiro in 1992, to which the UK is a signatory.

To meet its commitments under the convention, the UK Biodiversity Action Plan (BAP) has been produced, and this is being implemented through UK, country, regional and county action plans.

Biodiversity Action Plans

Specialist steering groups have produced action plans for species and habitats of greatest conservation concern and Local Biodiversity Action Plans have been produced at a county or local level to assist in the delivery of the species and habitat plan targets. The UK BAP was published in 1994 and a major review of its priorities and targets is about to be completed. Alongside this, a review of the MOD's action for biodiversity is currently underway. There are currently several statutory and

policy obligations on the MOD relating to biodiversity. Under Section 74 of the Countryside and Rights of Way Act 2000, Ministers and Government Departments have a duty to have regard to the purpose of conserving biological diversity in carrying out their functions. This has been replaced by a similar provision under Section 40 of the Natural Environment and Rural Communities Act which came into force in October 2006.

In Scotland, the Nature Conservation (Scotland) Act 2004 places a duty on every public body to further the conservation of biodiversity consistent with the proper exercise of their functions.

The UK Government has made a commitment to halt the loss of biodiversity by 2010, through delivering the UK BAP targets. This commitment was made by European leaders at the 2001 EU Summit in Gothenburg - Countdown 2010 target.

Biodiversity on Defence Estates

The wider sustainable development agenda also informs MOD's biodiversity conservation. The Framework for Sustainable Development in Government (SDiG) gave us five targets, including the 95% of SSSIs in favourable condition target (*for further information see Queen and Countryside, Sanctuary 2005*).

Two of the other targets relate to auditing the biodiversity interest on the estate, and management planning for those sites where there is significant interest or impacts.

Target H2 - Where there are significant impacts for biodiversity to:

- conduct audits of their estate to identify nationally/locally important habitats and species
- assess the impact of activities on biodiversity at each site

Target H3 - Sites identified as significant for biodiversity, will have developed management plans/actions for nationally and locally important habitats and species.

MOD is using the opportunity provided by these targets to improve its understanding of the biodiversity interest across the totality of the estate, our ability to contribute to the UK's Biodiversity Action Plan targets, and the issues for both biodiversity and defence delivery. To facilitate this, an audit of the estate's biodiversity is being carried out, and strategic objectives for biodiversity on the estate have been developed.

The development of the Biodiversity Strategic Statement has combined both the new targets provided by the SDiG Framework, and the broad range of other biodiversity and conservation activities that have occurred across the estate for many years (and reported here in Sanctuary), and combined them to outline the overarching biodiversity objectives for the estate for the future.

MOD Biodiversity Strategy - Objectives and Targets

Strategic Objective 1	Sub-Objectives	Targets
SO1. To be an exemplar in the management of designated sites	O1. To maintain and, where appropriate, enhance the biodiversity interest of Natura 2000 sites, Ramsar sites and SSSIs / ASSIs for which MOD has direct management responsibility.	T1. 95% of SSSIs in favourable / unfavourable recovering condition by 2010.
	O2. To minimise the potential impacts of MOD activities on SSSIs / ASSIs which are the management responsibility of other landowners.	

Strategic Objective 2	Sub-Objectives	Targets
SO2. To ensure natural environment requirements and best practice are fully integrated into the estate management.	O3. Ensure that where there is significant biodiversity interest on the estate, integrated rural / land management plans (IRMP / ILMP) are developed, or otherwise integrated with estate management processes and military objectives.	T3a. For all establishments with moderate or major biodiversity interest IRMPs / ILMPs developed by 2010 (80% by 2008). T3b. For all establishments with minor or no known biodiversity interest to have integrated biodiversity aspects into the appropriate Establishment EMS by 2008.
	O4. To ensure high quality and consistent application of appraisal tools that facilitates the sustainable use of biological resources and identification of impacts on biodiversity.	T4. Audit of sustainability appraisals and update of guidance, to ensure full use of MOD's appraisal tool hierarchy, by 2007.

Strategic Objective 3	Sub-Objectives	Targets
SO3. To contribute, as appropriate, to the UK Biodiversity Action Plan (and devolved administration biodiversity strategies).	O5. To improve the co-ordination of biodiversity enhancement on the defence estate, and deliver the actions identified as priorities for MOD action for biodiversity.	T5. MOD contribution to UK priority habitats and species is identified by March 2007.
	O6. To improve methods to monitor biodiversity resources to ensure use is sustainable.	T6. Recommendations to improve current MOD procedures for relevant habitats and species data collection identified by 31 March 2008.
	O7. To identify species at risk on the defence estate, and evaluate potential for recovery. (Vulnerable species will be considered for recovery on a case-by-case basis).	

A recent review of known biodiversity interest on the defence estate showed that approximately 80% of the estate supports nationally important habitats and species. Of the priority habitats and species highlighted as being under threat in the UK BAP, 35 habitats and 138 species occur on both the rural and built defence estate. Work is currently underway to quantify the biodiversity of the estate with more accuracy. This is no mean feat given the size of the land holding (around 240,000 hectares).

Using information obtained from MOD conservation groups, existing management plans including ILMPs and IRMPs, consultants' reports and from specialist MOD staff, the presence and status of habitats and species are being confirmed. This is an ongoing project as additional surveys are carried out, new records obtained and habitats are more accurately mapped to improve our understanding of the estate. This process is essential to inform our decision-making.

Records exist for 179 establishments which include the large parts of the estate known to have a high biodiversity importance such as the 38,000 ha of Salisbury Plain. Data collection, information retrieval and mapping is currently being improved to enable us to have more accurate information on the distribution, extent and population status of habitats and species of conservation concern, as part of the MOD BAP Review and the wider environmental management activities of Defence Estates.

Land management planning on the defence estate includes provisions for biodiversity within the existing structure of ILMPs and IRMPs. It is not proposed to produce separate biodiversity action plans for establishments as this would cause unnecessary duplication. Part of the MOD BAP Review is to evaluate the current status of plans, identify which sites need new plans or updates, and ensure that plans contain management actions linked to BAP targets, where appropriate.

Specific actions for the MOD were identified in the 1994 UK BAP for nineteen species and seven habitats:

1. Lowland heathland
2. Aquifer fed naturally fluctuating water bodies
3. Lowland dry acid grassland
4. Lowland calcareous grassland
5. Coastal vegetated shingle
6. *Modiolus modiolus* (horse mussel) beds
7. Sublittoral sands and gravels

Priority habitats, where the MOD estate constitutes a significant part of the national resource, include lowland heathland, lowland calcareous grassland and lowland dry acid grassland. Current targets are to provide action plans for the restoration and management of these habitats. Rare habitats include the Breckland meres, which are aquifer fed naturally fluctuating water bodies on the Stanford Training Area, and areas of coastal vegetated shingle.

There is often overlap between objectives for biodiversity action

plans and maintenance of favourable condition of SSSIs, particularly where habitats are concerned. Maintenance of habitats is also relevant to species conservation, with several lowland heath species having requirements for MOD action. These include nightjar, woodlark and sand lizard and several rare invertebrates. Invertebrates found on Stanford and Salisbury Plain also have specific actions. Black grouse and stone curlew are additional bird species which require specific action by the MOD.

Integration of biodiversity conservation with management of the estate however, covers a substantial number of species and habitats. Whilst the above species and habitats may take priority, conditions are maintained for a diverse range of wildlife through day to day management and maintenance of the Defence Estate.

Examples of selected UK BAP targets taken from the Catterick Training Area ILMP are listed below. These contribute to some of the nature conservation objectives for the management of the estate, which are integrated with military training and the other land uses.

For heathland:

- maintain the current resource of upland heathland in favourable condition
- achieve favourable condition on all upland heathland SSSIs
- improve the condition of at least 50% of upland heath outside SSSIs
- increase dwarf shrubs to at least 25% cover where they have been reduced or eliminated

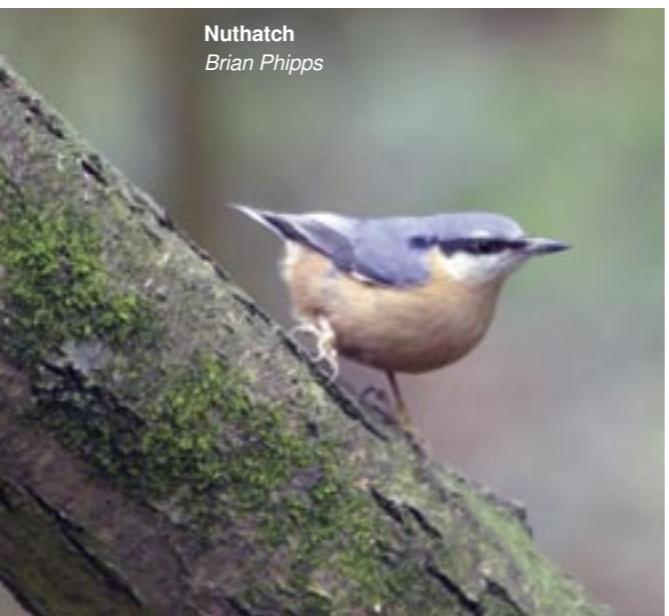
Nightjar, *Caprimulgus europaeus* roosting on pine logs which provide a refuge for a host of animals and invertebrates
Brian Rogers, Natural Visions



Male sand lizard, *Lacerta agilis*
Geoffrey Kinns, Natural Visions



Nuthatch
Brian Phipps



Bracket fungus
George Chan



Creeping cinquefoil
Rachel Crees

For upland mixed ashwood:

- maintain the total extent and distribution of upland mixed ashwoods
- establish upland mixed ashwood on un-wooded sites, or by conversion of non-native plantations
- initiate measures intended to achieve favourable condition in 100% of upland mixed ashwoods SSSIs and in 80% of the total resource
- achieve favourable condition over 50% of the total resource and 70% of the designated sites by 2010
- complete restoration to site-native species of former upland mixed ashwood, which has been converted to non-native plantation on Ancient Woodland Sites

Long term goals

The challenge for the future is to ensure that the biodiversity interest of the estate is recorded accurately and that all sites of importance are identified and have management plans or actions agreed, taking into account revision and review of targets. As new information becomes available, a more quantitative approach will be required in line with changes in BAP reporting and the UKBAP review. This will enable all practitioners to be better able to measure trends and changes and report what they do.

UK BAP review

The UK BAP review is currently attempting to make BAP targets SMARTer, i.e. Specific, Measurable, Achievable, Relevant and Time-related. New targets for these priority habitats include for specified hectares to be maintained in favourable condition, to be restored or re-established. For priority species, targets include maintaining populations or increasing populations by specific amounts such as pairs of breeding birds, or maintaining and expanding the range of the species. There are also changes proposed for the habitats and species listed in the UK BAP. For MOD, the task during the review is to identify where we can contribute to biodiversity targets and actions, and where there may be potential conflicts and challenges integrating them with operational imperatives.

The Defence Estate supports a substantial proportion of the UK's population of stone curlew
David Harrison, Natural Visions



Grazing the Lizard

A partnership project at Predannack Airfield

In a remote corner of the MOD estate, a partnership project is yielding rich rewards for one of the rarest habitats in the UK. The Royal Navy, Defence Estates, English Nature, National Trust and MOD contractors have worked together to restore traditional patterns of grazing to the heathland that covers much of Predannack Airfield. This grazing project aims to retain the unique habitats and the remarkable assemblage of nationally and locally rare plants and animals that are found on the Lizard peninsula.



Aerial view of showing the mosaic of different habitats at Predannack
Crown copyright

Predannack Airfield, a satellite airfield to Royal Naval Air Station Culdrose, extends over 350 hectares. The combination of complex underlying geology and mild oceanic climate means it supports a type of heathland that is only recorded in this part of Britain. The importance of this habitat is recognised by the West Lizard National Nature Reserve designation that covers 2,000 ha adjacent to the airfield. The airfield itself is covered by the West Lizard SSSI and Special Area of Conservation (SAC) designations.

The primary military use is for helicopter flight training and fire fighter training. Secondary activities include use of the airfield by

the 626 Volunteer Gliding School and dry training by the TA and cadets. Fire training has been provided by the Royal Naval School of Flight Deck Operations for many decades and it is now considered an exceptional and important facility. Fire training at the airfield has evolved into a far cleaner operation in that time with the use of less harmful foams and the recycling of water used in training exercises. The emphasis is now placed on fire fighting technique whilst retaining all the ingredients and dangers of real time aviation fire fighting. This reflects the importance the Royal Navy place on environmental protection across all sites.



Borehole and solar powered pump
Crown copyright



Removing scrub from heathland
Crown copyright



Dexter cattle
National Trust

At first glance the Lizard peninsula landscape appears rather uniform but it actually comprises a mosaic of different vegetation types. This diversity is partly due to the varied soils derived from magnesium rich serpentine rocks and poor drainage. These complex ground conditions mean that in just a few steps you can move from a patch of acidic short heath that supports heather (or ling), bell heather, Western gorse and bristle-bent grass, to the highly alkaline tall heath with the nationally rare Cornish heath (which only occurs naturally on The Lizard) and black bog-rush. Nearby there is likely to be an area of mixed heath with European gorse and willow scrub.

The historic pattern of land use on the Lizard peninsula is almost as complex as its geology and managing the area for conservation is partly about restoring traditional management techniques. The soils do not lend themselves to improvement so turf cutting, controlled burning and grazing would have been some of the activities undertaken. Cattle grazing is particularly important to prevent the build up of litter that limits plant diversity and makes these heathlands prone to damaging summer fires. It also controls the growth of undesirable scrub, and trampling by cattle creates patches of bare ground and waterlogged runnels that provide microhabitats for plants and invertebrates.

Many of the benefits arising from cattle grazing cannot be replicated by mechanical means. Cutting and removing scrub and heathland vegetation is costly and time consuming for MOD contractors and grazing represents the most cost effective management option in the long term.

However, introducing animals onto fringes of an active airfield can compromise military training activities, which is clearly

unacceptable. There is potential for animals to stray on to the airfield and disrupt flying operations and permanent fences restrict access for rescue vehicles in the event of a crash. After some consideration the Royal Navy agreed the location of grazing compartments, and temporary electric fences were installed to contain cattle.

Grazing will take place within four compartments at Predannack using traditional breeds of cattle that thrive on the coarse heathland vegetation and cope with harsh winter conditions. Last winter Dexter cattle, owned by the National Trust, were used to graze large areas and there is already evidence they are having a positive impact on the vegetation. The Cornwall Wildlife Trust has grazing rights on other parts of the airfield and this will complement their management of adjacent sites.

The grazing project at Predannack has been identified as a requirement in the new Nature Conservation Management Plan for the site. Some essential work identified in the plan has already been funded through the MOD SSSI Condition Improvement project. This project channels funding into SSSI management to ensure the MOD meets its Sustainable Development in Government (SDiG) targets.

Delivering a nature conservation management plan at any MOD site requires widespread consultation and Predannack is no different. New contracting arrangements for the South West mean that staff from the MOD's prime contractor for the SW region, Debut, could also bring expertise to bear. This has helped ensure the smooth delivery of conservation works from aspiration to execution.

One project in particular has demonstrated the benefits of this new partnering arrangement. This involves

the supply of water to a remote grazing compartment. The cost of piping mains water to this site proved prohibitive and Debut staff, with assistance from the National Trust, set about identifying alternatives. The solution has been the installation of a stand-alone solar powered pump to extract water from a borehole and feed a water tank. This sustainable water supply is the first of its kind in Cornwall and there is considerable interest from other conservation organisations to see how well it works.

The Royal Navy is committed to working in partnership with its stakeholders to take forward the conservation management plan for the site, and implementation is being co-ordinated through the Predannack Conservation Group. There has already been considerable effort put into cutting scrub using a variety of techniques. Some controlled winter burning will also be used to create a patchwork of heathland vegetation. Some of this work will be funded by the HEATH project (Heathland: Environment, Agriculture, Tourism and Heritage) as part of a regional scheme to support conservation management using European funding.

Big strides have been made in managing the wildlife interest on the airfield in recent years. Much effort has been made to ensure that military operations are sympathetic to this interest. These efforts were summed up by the English Nature Conservation Officer when he said: "The future well-being of Predannack Airfield's rich wildlife looks good thanks to the hard work and dedication of the many people who have been involved." The Royal Navy is keen for this good work to continue at one of their flagship wildlife sites.

Predannack Conservation Group

Lake margins left to grow to provide increased cover for wildlife
Leighton House, Regular Commissions Board, Westbury
All photos Debut

Grounds for Improvement

In the spring of 2004, Debut Services (South West) Ltd, a joint venture partnership between Babcock International and Bovis Lend Lease, were appointed by Defence Estates as prime contractor in the south west.

The Regional Prime Contract South West (RPC SW) is the second of five regional contracts to be let under the MOD's Prime Contracting initiative, which covers estate management services for almost 200 sites and encompasses some 9,000 physical assets in the south west region. RPC SW covers a significant area of rural estate, including a number of sites with statutory nature conservation designations. These are the main focus for our conservation work to meet UK Sustainable Development in Government (SDIG) targets. In the two years since contract award, over £600,000 has been spent on SSSI restoration projects and a small team has been created, dedicated to rural estate management, to cover our responsibilities for nature conservation and forestry work.

However, most of the establishments have very varied land uses, ranging from operational activity to recreational, functional, administrative and living areas. These intensively used and highly populated sections of the MOD estate are maintained through amenity grounds maintenance activity. Within amenity areas there is enormous potential to aid wildlife and landscape conservation and contribute to overall estate management sustainability.

Prime contracting has brought about various benefits to the MOD estate, which have included the development of dedicated, well-equipped supply chain teams comprised of qualified personnel from a range of backgrounds and specialist areas. This valuable resource provides opportunities for sharing experience and good practice. The use of dedicated area and site-based teams encourages a sense of ownership and delivers innovative solutions to maintenance regimes.

Landscapes within military establishments normally have a well-ordered and tidy appearance. A less tidy appearance is generally considered undesirable. However many sites have 'conservation areas' with less intensive management in order to encourage biodiversity.

At contract award, Debut's supply chain recorded the various types of maintenance undertaken across amenity areas, which included dedicated conservation sites and less intensively maintained elements within establishments. With the exception

Corky Fruited Dropwort, Langport Range

of areas that were a result of neglect or failure to meet client requirements, marginal areas with conservation potential were identified and maintained for their biodiversity interest.

On a number of sites, in consultation with the establishment, opportunities to modify grounds maintenance practices and improve the potential for diversity of species have been explored and implemented.

Grassed Areas

One of the key ways to support biodiversity is to emulate hay meadow management through cutting and removing arisings mid to late summer, following flowering and seed setting. This is employed to maintain many tall grass areas. Results are varied, often dependant on soil types, with sites on nutrient-poor, shallow soils more readily producing species rich grassland. Low nutrient status means that finer herbs are less likely to be smothered by taller coarse grasses. This form of management also supports many insects that pollinate flowering plants.

However, cutting and removing arisings can be a costly procedure, potentially more so than routine cyclical mowing. For this reason, in some locations, it has been necessary to invest in cut and remove machines and employ methods of work that will aid this type of operation.

Maintenance regimes aimed at aiding conservation through alterations to mowing practices must be sustainable, both financially and from a biodiversity point of view. We have therefore, where practicable, attempted to take a structured approach to grassland management.

In a few locations grass has been permitted to grow, mowing only once or twice a year outside the main growing season, to encourage vegetation to become more diverse rather than just the normal rosette weeds found in close mown turf. A tall sward will support flowering plants and include a build-up of thatch in its base. The flowers provide nectar for insects such as bumble bees and butterflies whilst the thatch provides habitat for small mammals and invertebrates.

GROUND FOR IMPROVEMENT

In areas where we have changed our cutting regimes we have been rewarded with success. At one station where there is now a mix of short and tall grass, little owl activity has been recorded for the first time. At another site, where there was a possibility of water vole presence, cutting regimes were altered to maintain some well vegetated ditch margins. Grounds crews have now confirmed their presence.

At Leighton House, Westbury, where there is a collection of mature trees and woodland, changes in maintenance practices have been developed to permit tall grass areas around a small lake to provide cover for nesting ducks, moorhens and coots. Other changes in short grass maintenance now provide meadow areas that act as corridors to and from the lake to secondary woodland, with tall grass along its edge. Following the success of this approach it has now been agreed to plant shrub cover, using suitable species for habitat creation, and increase the area of tall grass around the lake. It is hoped that the extension of tall grass and meadow areas will enhance invertebrate diversity that will, in turn, benefit the wild bird population.

Co-operation between Debut, its supply chain and the establishment exists at DSDA Gosport. We will continue to develop the long-standing conservation practices.

It is important that areas maintained differently from the generally accepted standards of grounds maintenance are not perceived as poor performance on our behalf. This is vital within close proximity to airfields or explosive storage areas, for example, where grounds maintenance has safety implications. It has been possible, through discussions with all stakeholders, to make alterations to the 'green desert approach' without compromising operational requirements and standards. However, we have found that in some locations, to avoid misunderstanding, interpretation signage

will be necessary to inform site staff and personnel of objectives and the reason for changes to grounds maintenance practice.

Short grass can also have its benefits, not only providing worming grounds for birds, badgers and foxes, but in one instance some of our regularly mown areas are within a Site of Nature Conservation Importance (SNCI) because of the presence of dwarf sedge *Carex humilis*. This plant, of smaller stature, thrives in close mown areas within well drained, landscaped ground overlying chalk. At another site the close mown areas of acid grassland are essential feeding habitat for woodlark *Lullula arborea*, a UK Biodiversity Action Plan Priority species.

Arboriculture

Trees are a visually important part of any amenity landscape providing degrees of shelter and shade for site-based personnel, whilst offering important nesting and roost sites for birds, roosting and foraging sites for bats, habitat for small mammals and many other ecological niches. Trees and hedges also form important habitat corridors, which can be integral to the success of other conservation measures adopted within a site.

Trees also make a valuable contribution to carbon storage and a planned approach to tree management and development of tree cover may contribute towards mitigating the carbon production from estate maintenance activities.

Debut, working with their supply chain partner Cannon Horticulture, have developed a survey system for mapping and recording amenity tree stocks using GPS technology and data capture. This will enable individual trees of various age classes, together with tree groups and woodlands, to be recorded and plotted. As this process is rolled out across the region it will provide valuable data on tree management and

the physical and age structure of tree cover on sites. This, in turn, will enable more strategic planning and inform replacement policy. It is hoped that this approach will provide opportunities for using MOD property for carbon offsetting initiatives.

Deadwood is a valuable habitat and resource for various saproxylic invertebrates and birds, but presents safety issues and is often removed as part of routine tree maintenance. However, with Visual Tree Assessment (VTA) and a rational approach to risk assessment, it is possible to safely retain this most important ecological resource within amenity areas.

Where the safety of established mature trees is in question their removal is not taken lightly, especially where they have a particularly high amenity value. The employment of VTA analysis will normally be sufficient to establish the most effective action in terms of preservation of the overall structure of tree cover on site. In cases with particularly high amenity or conservation considerations, modern decay detection techniques are employed to establish the best course of action.

Within RPC SW we have taken the approach to end the distinction between amenity woodlands and forestry on the wider rural estate. All large amenity woodlands will be included within rural estate forestry practices so that they can be managed for their biodiversity, landscape value, timber value and potential non-fossil fuel initiatives derived from their management.

Pesticides

The use of pesticides within amenity areas is confined to weed control to maintain the integrity of hard and paved surfaces, to keep sports and amenity turf fit for function and to ensure safety on operational airfields by deterring unwanted bird activity.

The cost of chemical application is in itself a regulating system to prevent the overuse and unnecessary release of products into the environment; nevertheless we are exploring a more structured approach. On one site, where application of herbicide takes place on, or close to, an SSSI, we are preparing an overall strategy for weed control that will be agreed by all stakeholders and will eventually form part of the conservation management plan for the site.

We have carried out agronomical surveys on two airfields, one with short grass policy and the other with the MOD 'Airfield Long Grass Policy' which is designed to deter unwanted birds from the active areas of the airfield. By taking a scientific approach and gaining a better understanding of the current condition of grasslands we will be better placed to make judgements on turf cultural activities, including methods of pest control.

In one of the trial locations, conservation efforts at the airfield are linked to local initiatives to increase the number of farmland birds. By working with the establishment and external stakeholders it will be possible to bring together our management information and external studies to formulate the most appropriate strategy that we hope will meet operational requirements and wider biodiversity objectives.

Arisings

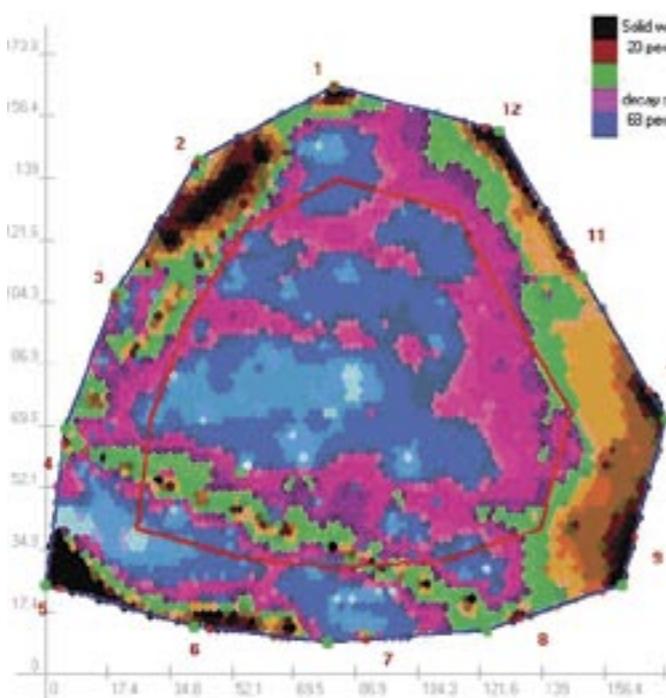
Arisings from grounds maintenance activities are now segregated and organic waste is composted on the bulk of our sites.

In addition, we are monitoring the types and quantities of biomass produced so that judgements can be made on its best use. It is hoped that some arisings may contribute to biomass use solutions that we are currently investigating for materials from rural estate management and forestry activities. To assist in promoting this activity we have formed a small working group comprising Debut, DE and external specialists which is looking at potential projects and trial sites where this may be implemented.

The Future

With RPC SW now entering its third year of a seven year term, it is hoped that it will be possible to build on the maturity of the contract and the trust formed with the Establishments, Defence Estates, Debut and our supply chain to adopt similar schemes on a number of sites across the region. In this way it will be possible to use good environmental practice for grounds maintenance as 'grounds for improvement'.

Doug Smith, Grounds Maintenance and Rural Estate Manager for Debut Services (South West) Ltd



Sonic Tomograph showing areas of decay to determine if the tree needs to be felled for safety



Greater Knapweed, Langport Range



Field Scabious, Langport Range



Mouse-ear-hawkweed, Langport Range



Improving the rivers of mid-Wales

When you look at a map of the area you rapidly realise it's one of the most important areas in the country for rivers.

Every gallon of water from the Sennybridge Training Area (SENTA) on the Epynt hills in mid-Wales flows into a river designated as a Special Area of Conservation (SAC). To the north and east flows the Wye SAC, whilst the Tywi SAC drains the forests of the western edge. The five streams that drain the heart of the range form an integral part of the Usk SAC and are important for a number of its designated species including: brook lamprey *Lampetra planeri*, bullhead *Cottus gobio*, otter *Lutra lutra* and Atlantic salmon *Salmo salar*. They also have small populations of the rapidly disappearing white-clawed crayfish *Austropotamobius pallipes* and water vole *Arvicola terrestris*.

Take a moment to consider the life of the Atlantic salmon: their journey to, and return

from, their distant feeding grounds, is one of nature's greatest migrations. From the moment they leave the safety of the gravel in which they were spawned, their numbers are steadily whittled down by predators, famine and disease so that in the end only around 1 in 2,500 of the emerging fry return to Epynt as adults to spawn successfully.

In the last 20 years there has been a marked change in fortune for salmon across Western Europe. The three SAC's rivers draining the range were, until recently, amongst the most significant salmon rivers in the world. Now, despite recent signs of a recovery, salmon populations remain at a very low ebb. Annual catches are measured in the hundreds, compared to the thousands of only a couple of decades ago. With the exception of a few rivers

recovering from the recent grip of industrial pollution, this decline has been mirrored, to a lesser or greater degree, across the UK. The decline has been caused by a number of factors as diverse as a change in the frequency of storms in the North Atlantic to the Common Agricultural Policy. The wide range of problems means that many are beyond the control of the common man - but that does not mean we should not tackle those that are within our grasp.

Now, thanks to an innovative partnership between the MOD and the Wye and Usk Foundation (WUF), the life of Usk salmon has just been made a little easier. In 2004 the Foundation put together a £0.9m partnership project to enhance the conservation and economic value of the Usk. This was catchily called the Usk Project

and subsequently shortened to UP! At that stage it was not envisaged that one of the many presentations the Foundation gave during the course of the year detailing the Usk Project, would lead to a £40,000+ project to improve the streams on the range. However, subsequently a partnership was set up between SENTA and UP that would use the resources and expertise of the Usk Project, combined with monies from MOD, to improve the condition of the streams on the range. In the course of the work MOD funds would help to bring in over £300,000 of additional funds to be spent on the rivers outside the range.

The Wye and Usk Foundation has been working since 1996 to improve the fortunes of these two famous rivers. During

this time we have used the donations we receive to secure additional funds from a consistent group of partners such as the Environment Agency, Forestry Commission, Countryside Council for Wales and Welsh European Funding office. Through this mechanism we have been building a series of projects totalling almost £4.5m.

The MOD is the largest landowner in the Usk catchment and includes the headwaters of the Bran, Ysgir Fechan, Ysgir Fawr, Cilieni and Honndu - five of the most important Usk tributaries - which together drain the Epynt massif. This puts the MOD in the position of assisting the project's aims of restoring and enhancing the fishery and local economy, whilst at the same time furthering its own conservation plans on the range.

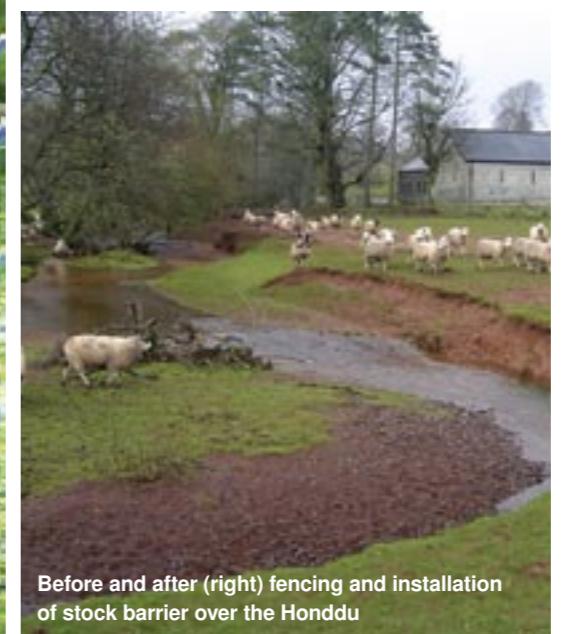
Due to Epynt's altitude and long use as a firing range, it has escaped the ravages of intensive farming, and its semi-natural landscape makes up a relatively unmodified catchment area that supports nationally important populations of many plants and birds. Until last year the streams had not been surveyed and had received little proactive management. Although they are SACs for much of their lengths, it was suspected that they were lagging behind the rest of the range in ecological quality.

The Survey

The Usk tributaries on the Range were surveyed in the winter of 2004. It was good to see that the Cilieni and Upper Ysgir demonstrated excellent semi-natural



Severe stock access on the Honndu prior to work being carried out.



Before and after (right) fencing and installation of stock barrier over the Honndu



riparian habitat - in fact some of the best in the whole Usk catchment. Within the more intensively farmed dry training area, however, the Honddu, Bran and Ysgir were showing symptoms of the all too familiar problems of both over-shading and overgrazing. This was due to a riparian strip of abandoned coppice creating a dense shading regime combined with some heavy sheep grazing.

It was anticipated that these high altitude streams would be nursery areas for the economically important spring salmon stocks, so it was encouraging that during the survey, freshly cut redds (spawning sites) made by large, multi-sea winter salmon were found, together with carcasses. This showed that the populations we were looking to enhance within the UP were present.

Extensive evidence of otters was noted on the Honddu and Cilieni where there was plentiful habitat. The woodlands adjacent to the Ysgir and Bran were sparse with a limited under-story due to heavy grazing. This limited the potential for holts and lying-up points beside these streams. The survey also showed a water vole colony in one of the wetlands adjacent to the Ysgir; as far as we know, the only colony on the range.

Finally, the survey found that the tornado that ripped through the lower Bran valley in the autumn of 2004 had up-rooted and snapped several riparian trees. One large tree had fallen across the river and was at risk of forming a substantial barrier to salmon migration.

The Science

In rivers such as these, habitat determines the numbers of bullheads, trout and juvenile salmon that a stretch of river can support.

Given adequate egg deposition the populations of salmonids are density-dependent: the competition for suitable habitat, and its availability, limits numbers. In general terms you can think of good habitat as good cover with an adequate supply of food.

A well vegetated and undercut bank provides cover from predators and comfort from the main force of the flow. For this reason, banks with overhanging rank grasses are ideal, whilst wide shallow channels formed after heavy grazing usually support low numbers of fish. Well vegetated banks also provide wildlife corridors in the landscape linking discontinuous habitats. Woody debris on the banks and in the channel also provides cover, traps leaves and creates scour areas of deeper water.

Heavy shade from riparian trees not only suppresses the growth of rank grasses degrading the banks, but also limits the productivity of a stream. There is a suite of herbivorous invertebrates that rely on algae for their nutrition and, not surprisingly, heavy shade seriously impacts on their numbers. These invertebrates, both as aquatic nymphs and adult flies, provide food for all ages and types of fish and other larger aquatic and terrestrial invertebrates, birds and bats. They are the principal food source for salmon and trout. The majority of these 'grazing' invertebrates are found on the stones in well-lit riffles. This is because, unlike most pools, riffles have hard, relatively stable beds, suitable for algal growth, provided there is sufficient light.

Pools generally have dynamic, silty beds and their own suite of invertebrates. These live mostly within the sediment and are specialised

towards collecting and eating fine particles. It is beneficial to leave shade over the pools and deeper sections which keep the pool areas cool in the summer allowing higher concentrations of dissolved oxygen. However, the fine sediments in pools are suitable rooting areas for larger aquatic plants, which also provide cover for invertebrates and fish. A 'dappled light' over pools is therefore deemed to be most beneficial.

The Solution

In response to the issues found in the survey, a programme of works was drawn up intending to address the issues, which we hoped would bring the SACs back into favourable condition. This programme commenced in late February 2005 and was completed in June 2005. During this time 4.08km of fencing was erected, 4.28km of river bank selectively coppiced, ten water gates and eight drinking places installed to control stock access, and some of the coppiced timber used to build five otter holts.

Will it succeed? The Foundation has been active for ten years now, and the evidence from elsewhere in the Wye and Usk suggests it will. Although the work is still bedding in, it is starting to look good. The streams are narrowing, deepening and starting to cut down, while the sward is thickening following stock exclusion. The eroding banks are grassing over, and *Ranunculus* sp. patches are appearing where none were before. The expectation is that now, after this year's spawning, the odds for each of the emerging salmon fry will be a little bit better than 1 in 2,500.

Simon Evans, Wye and Usk Foundation

Dead salmon kelt
all photos Simon Evans




**Before and after (right) coppicing
on the banks of the Honddu**



**Before and after (right) Weir removed on the lower
Cilieni, made possible through matched funding**



WATER

a precious resource



Water is a precious resource that we have tended to take for granted. Demand is expected to increase and with the uncertain impact of global warming on rainfall and water patterns it will be essential to conserve this vital resource.

We are getting used to the fact that water levels, particularly in the south of England, are low. Hosepipe bans are in place in some areas to ensure that stocks do not reach critically low

levels. Paradoxically, in times of heavy rain, water levels rise so quickly that rivers overflow their banks and cause widespread flooding with catastrophic results, as seen over the past couple of years at Boscastle, Hawnby and Carlisle.

Drinking water requires energy both for its treatment and to pump it to its destination. If we reduce water consumption we can reduce energy consumption. So one indirect benefit of water conservation is the energy saving related to supply, treatment

and processing for potable water, and reduced waste water disposal costs and less final effluent.

There are many opportunities for water conservation on the defence estate. Project Aquatrine, MOD's water and waste water partnership, is involved with the renewal and leak reduction of the MOD's extensive water and drainage infrastructure systems. Within defence establishments water saving measures and improved metering and monitoring of supply can make a difference.



Abbey Wood fountain
FIRA



Abbey Wood stepped waterfall
FIRA



Project Aquatrine

Reducing use of water

Reducing our use of water makes good financial as well as environmental sense. Special valves can restrict flow at particular consumption points, such as showers or urinals, resulting in substantial savings. Water saving devices are relatively cheap and easy to install, with a quick return on the money invested. Under Sustainable Operations on the Government Estate the MOD has a target to reduce water consumption by 25% by 2020 relative to 2004-5 levels. An additional spur is that water conservation measures in building design or refurbishment gain credits under the environmental appraisal processes.

Rainwater collection and greywater recycling

With excessive abstraction endangering water resources alternating with increasingly heavy flooding, one practical way to provide the twin benefits of reducing water demand whilst also preventing increased run-off, is to harvest rainfall. By installing relatively straightforward collection and treatment systems, we can use rainwater to flush toilets and irrigate plants. "Greywater" is defined as usable water processed from waste water from baths, showers, washing machines, and wash-hand basins. Greywater can be used for non potable purposes such as flushing toilets, so this recycled use means that less water goes down the drains, offering potential financial advantages to regional sewage treatment facilities.

Draining away in a sustainable way

The UK has experienced devastating floods throughout the last five years, which have affected thousands of people and caused millions of pounds worth of damage.

Traditionally, surface water has been drained away in pipes for treatment prior to discharge into water bodies. However, the consequence of building and paving over our permeable green areas results in increased run-off altering existing flow patterns leading to severe flooding and erosion risk.

Sustainable Urban Drainage Systems (SUDS) is the term used to describe the sustainable technologies designed to avoid these problems. SUDS reduce infrastructure capital and maintenance costs, flood risk, and provide enhanced opportunities for pollution control.

The following case studies illustrate some of the ways in which the MOD is acting to minimise water usage and conserve this precious resource.

Aquatrine

The Aquatrine arrangements covering the whole of Great Britain are a response to concerns raised by the National Audit Office (NAO) in 1997 about the MOD's management of its utilities. Aquatrine is designed to remove MOD's direct responsibility for water and wastewater service provision and transfer a wide range of risks, including leakage, to leading private sector water companies. These companies have expertise and experience that can benefit MOD and the environment. This approach needs improved monitoring and measurement.

The main focus of the measurement arrangements is to enable MOD to be billed accurately for the volume of water consumed after the leakage during supply has been deducted. The transfer of risk is a major driver to reduce leakage, as leakage levels have a direct cost impact on the Aquatrine Service Providers.

The contract is in three 'packages'. In package 'A' covering the Midlands, Wales and the South West, the Aquatrine partner is BREY Utilities. They have adopted a sophisticated measurement process and industry standard including statistical analysis and telemetry which provides sound consumption data to the required accuracy. The information gained from this approach will identify where MOD is unnecessarily over-using or losing water.

HMS Drake in Portsmouth has seen leakage reduced by around 350,000 m³ per year and RAF St Athan has benefited from leakage detection work that has shown that there is significant wastage from leaking overflows, continually running urinal toilets and other practices where water is allowed to run to waste.

Measuring consumption – how does it work?

Stage One for BREY was to identify all water supply points feeding the distribution system, install additional meters as necessary and measure actual flows onto each site. Stage Two was to install flow devices to record the pattern of water usage on major sites to distinguish between water being consumed by the site from losses in the distribution network.



As part of Stage Two, it was essential to understand when water was being used, and obtain data to estimate the usage in various parts of the network that were not separately metered. This involved gathering data for married quarters, barracks and operational buildings and the quantities of water used by MOD operational activities.

BREY and MOD are benefiting from knowledge-sharing, which should result in further reductions in leakage from the underground distribution system and opportunities for reductions in the use of water on site. More attention can be focussed on water recycling and re-use, and the abstraction where appropriate of non-potable water, all of which will positively contribute to the drive for environmental sustainability.

The outcome will be significant improvements to the MOD's consumption of this precious resource and a positive contribution to the sustainable management of the Defence estate. (Thanks to Aquatrine IPT and BREY Utilities).

Royal Naval HQ – Sir Henry Leach Building, Portsmouth

The flat roof of the new Naval HQ is designed to drain rainwater into a storage tank which can provide approximately 20% of the water needed for the building's toilets. Water is filtered, collected and pumped into a pressurised pipeline which passes through an ultra-violet treatment unit. The water goes through the building in a separate piped system that only serves the WCs. In case of drought, the system can be topped up with mains water. Similarly, if there is excess rainfall, the system is fitted with an overflow. (Thanks to Pick Everard and Capita Percy Thomas).

Project Allenby Connaught (PAC)

PAC incorporates three excellent water conservation measures: water monitoring and efficiency measures including leakage reduction, rainwater harvesting systems, and SUDS. To identify poor performing buildings 800 water meters are linked via sophisticated software to a central database. To avoid the bad practices of the past when losses could go



Entrance elevation of Sir Henry Leach Building

Crown copyright

unnoticed for long periods, water leakage from pipe-work can now be automatically identified. Ian Flindall, Aspire's Utility Monitoring Manager, says: "Metering will allow us to measure, and measuring will allow us to manage. This will help us understand the balance between supply and use, allowing Aspire to drive down losses and to drive up efficiency." (Thanks to Aspire and Jon Mason, DE Ops South).

Reed Ponds

The construction of ponds and planting to create native marginal reed beds creates a natural means of cleaning contaminants in rainwater run-off as well as providing an ecological benefit and visual landscape feature in the heart of new Defence developments.

Abbey Wood
FIRA



In addition "swales" (grassy depressions in the ground) and soak-away features as part of Sustainable Urban Drainage Systems (SUDS), help to control peak levels of water during high rainfall events.

The illustration of DLO Andover at the head of the article is from recent Defence construction projects where SUDS is integral to the project Master Plan.

Green Roofs

Green roofs have a top layer of vegetation, usually a sedum species, on top of an existing impermeable roof. Sedums are low-growing succulents - plants with thick fleshy leaves and stems - which makes them particularly suitable for growing in the inhospitable conditions found on a roof. Benefits include high water retention, the reduction of drainage into sewers, absorption of greenhouse gasses, pollution and dust, a habitat for animals and plants, additional insulation and reduced noise levels.

Tony Whitehead, DE Construction and Built Environment Team Estate Strategy and Policy Directorate, with thanks to Peter Caddock, Environmental Manager, Aspire Defence, and Ian Flindall, Utilities Monitoring Manager, Aspire Defence

Every year, English Heritage's National Mapping Programme (NMP) identifies thousands of previously unrecognised features dating from the beginning of the Neolithic (circa 4,000 BC) to the twentieth century through the study of both new photography and historic collections. The latter features photographs from a wide variety of sources, including thousands of RAF photographs taken over England from the 1920s onwards.

Those first photographs, dating probably from late September 1906, were taken by 2nd Lt Philip Henry Sharpe of the Royal Engineers balloon section. The reasons why he chose to photograph Stonehenge from the air are unclear – no documentation survives – but as the officer in charge of photography within the section, the tasks laid out for him by his commanding officer provide a few clues. For example, he was required to take distant (oblique) views of particular targets in order to find out how much detail could be seen both on the original print, and on any enlargement. He was also to take overhead (vertical) views of targets and compare the photographs with existing mapping, in order to evaluate the potential of vertical aerial photography as a tool for producing maps. Stonehenge would clearly have been an attractive subject, particularly as Sharpe was at the nearby Bulford Camp at the time. Indeed, there may have been no military purpose to the photographs at all – he may simply have found the idea of photographing Stonehenge from the air too hard to resist.

Sharpe's balloon would, as was usually the case, have been tethered – their reconnaissance value was minimal once they were let go. The three surviving photographs suggest that his balloon was tethered a short distance southwest of Stonehenge, and allowed to drift with the breeze until directly overhead. The photographs were exhibited on 6 December 1906 at the Society of Antiquaries in London by Sharpe's commanding officer, Colonel John Edward Capper, and two of them were published the following year in the Society's journal *Archaeologia*, accompanied by the briefest of notes.

Researching the background to these photographs in advance of a planned exhibition and book on the history of aerial photography has led to a lengthy trawl through the surviving archives, as well as a search for any more existing aerial views from Victorian and Edwardian Britain. The first aerial photographs ever were taken over

the outskirts of Paris in 1858, and the first in Britain over London in 1863. Most civilian aerial photography belongs to the period after 1888, the year that the first Kodak appeared, making the art of photography more accessible. Military aerial photography, on the other hand, followed a more uneven path.

Although airborne military reconnaissance began in post-revolutionary France, it was not until 1878 that the British Army paid for its first balloon. The balloonists, part of the Royal Engineers, were initially based at Woolwich, before moving to Chatham, Aldershot, and finally Farnborough, the last move occurring over a protracted period around 1905-07. The use of aerial photography for reconnaissance purposes had been considered from the outset, but practical difficulties especially in the field meant that written notes, annotated maps, sketches, signal flags and megaphones generally took priority. When under fire, waiting at least half an hour for a print to be developed was not considered ideal.

Until 1905, photography appears to have been left to interested individuals, who often had to dip into their own pockets to pay for their experiments. One such individual was Henry Elsdale, who came to the balloon section as a Captain in 1880 and left as a Major in 1887. While in Gibraltar and Nova Scotia in 1881-3, he experimented with unmanned balloons and an automatic camera of his own devising. The camera was capable of being operated from the ground, via a wire, or could take a succession of images at pre-set intervals. Elsdale, who had previously served for seven years in the Ordnance Survey - then still part of the Royal Engineers - hoped to prove that mapping from vertical aerial photographs could save the Ordnance Survey a great deal of time and effort. However, he was to be disappointed – the Ordnance Survey saw no future in the idea of mapping from aerial photographs.

As far as warfare is concerned, the balloonists saw little real action during the lifetime of the section. There were a few brief visits to parts of Africa, India and China, for example, but their only long-term involvement in military conflict occurred during the first part of the Boer War. Their participation came to a premature end around mid-1900: once the War moved into its guerrilla phase, both the terrain and the nature of the conflict proved unsuitable for balloon reconnaissance. Few aerial photographs survive from the Boer War, and of those that do, most appear to have been taken either by, or for, the press.

Of no earthly use

military aerial photography and archaeology

The 100th anniversary of Britain's first aerial photograph of an archaeological monument occurs this year. Today, aerial photography and interpretative mapping represents one of archaeology's principal means of discovering and recording new sites.



A Royal Engineers' balloon in front of Tedworth House, Tidworth, Wiltshire in 1905. This gives a good idea of the number of men necessary to get one of the balloons up in the air, and down again. Credit: Frank Willmott/Nicholas Willmott.



Two overhead views of Stonehenge taken 100 years apart.
Left: Lt Sharpe's photograph from a tethered balloon.
Society of Antiquaries/
Lt PH Sharpe, RE
Right: a similar view from the window of a Cessna taken by Damian Grady of English Heritage
English Heritage/Damian Grady – NMR 24182/03. © English Heritage/NMR

Most of the few surviving aerial photographs taken by the Royal Engineers' balloonists are views of training exercises, manoeuvres, and military camps. The search continues for further examples, but those already located show their potential for those interested in such aspects of military history. The Stonehenge photographs – a distinctly unmilitary target – are so far unique.

There is a considerable contrast between the surviving military and civilian aerial photographs. For example, the latter tended to use 'free' rather than captive balloons and the range of subject matter is more varied, though there is a tendency towards urban scenes, particularly of London, reflecting the areas where most balloon flights were taking place. In addition, while the military experimented with both vertical and oblique photography, the civilian views are almost entirely oblique – i.e. they were simply pointing their cameras at anything that took their fancy. There was no interest in scaling and mapping the results.

Curiously, though, there appear to be no civilian aerial views of archaeological monuments prior to WWI. This may reflect a lack of knowledge on the part of most balloonists – few are likely to have known the significance of any earthworks they saw, while cropmarks were not really understood until the 1920s. However, it still seems remarkable that only one attempt by a civilian to photograph an archaeological monument from a balloon has come to light.

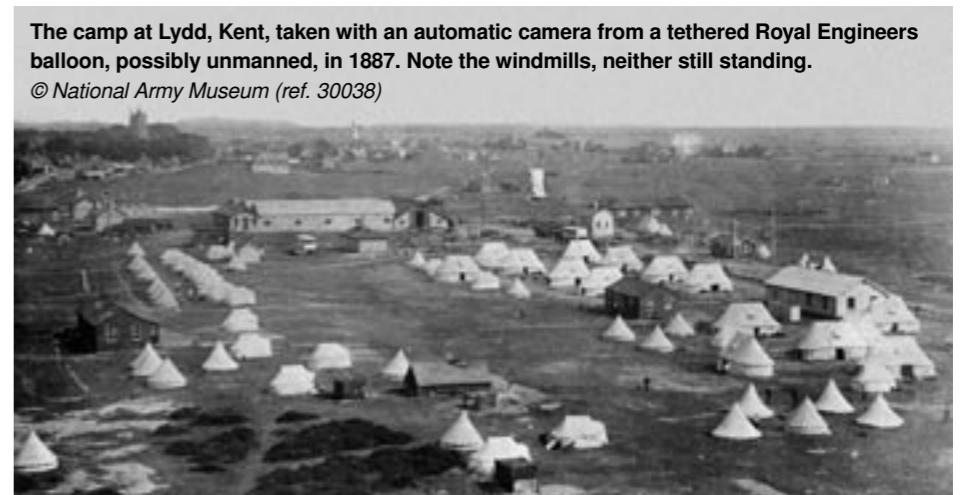
The Reverend John Mackenzie Bacon was the sort of gentleman that seems to have existed solely within the Victorian era. With his Church of England background, his scientific leanings and a thirst for the kinds of knowledge that were never going to lead him anywhere of lasting value, his eccentricities and exploits provide considerable entertainment today. For the historian of aerial photography, he is a key figure because between 1888 and his death in 1904, he undertook dozens of balloon flights and always took a camera with him.

In 1900, having followed the sieges of Ladysmith and Mafeking in the pages of the daily newspapers, he decided to test the possibilities of using balloons as a platform for passing messages (presumably unaware of the Royal Engineers' own efforts). He took his balloon on a course that would carry him over Salisbury Plain, and alerted the soldiers in the camps below to his presence by letting off explosive charges. He was unable to decipher their response, which was



An aerial view of Casterley Camp, Salisbury Plain, Wiltshire. The 'camp', in the centre, is the largest hillfort on Salisbury Plain. Within the interior, visible as cropmarks, are traces of what may be an Iron Age or Roman ritual enclosure. The buried archaeological features affect the growth of the crop, in this case by providing a greater depth of soil. In the ploughed field beyond, traces of a later prehistoric field system can be seen, the almost levelled banks and ditches providing a contrast in colours with the general background.
English Heritage/Damian Grady – NMR 18229/02, © Crown Copyright.NMR

The camp at Lydd, Kent, taken with an automatic camera from a tethered Royal Engineers balloon, possibly unmanned, in 1887. Note the windmills, neither still standing.
© National Army Museum (ref. 30038)



probably just as well, but then realised the balloon was drifting towards Stonehenge. Late in the day, nearly a mile high and with the sun masked by cloud, he claimed that his camera was "unable to distinguish" the stones from the dry grassland that surrounded them. It remains unclear whether he was disappointed with the view through the camera, or with a resulting print, but until we can find his photographs (if they survive), Lt Sharpe retains first place in the annals of archaeological aerial photography.

It is not possible to credit Sharpe with directly inspiring the growth and development of aerial photograph within archaeology. The real stimulus came from the experiences of the First World War, as pilots, observers, and mapping staff with an interest in archaeology realised how the photographic techniques and interpretative mapping that became so invaluable to the war effort could be put to the benefit of archaeological survey after the war. The key figure here was O.G.S. Crawford, who was involved with army mapping from aerial photographs as early as 1915, and during 1917-18 served as an RFC observer. After the war, he became the Ordnance Survey's first archaeological officer, and immediately turned to the RAF's growing collection of aerial photographs in his search for previously unrecognised antiquities. The 1920s and 1930s saw the pioneering phase of archaeological aerial photography – most of those involved were either former or serving RAF pilots, and their contribution is impossible to overestimate.

RAF photography itself continues to be of value to the archaeologist and the historian. The numerous training flights undertaken during the war, plus the blanket coverage of the UK produced during the later 1940s represents an invaluable resource. Although clearly not taken for

archaeological purposes, this photography managed to capture otherwise unknown archaeological sites, including many that have since been destroyed, as well as large swathes of historic landscape that have undergone considerable change over subsequent decades. In addition, England's own wartime landscapes are of considerable interest to the expert and the general public alike, and the range of military activity, from transient defences such as barbed wire fencing, to more substantial buildings and installations, can be seen, mapped and interpreted from this photography.

A recent mapping project focused on the Suffolk coast produced fascinating results from close study of the 1940s RAF cover now housed at the National Monuments Record in Swindon. This all seems a far cry from the days when one of Lt Sharpe's ballooning contemporaries noted that few in the army held aerial reconnaissance in general, and ballooning in particular, in any high regard: "Of no earthly use", he wrote.

**Martyn Barber, Aerial Survey,
English Heritage**

A book on the history of aerial photography, 'Mata Hari's Glass Eye and other stories', was published by English Heritage in September. The accompanying exhibition was launched at Stonehenge in early August, before travelling around a number of venues including Devizes, Salisbury, Aldershot Military Museum and the Royal Engineers Museum. Please see the English Heritage website www.english-heritage.org.uk for more details.

In addition, a book on Suffolk's coastal defences as revealed by aerial photographs, 'Suffolk's Defended Shore', was published in the summer of 2006, also by English Heritage.



The barrows and burrows of Silk Hill

The rabbit holes have been filled with chalk, the mesh applied, and there is good evidence of the regeneration of ground cover
Richard Norris

Silk Hill in Wiltshire is the site of one of the most important Bronze Age round barrow cemeteries in the country. It lies some 8 km from Stonehenge on the Army Training Estate of Salisbury Plain. The features have survived 4,000 years in the English landscape and comprise of several types of burial mound, including bell barrows, disc barrows and pond barrows.

These burial mounds were, for the most part, explored in the nineteenth and twentieth centuries to examine their contents. Finds varied from a primary cremation with bronze dagger, two whetstones and pin, to a small urn with a cremation, a bone ornament, a long piece of flint and a fragment of iron pyrites. Round barrows were places of burial and veneration. Although there are notable exceptions on Salisbury Plain, they are frequently located on the crests of hills or on false-crests and, as such, were clearly monuments that were made to be highly visible, made to be seen by local societies to remind them of the ancestors and, presumably, of territories.

Over the years these barrows have been incorporated into the layout of practice trenches or within the ditches of hillforts, tracked over by tanks, and cut into by early investigations as mentioned above. Yet the monument profiles remain largely intact. However, they are now under threat from a small yet highly-damaging opponent: rabbits.

Recent archaeological work at a site at Lynford in Norfolk seems to indicate that rabbits have been in the British Isles from the early Roman period. On this site, butchered rabbit bones were found in association with early Roman pottery. Damage to archaeological features by rabbits is not a new phenomenon but, in recent years, the scale of this has increased. Large holes have been created through the barrows and if left without intervention, the burrowing activities of these animals would ensure that the monuments would soon more closely resemble the set of Watership Down than elements of the magical prehistoric landscape they currently are.

To this end, Defence Estates and the Bulford Conservation Group have mustered forces to protect these features. With the close co-operation of English Heritage and Wiltshire County Council, a number of barrows have been draped with a series of meshes to prevent rabbits entering the monuments. We have examined different products to evaluate both the efficacy of the product in covering the monument and keeping the rabbits out, and also to find a cost-effective solution to a widespread problem. The results will hopefully be made available to other bodies trying to protect valuable archaeological sites from Hadrian's Wall to Glastonbury Tor.

The initial phase of the project was to undertake a geophysical survey of the area – to establish whether there were traces of other monuments no longer visible on the surface yet still traceable in spite of the site lying in the template of the rifle ranges and its associated

detritus. These results proved inconclusive – there was too much material (or ‘noise’ as the surveyors refer to it) within the soil to be sure, with the possibility of only one further barrow being traced.

There then followed the main period of site work, all of which had to be accomplished during hours when the Bulford Rifle Ranges were not ‘live’. Following the survey in early spring, contractors removed any covering scrub and then filled the old holes on the site with locally-sourced chalk – meeting the requirements of the SSSI status of the herb-rich chalk grassland. This was brought to site with the assistance of the Royal Engineers, thus ensuring as wide a participation in the conservation project as possible.

With their chalk covering, some of the barrows appeared almost as white as they would have been when first created – a time when they acted as important visual markers on the Plain. The monuments were then covered. Various wires and meshes were trialled giving the whole site a strange appearance with some mounds looking as though they were gossamer-covered, others resembling old black waste heaps from a now-redundant colliery. Soon the barrows were once again covered with grass and vegetation with their protection measures scarcely visible. There then began the process of close monitoring, a task in which the Conservation Group has helped.

Within weeks it became clear that one of the plastic mesh types, Enkamat, although easy to drape over the monument, was next to useless at its primary function – keeping the rabbits out of the

barrows: all three of its variants were chewed through. Despite re-covering the barrows, the rabbits soon returned. Six months later the final plastic example Netlon, was breached, leaving us solely with the meshing composed of wire. Happily the rabbit mesh and chain-link variants have held and are proving most effective. All the barrows and their protection measures are being closely monitored by visits from Defence Estates, English Heritage, the County Archaeologist and Conservation Group members.

We shall explore the options of purchasing plastic coated variants of this wire to continue the trial over further monuments as this should increase the life span of the wires whilst also preventing metal traces being left in the soil. With the results of this project we will have physical evidence for the best method of protection for barrows and thus be able to extend the measures for other areas of the Plain. Through these methodologies barrows should be protected for some time into the future - not providing accommodation for rabbits...

“As she said this, she came upon a neat little house, on the door of which was a bright brass plate with the name ‘W. RABBIT’ engraved upon it. She went in without knocking, and hurried upstairs”. Alice’s Adventures in Wonderland, Lewis Carroll

Richard Osgood
Environmental Adviser (Archaeology)

Showing the barrows in situ, with almost complete regeneration of vegetation
Sarah-Lynn McCullum



Orthophotograph of Scordale
English Heritage



Viewing the 3-dimensional
images of the Scordale Valley
P Bryan, English Heritage

Lead Mines and Stone Beasts



3-D Image of Scordale
English Heritage

General view of Scordale and the former lead mine workings
P Abramson

Ancient Lead Mines

In April 2005 a group of archaeologists from Defence Estates, English Heritage and Cumbria County Council carried out a site reconnaissance of the Scordale lead mining complex on the Warcop Army Training Area. Situated in one of the most remote and rugged parts of the training area, the lead working remains of this nationally important monument extend for 3 km along the steep slopes of the Scordale valley. Included within the area are spoil tips, mine shafts, trackways and the remains of processing buildings.

Identifying the correct method of recording an archaeological monument is not as straightforward as it might at first appear; traditional tape and theodolite surveys have been largely superseded by Global Positioning System (GPS) or laser scanning techniques. Finding the right survey method that takes into account the size, nature and complexity of a site is crucially important as the survey methodology will determine the accuracy, time and ultimately, cost, of the resulting survey. With respect to Scordale, the enormous extent and complexity of the site, the inhospitable terrain, and not least the urgency of the situation, all called for a multi-agency approach to making decisions on the best survey method.

Aware of the MOD commitment to implementing best practice on the rural estate, and mindful of the potential challenges for the future management of the monument, Clare Louise Hetherington, the Warcop Land Agent, and Phil Abramson, Archaeology Advisor, invited archaeologists from stakeholder organisations on a site inspection to identify the features which

were most at-risk and assess how best to record them before they were washed away and lost forever. The site is a scheduled monument and the working partnership of Defence Estates and English Heritage meets the objectives identified in the Strategy for the Defence Estate of seeking to influence, develop and implement best practice on the rural estate and maintaining relationships with stakeholder bodies to build confidence and trust.

During the first recce of the site in April 2005 one sharp-eyed member of the team pointed to a stone embedded in the ground in one of the lead ore processing areas. What had attracted Mick Clowes' attention were some unusual markings on the face of an otherwise unremarkable flat stone. Whether the markings were natural or engraved was the subject of some on-site debate, although everyone agreed that because the stone was vulnerable to being swept downstream it should be removed for further study.

As a result of pooling ideas, an aerial photographic survey was commissioned to provide a high resolution record of the full extent of the Scordale workings, along with other parts of the training area. The outcome of this survey was the production of an orthophoto, which is a true to scale air-photo, of the whole of the Scordale valley. The orthophoto is, essentially, an extremely accurate digital map - Professor Stuart Lane of Durham University Department of Geography, working at Scordale, recently described this type of visual mapping as 'the gold standard'. The high resolution orthophoto was demonstrated by English Heritage photogrammetry staff at a workshop seminar held at Warcop HQ, as were some very impressive 'mind-boggling' 3-dimensional views of the valley.

The next step forward should be to undertake an emergency survey of those archaeological structures and features most at risk from the erosion caused by Scordale Beck. This would involve using the orthophoto to generate a background topographic context of the threatened areas, supported by a detailed and highly accurate ground survey by a team of specialists.

DTE Warcop is intensively used and opportunities to enter the training area for several consecutive days for the purpose of archaeological recording are few and far between. One such opportunity arose in early July 2006. It is hoped that the survey will provide the data we need in the time available.

The stone beast

During the first recce of the site in April 2005 one sharp-eyed member of the team pointed to a stone embedded in the ground in one of the lead ore processing areas. What had attracted Mick Clowes' attention were some unusual markings on the face of an otherwise unremarkable flat stone. Whether the markings were natural or engraved was the subject of some on-site debate, although everyone agreed that because the stone was vulnerable to being swept downstream it should be removed for further study.

Back at Warcop HQ and the DE Catterick office the carving caused quite a stir... Archaeologists and non-archaeologists alike studied the motifs, knowingly nodded their heads and offered their best guesses of the day. Their opinions included natural formations in the stone, fossilised worm casts and artificial engraving - all of which are perfectly valid - but not all of which could be right!

To solve the dilemma a laser scan of the stone was created and photographs of the carving distributed to specialists. They agreed that the markings were artificial and had been intentionally engraved into the stone. Beyond this, however, there was little unanimity. One interpretation was that the engravings represented a rear leg and tail of a beast, below which was another tail plus one and a half back legs. A second interpretation was that the upper engraving was the lower half of a human figure. Yet a third pointed to the similarity of the upper engraving to the head of a mythological creature depicted in Pictish carvings and often referred to as the 'swimming elephant'.

The Picts settled in what is now eastern Scotland in the early historic period and produced abstract and naturalistic designs engraved into rocks between the seventh and tenth centuries AD. However, in keeping with the Cumbrian location of the stone, there is also the possibility of late Viking influence - which could extend its date into the eleventh century. It has even been suggested that the carving may be Romano-British, pushing back its origin to the first four centuries AD.

So, where does this leave us, several months after the discovery of the 'Scordale Stone'? There is agreement that the markings are artificial and unusual. The engraving is possibly a human figure or possibly a beast. It could possibly

date between the first and eleventh centuries and the style is possibly Roman, Pictish or Viking... possibly!

This is not a lot to go on - but it does perhaps demonstrate the difficulty experts face when providing an interpretation based on the most fragmentary of evidence. But there can be no doubt that the Scordale Stone offers several challenges to archaeologists: What are the engravings actually representations of? Are there parallel examples elsewhere in the region? Why has a carved stone which might be fifteen hundred years old (give or take a few hundred years) turned up in eighteenth and nineteenth century lead mining remains? And finally... If it is a Pictish image engraved in eastern Scotland, what is it doing in north-west England?

These are difficult questions to answer and more research will be required before adequate answers become available. Meanwhile, if readers have any helpful suggestions...

Philip Abramson, Archaeology Advisor, Environmental Support Team, DE

Thanks to Stewart Ainsworth, Professor Richard Bailey, Paul Bryan, Alistair Carty, Mick Clowes, Andrew Davison, Chris Dunn, Dr Richard Hall, Caroline Hardie-Hammond, Clare Louise Hetherington, Dave McLeod, Richard Newman and Chris Rigby.

left: A Laser Scan of the Carved Stone (courtesy of Archaeoptics Ltd)
A Carty

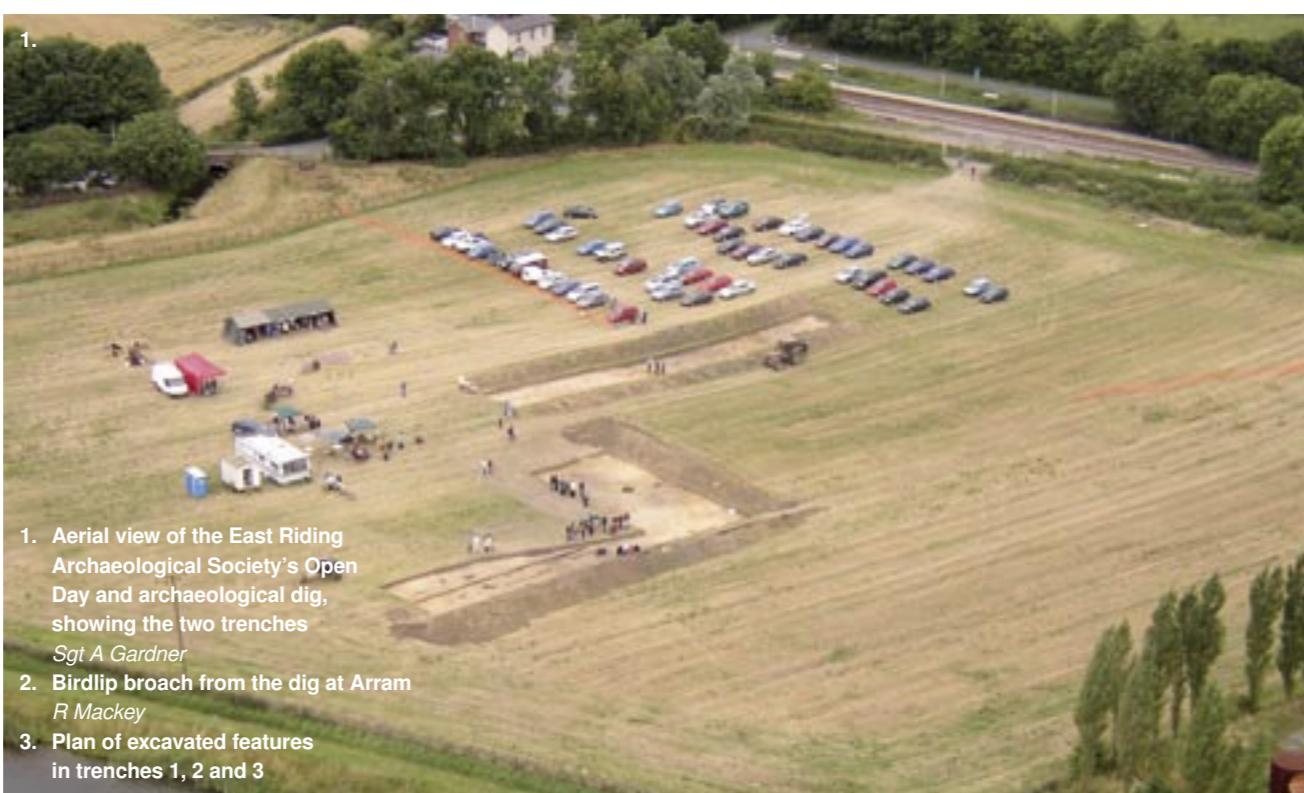
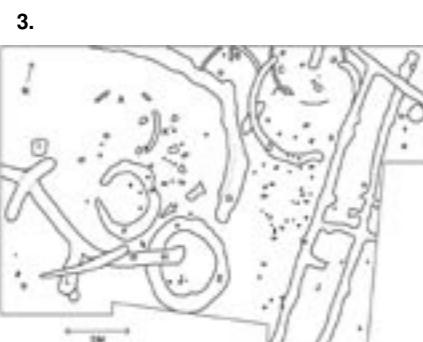
below: The Carved Stone in situ
P Abramson



Iron Age Cornfields and Beehive Querns



A Junior dig underway!
A Bakewell



1. Aerial view of the East Riding Archaeological Society's Open Day and archaeological dig, showing the two trenches
Sgt A Gardner
2. Birdlip broach from the dig at Arram
R Mackey
3. Plan of excavated features in trenches 1, 2 and 3

The Iron Age Cornfield project evolved from the relatively straight-forward idea of creating semi-arable plots to benefit overwintering birds, to the establishment of an old-fashioned cornfield with cornflowers and poppies, to the final plan to re-create an Iron Age cornfield using traditional grain.

This idea, suggested by Darren Williamson our Archaeology member, was prompted by ERAS's on-going investigation into an Iron Age and Romano-British settlement located just a few metres from our site in the village of Arram. The land is owned by Fiona and Ian Wilson

who are also members of ERAS, and a new dig was planned for July 2005.

Much research was undertaken to find out which crops might typically have been cultivated at this time, culminating in Professor Mike Ambrose, of the John Innes Centre at Norwich, kindly agreeing to send me, free of charge, samples of all three known Iron Age crops: spelt *Triticum spelta*, emmer *T. dicoccum*, and einkorn *T. monococcum*. He also provided invaluable guidance on when and how to sow the seed.

Once the samples had been received I contacted Fiona and Ian about our plans and they were delighted to set up a joint project,

The Iron Age Cornfield project is a joint project between the Leconfield Carrs conservation group at the Defence School of Transport, and the East Riding Archaeological Society (ERAS)

especially as they had uncovered several querns on the site – stone hand mills used to grind corn – and agreed that once enough grain was grown we could use the stones to make flour for Iron Age bread and mead.

In order to publicise the joint projects an ERAS Open Day was planned for 24 July when it would form part of Channel 4's Time Team "Big Roman Dig". Work commenced in July 2005 on two large trenches, one partially cutting into the previous year's excavation to further examine features already discovered.

We agreed to advertise both projects and provide assistance with the Open Day on their site. This included dressing up in authentic Iron Age costumes acquired from the Museum of Culture in York, augmented with items made by the Royal Electrical and Mechanical Engineer Workshop!

Assisted by committee member Mick Bassett, his wife Sandie, their son Jason and several ERAS members, we proceeded to put up three, linked, "twelve by twelve" tents which provided ideal cover for all the presentation screens and displays.

Reinforcing the Iron Age theme, ERAS set up a wattle and daub making stand, a geophysics demonstration, pottery washing, soil sieving, a pottery making demonstration and a pottery sorting game. A couple, dressed in Roman civilian costume, cooked typical Roman dishes including pigeon and snails. Members of ERAS demonstrated the use of the quern stones, and gave talks on how work in the trenches was proceeding.

Although the weather was a little on the cool side the day was a huge success, with more than 500 visitors to the site. Fiona had put together an impressive display of finds and information, including a whole

section dedicated to MOD conservation and archaeology on the Defence Estate, together with a write-up about our joint project.

Sergeant Andy Gardner from E Flight 202 Squadron RAF, who operates the Search and Rescue Sea King Helicopters from our site, had kindly agreed to take aerial photographs during the dig and on the Open Day, and Fiona posted them onto the "Big Roman Dig" website, along with a note of thanks to our conservation group.

The dig at Arram continued into October: finds include a small, fragmented, (probable) annular brooch, a brooch pin, a second century blue, enamelled copper-alloy disc brooch and a near complete Birdlip brooch. The Birdlip-type is a prominent group firmly distributed in the east of England, but its presence in East Yorkshire represents the first north of the Humber. Three pieces of jewellery were recorded from the 2005 excavations: half a small jet finger/toe ring, half a clear glass bead and fragments of two white glass bangles thought to occur from the first and second centuries. The stone artefacts from Arram include twelve fragments of beehive quern, including one upper stone and two bases that were nearly complete.

Leconfield Carrs conservation group had been a runner-up for the Sanctuary Award in 2003 for its multi-faceted approach to tackling different conservation issues, and the committee now agreed to use the bulk of monies received from this award to help fund soil analysis to identify any traces of crops typically grown at this time.

Six soil samples taken from various parts and levels of the dig were labelled and taken to Phil Abramson DE, the Environmental Advisor (Archaeology) at Catterick Garrison who forwarded them to Dr Charlotte O'Brien

at the University of Durham. Three samples were paid for by ERAS with the other three from our award monies.

Plant macrofossil assessments were carried out between 12 and 15 December 2005, and the report was received shortly afterwards. Charred plant remains were found in three of the six samples, with cereal assemblage indicating that barley and wheat were being used at the site. One sample also comprised four spelt glume bases and two spelt/emmer glume bases. Both emmer and spelt were cultivated in northern England at Iron Age and Romano-British settlements and there is evidence that spelt was the favoured wheat in the south of the region. Dr O'Brien also indicated that the presence of chaff suggested that at least some crop processing occurred at the site.

The project plans for 2006 are to monitor the continued growth of the three crop samples which will be planted out by Alan Maskell, our Training Area Supervisor, into a protected area until mature. We will prepare an area for sowing the bulk of the remainder of the seed, putting into practice lessons learned from the samples. Since *T. spelta* was shown to be most evidently grown on the site, we can focus most of our bread making and mead brewing on this variety, although we will continue with the other types as well. ERAS have offered a free geo-physical survey of the part of our site nearest to the Arram dig to see if the settlement extends onto MOD land.

Last, but not least, will be preparations and plans for the next open day - which promises to be bigger and better than 2005.

**Alan Bakewell, Contract Manager,
Defence School of Transport**



Iron Age rural crafts display during Open Day
A Bakewell



Demonstrating how quern stones were used to grind corn
A Bakewell



Holcombe

New research by archaeologists has revealed an historic landscape hidden on a north country army training range. The Holcombe Moor Army Training Area north of Manchester occupies 750 acres (303 hectares) of freehold land in the rugged countryside around Ramsbottom, Greenmount and Hawkshaw. The Training Camp was built in the 1940s and is now an all-year-round training camp for TA and cadet training (mainly at weekends), and regular army units doing low-level tactical training and live firing.

An exciting project, initiated by the Holcombe Moor Heritage Group and funded by the MOD, has examined all of the historic boundaries on the training area in an attempt to discover how the landscape has gradually altered over a long period of time. Members of the local

community, working with professional archaeologists, have been inducted into the dark arts of archive studies, field survey and archaeological interpretation. In doing so they have developed an appetite for finding ways to convey the history of their area to a wider audience.

The idea of setting up the Holcombe Moor Heritage Group was born during a Holcombe Moor Training Area Conservation Group meeting in 2005. Building on the expertise and experiences of the Conservation Group archaeologist Robina McNeil, representatives of local societies and residents living close to the training area were asked if they would be interested in forming a Steering Group for the study of the archaeology in the area. The response was positive and in April 2005 the inaugural meeting of the Holcombe Moor Heritage Group was held, not on the Holcombe

Moor base as all the buildings were being refurbished, but in nearby Hawkshaw village in the Wagon and Horses pub. It must be said at this early stage that without the hard work, commitment and enthusiasm of the Holcombe Moor Heritage Group this article would never have been written.

Several members of the group had been researching the history of Holcombe for many years and the idea of undertaking an Historic Boundary Survey of the training area was seen as an opportunity to compare the documentary evidence with the archaeological evidence on the ground. The patchwork of stone field boundaries and hedges on the training area are as much a part and parcel of our landscape as the farmsteads they enclose, but there are some interesting and fundamental questions which needed to be addressed: How old are they? What condition are they in? Are they on

maps? Have they moved over the years? Can they tell us anything about the development of the landscape? And most importantly of all... walls don't build themselves, so what can they tell us about the people of Holcombe and the surrounding area?

There's already an indication that the area has an interesting past: a study of microscopic ancient pollen grains which survive in the nearby upland peat deposits, suggest that at one time the whole area was wooded, with the possible exception of the exposed summit of Bull Hill at the northern end of the training area. From about 3,000 BC onwards farmers felled trees and gradually opened up the landscape to create clearances for crops and animal grazing. Early settlers lived and died in the area leaving a rich and varied archaeological legacy of burial mounds, defended settlements, forts and roads. In the early medieval period the only clear evidence for settlement comes from place names. The training area lies in the township of Tottington, otherwise referred to as Totinton in 1212 and Tottington in 1233 and is thought to derive from the Old English meaning 'the Hamlet belonging to Totta'.

The boundary survey project started in the winter of 2005 and the first task was to search local and regional archive offices for as many early maps and documents as possible which relate to Holcombe. The knowledge of local residents was also tapped and a meeting was held at Lancashire Record Office in Preston to show the results of this work.

A crucial part of the project requirements was that the professional archaeologists should provide training sessions to people who were interested in the work. One of those involved as an interested local resident is Jonathan Ali who has conducted extensive research into the origins of some of the farms on the range.

Jonathan said: "Through working with the archaeologists we've been able to construct what the landscape was like in 1600 before much of the land around Hawkshaw and Greenmount was enclosed and new farms created. Looking at the evidence it appears that there were five or six main sites in the area with small tenements attached which all fit the bill as important medieval farms: Holcombe Hey, Hollingrove, Croichley Fold, the Lowe, Bleaklow and Croich Hey. Other sites like Holcombe Head, Holcombe Ridge (Higher Ridge), Holcombe Nook and Withins all seem to be post 1550."

Volunteers helping to record boundaries on the training area
P Abramson



The importance of the work by the archaeologists is to identify the physical remains of the landscape like boundaries or ridge and furrow, then to be able to place them within the documentary evidence of maps and wills to try to reconstruct the area around Holcombe Moor before 1600. Although working in difficult weather conditions the archaeologists from Oxford Archaeology North, based in Lancaster, have been able to peel away layers of history to rebuild the forgotten valley which is remarkably unspoilt and "is probably one of the most important historic landscapes in this part of the country."

In order to inform people of the results of the Historic Boundary Survey a public meeting was held early in the New Year at the Old School Hall in nearby Greenmount. Despite the horrible weather conditions, close to 70 members of the public turned up to an evening meeting to listen to the results of the survey followed by a lively question and answer session - proof indeed that the archaeology and history of the training area was of interest to members of the community.

At the following meeting of the Heritage Group it was considered vitally important not to lose the momentum generated by the public meeting. A photographic competition focusing on the landscape of the base, run by the Scouts Group, will hopefully result in a PowerPoint presentation and the winning entries may end up in a leaflet on the history of the training area currently being produced by group members. It's all go at Holcombe Moor...



"Perhaps the weather could have been a bit better..."
P Abramson

A packed public meeting to hear the results of the survey
P Abramson



Philip Abramson, Archaeology Advisor,
Environmental Support Team, DE

Putting the heart back into Devonport: a community reunited

In July 2005 English Partnerships acquired the South Yard Enclave site in Devonport, one of the three original towns that make up the city of Plymouth. Once a busy commercial centre, the site had been in the ownership of the MOD and off-limits to the public since the 1950s after being badly damaged during the Second World War.

Two of English Partnerships' main objectives as the national regeneration agency are to make best use of surplus public sector land and to create communities where people want to live, and can afford to live. The return of the South Yard Enclave for community use is helping to achieve these aims by putting the heart back into Devonport.

Identified as an area suffering from high levels of deprivation, Devonport is included in the Government's New Deal for Communities programme and is therefore part of the Neighbourhood Renewal Strategy. Once the decision was made to reconnect the South Yard Enclave to the rest of Devonport, the MOD executed a staged withdrawal from the site, leading to its handover last summer. In line with



View towards South Yard Enclave
from Cumberland St
Chris Henderson



English Partnerships' policy to ensure surplus public sector land is used to support the Government's regeneration objectives, which are outlined in the *Sustainable Communities Plan*, we aim to create a high-quality neighbourhood that will make a really positive and lasting difference to the residents of Devonport.

A month before we became the new owners of the 7.3 ha site, we submitted an outline planning application to Plymouth City Council for a mixed-use neighbourhood comprising new homes, shops, offices and community facilities. The Enclave now has outline consent for 463 new properties and English Partnerships will ensure that a range of these are available for people who want to move to the area as well as for local people seeking to rent or buy there. Of the new homes, 75 per cent will be market sale, including 15 per cent reserved for first-time buyers, creating more opportunities for home ownership in an area that currently lacks choice. There will also be homes for affordable rent and shared ownership. The historic Market Hall building featuring an attractive clock tower will be retained and restored and there are plans for the creation of a new public square that will help to establish the development's sense of identity. Residents will also benefit from safe streets and open spaces in pleasant surroundings.

Regeneration projects on this scale don't work in isolation, so we've widely consulted our partners, including the Housing Corporation, Plymouth City Council, Government Office of the South West and South West RDA. We're also working with Devonport Regeneration Community Partnership (DRC Partnership) and engaging the local community through consultation events and exhibitions. We even held a party within the walls of the South Yard Enclave last September to celebrate the sale of the site to English Partnerships, and enable the local community to find out more about the new neighbourhood that will help to reunite their part of the city.

In February 2006, English Partnerships selected Redrow Homes as its preferred purchaser, and entered into a development agreement with Redrow in March with the help of the Housing Corporation, DRC Partnership and Plymouth City Council. Redrow Homes will work with us to progress the scheme over the next eight to ten years and the next step will be to submit a reserved matters planning application later in the year following extensive consultation with people who live and work in Devonport. Subject to planning consent, a start on site could happen within a year of English Partnerships purchasing the site.

We've been very encouraged by the positive feedback we've already received from the local community and everyone is looking forward to the removal of the high security wall surrounding the Enclave. The team at Redrow Homes shares our commitment to putting the needs of the local community first and that's been our experience of working with all of our partners, including the MOD. The co-operation between Government and local agencies has enabled us to make terrific progress on the delivery of this exciting regeneration scheme in a relatively short space of time.

English Partnerships has also been working closely with DRC Partnership and the local community on the Devonport Development Framework (DDF) for the entire neighbourhood. People from the area will be able to consider how the proposals for the Enclave fit in with Plymouth City Council's overall development proposals for Devonport.

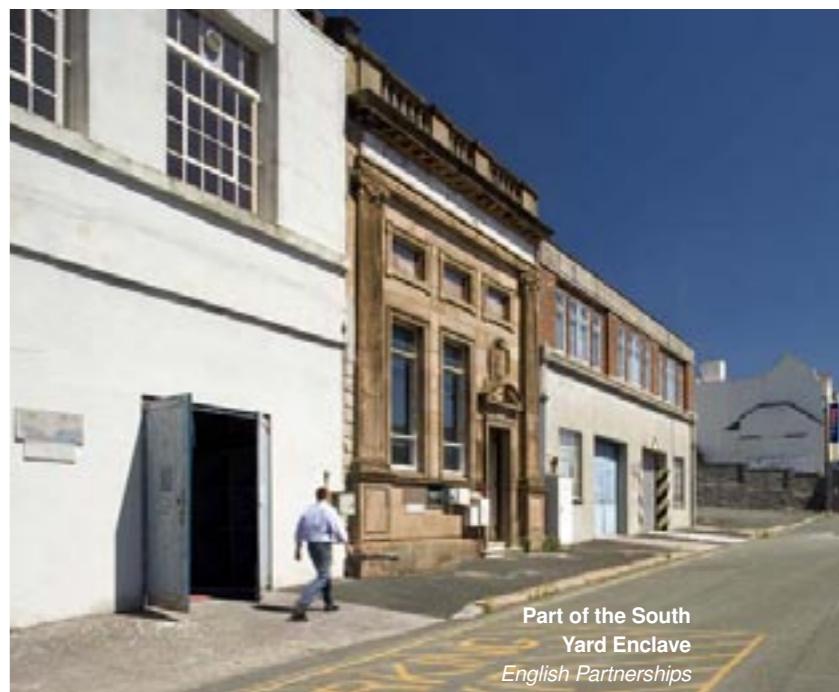
The Stores Enclave is the first site to come forward within the DDF, which was completed by the partners in 2003. This document sought to address the social and economic needs of Devonport as a whole and to maximise the benefits of the development opportunities. Plymouth City Council has drawn heavily on the DDF in preparing its Area Action Plan for Devonport so that now the ideas that emerged in close cooperation with local people are informing decisions in the planning process.

The residents of Devonport have waited a long time for the once-thriving heart of their community to be restored. We aim to create a high-quality, sustainable neighbourhood that the local community will be proud of. We also want to attract new people to this part of the city. We're well on our way to achieving this, and the MOD has played a pivotal role in the regeneration process by helping to ensure the smooth, effective handover of the South Yard Enclave site last year.

Steve Jackson, Senior Regeneration Manager, English Partnerships



A piece of the wall surrounding the South Yard Enclave was ceremoniously removed by Mr Bannister, a long-standing member of the community, at the Celebration Event for local residents held on 10 September 2005
English Partnerships



Scrub Management at Castlemartin Range

The primary purpose of the Defence Training Estate (DTE) is to train soldiers and prepare them for peacekeeping duties or deployment in conflict zones around the world.

Castlemartin Range in south Pembrokeshire is a key part of the DTE and it is used intensively for live firing by tanks, other infantry combat vehicles and helicopters, as well as dry training. Dry training is normally defined as low level tactical training, escape and evasion or navigation exercises.

The pages of Sanctuary include many examples of the benefits to wildlife from maintaining military training areas. Much of the MOD estate was acquired prior to WWII and consequently the land escaped agricultural improvement. Castlemartin Range was acquired by the army in 1938 when much of it was managed traditionally as mixed farmland.

Today the Range extends over 2,390 hectares and over 60% of this is unimproved grassland. The coastal strip includes other important habitats that lie within the Castlemartin Cliffs and Dunes SSSI, Limestone Sea-cliffs of South Wales SAC

and Castlemartin Coast SPA. The latter is partly designated for high numbers of breeding chough. The chough population is directly dependent on unimproved grassland close to its nesting sites on the sea-cliffs. The birds feed on soil invertebrates by probing with their long red bill.

The designations confer certain obligations to ensure the maintenance and enhancement of these areas. The army is well aware of these commitments and it is well practiced in the art of integrating the needs of military training and nature conservation.

Very often other land management issues also need to be considered and this was highlighted when the army requested a scrub management plan to cover the entire Range. Military training, nature conservation, archaeology and tenant farmers all have a requirement for scrub management and sometimes they conflict.

Before Defence Estates (DE) could produce a plan it was necessary to

Tank training at Castlemartin
Crown copyright

document the extent of the scrub problem at Castlemartin. The Countryside Council for Wales (CCW) assisted with a survey to map the location and extent of all habitats. Detailed mapping of vegetation communities was undertaken by CCW's surveyors in 2004. This produced a digitised vegetation map and from this map it was possible to determine the location and extent of scrub and bracken. Scrub cover extended over 184 ha in total with bracken covering a further 159 ha.

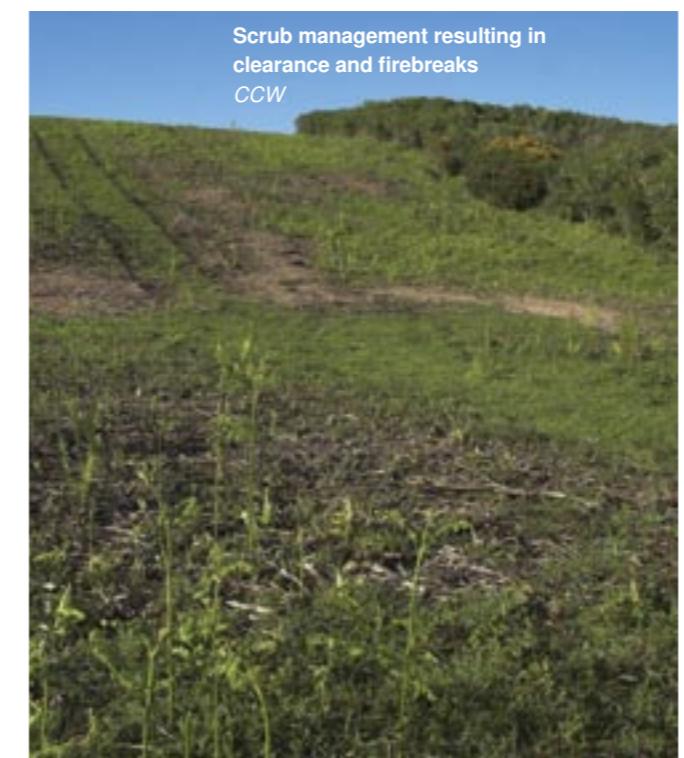
The next challenge was to identify areas of scrub and bracken that needed to be removed, while retaining desirable scrub. Some scrub is good for military training and for wildlife; some scrub needs to be managed to maintain clear lines of sight for tanks when firing at targets. The targets themselves, whether static or moving, should also be free from scrub. At the same time clumps of scrub within the range are important for concealing



One of the many Chough which breed on the site
Bob Haycock



Sheep grazing at Castlemartin Ranges
Annie Haycock



Scrub management resulting in clearance and firebreaks
CCW

infantry vehicles prior to firing. The tactic of an infantry vehicle firing at its target, and moving immediately before it is itself targeted, is important in modern warfare. To practice this at Castlemartin relies on the retention of at least some stands of mature scrub within the Range.

Live firing brings with it the risk of accidental fires breaking out and scrub management can help control the risk of this happening. Firebreaks need to be cut within the scrub in order to prevent uncontrolled fires across large areas of scrub or coastal heathland.

Dense stands of scrub or bracken are of little value for dry training, which takes place right across the Range. It inhibits the movement of troops either on foot or in light vehicles and the army is keen on management of these areas to improve access for this type of training.

The impact of scrub and bracken management on nature conservation is varied and complex. At Castlemartin one major concern is scrub encroachment into areas of species-rich grassland that support invertebrates such as shrill carder bee and silver studded blue butterfly. Blackthorn and European gorse in particular can develop into dense thickets across large areas if left unmanaged.

However, scrub is a natural component of many habitats and an important habitat in its own right; indeed some stands of coastal scrub are probably quite old and could be regarded as a natural climax community. Western gorse for example occurs naturally as an important component within the coastal heathland at Castlemartin. This low growing form of gorse is restricted in extent by the salt laden winds and unlike European gorse is not invasive. In other places scrub provides shelter for invertebrates and the interface between scrub and grassland is important 'edge' habitat that supports many species.

Scrub is particularly valuable for nesting birds and many species of invertebrate. The Dartford warbler is a good example, as it requires stands of mature European gorse scrub close to patches of lower heath in which to nest. Hence, it's important not to eradicate all mature gorse either by deliberate management or by incidental fires. The latter can be avoided by installing firebreaks.

There are a number of Scheduled Ancient Monuments across the Range and a large number of other important archaeological sites ranging from Mesolithic findspots

to military features. If allowed to grow unchecked scrub can damage earthworks such as Castle Lady Hillfort through the action of the roots altering the soil profile. Isolated pockets of scrub can be the focus for rabbit warrens and their burrowing action can disturb archaeology. Scrub also conceals monuments, which makes them difficult to assess and appreciate in the context of the historic landscape in which they sit. Scrub can also directly damage the fabric of old buildings such as those at Pricaston Farm.

The Range is extensively grazed by a mix of cattle and sheep throughout the year, including up to 12,000 sheep during the winter. There are a number of communal grazing areas and several separate farm tenants depend on the Range for their livelihood. The maintenance of some open grazing free from scrub and bracken is essential to maximise the area available for tenants to graze. Other enclosed fields are used as holding pens for livestock when live firing is taking place and these permit the movement of stock around the site subject to live firing.

The scrub management plan for Castlemartin Range follows a simple format with objectives being set for military training, nature conservation, archaeology, licensed graziers and tenant farmers in all management compartments (47 in total). Several meetings were held between DTE, DE and CCW to identify scrub and bracken work that was needed within each compartment. These meetings highlighted potential conflicts and management priorities. A detailed five-year work programme for each management compartment was produced, and some of this work has already been taken forward in the winter of 2005/06.

The management of the training area is currently co-ordinated through an Integrated Land Management Plan. The scrub plan will form a key component of the ILMP as a tool for identifying priority areas for scrub and bracken management over the next five years. Meetings of the Castlemartin Scrub Working Group will be held twice a year to agree the work programme for the following six months. This close collaboration between the army and its stakeholders will ensure the wildlife, archaeology and farming interests across the Range are secured without compromising its value for military training.

Oliver Howells, Environmental Support Team, Defence Estates

Restoring Cors Penally

Just a short way along the coast from the bustling seaside resort of Tenby, south Wales, is an area of land of approx. 111 hectares which is owned by the MOD.

This site (less the Penally Gallery Range of 5 ha, which provides a small arms training facility), boasts two SSSIs, and includes a network of WWI practice trenches which are designated a Scheduled Ancient Monument. All these features, together with the beautiful local landscape, can be viewed from the Pembrokeshire Coast Path that follows the cliff tops around the headland.

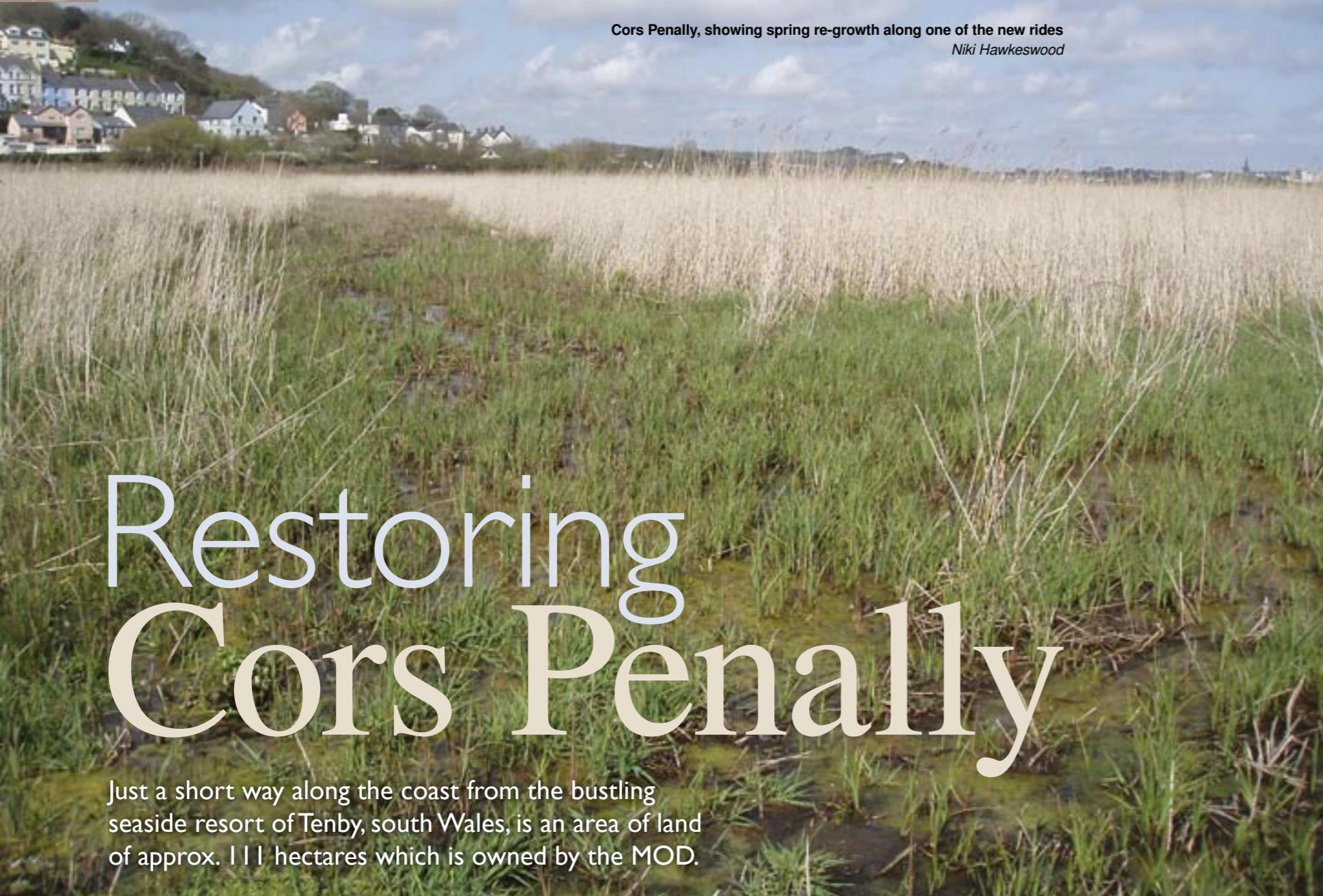
Over the last two years Defence Estates has secured a large injection of funding towards a whole suite of SSSI improvement projects at the site. Working in partnership with the Countryside Council for Wales (CCW), projects were planned and quickly implemented through Landmarc, our commercial Partner, to help safeguard and enhance the special

wildlife features of the Range. Defence Estates has also enjoyed excellent working partnerships with the Pembrokeshire Coast National Park conservation team and other key members of the MOD conservation group.

The whole MOD site, apart from the range area, is included within either one of the two SSSIs: Lydstep Head to Tenby Burrows, and Cors Penally. Indeed, the site incorporates a wonderful diversity of important habitats, from coastal habitat through the limestone cliffs and sand dunes, to maritime grassland and fen. This is truly a special place, supporting a very high number of nationally rare and scarce plants relative to its size, including wild asparagus, dune gentian – a priority species under the UK Biodiversity Action Plan – small restarrow and green-winged

orchid. Defence Estates, with its partners, has been carrying out the management work to ensure that the site retains its special value for many years to come.

The wetland of Cors Penally dominates the inland lowland section of the site, nestled between sand dune and limestone cliffs. The ‘Cors’, which is the Welsh term for bog, contributes significantly to the botanical diversity of the local area. It has the greatest concentration of vulnerable vascular plant species in Wales (JNCC, Red Data Book of Vascular Plants, 1999). The rich fen community is characterised by extensive stands of common reed, within which are stands of blunt-flowered rush, greater pond sedge and greater tussock sedge, which form tussocks up to chest height.



Cors Penally, showing spring re-growth along one of the new rides
Niki Hawkeswood

First recorded at the site in the 1920s, the nationally scarce galingale *Cyperus longus* still survives on the fen, and is the only native population in Pembrokeshire. Nearby the nationally scarce marsh fern still exists in quantity, and a few bushes of the fragrant bog myrtle can be found. Cors Penally is also home to royal fern, brown sedge, slender sedge and tufted sedge, all species that are considered to be rare in South Pembrokeshire. The botanical diversity of the site is the fundamental factor which supports a rich array of other species, and in particular, invertebrate and birdlife.

As with most habitats and plants, all the species mentioned here are vulnerable to successional change. The fen is an excellent example of plagioclimax vegetation – that is, vegetation that is permanently influenced by human activity or management.

The site was requisitioned by the Army in the late nineteenth century, prior to which it was managed traditionally for livestock production. The long history of grazing on the Cors was continued under MOD ownership and this prevented succession and the widespread encroachment of scrub and trees. However, grazing has,

in recent decades, been a little more intermittent, and field bindweed had started to invade, colonising the drier areas.

Late in the summer of 2004, Defence Estates re-established regular management of the Cors specifically to benefit its special plants and other features. In order to facilitate effective grazing of the very wet fen and to encourage livestock to graze widely across the site, it was quickly recognised that access needed improving. The dense reed vegetation needed cutting and specialist equipment was required to carry out this work in such soft ground conditions. The Pembrokeshire Coast National Park conservation team came to the rescue with their pedestrian tractor mower and Geraint Jones, its very experienced handler! This light machine, with its reciprocal cutter bar, is specially designed to access very wet places and is equipped with balloon tyres and bolt-on twin cage wheels - a far cry from the huge tractors and flails usually employed on MOD ranges.

In 2004 and 2005, networks of rides were cut through the fen vegetation under the careful supervision of the County Botanical Recorder, Stephen Evans, who keeps the locations of all the rare plants well mapped.



Marsh Fern
Stephen Evans



Cyperus longus
Stephen Evans



Asparagus prostratus
Stephen Evans



Greater tussock sedge

The mountains of cut reed produced from the mowing were removed from the site to prevent mulching and the addition of nutrients into the fen - something which can encourage more aggressive plant species to colonise.

In the last few years the whole site has benefited from the establishment of a more appropriate grazing regime, using cattle through the summer and sheep in the winter. Cors Penally is grazed as a single compartment within a network of compartments, each important for a particular habitat or rare plant species. In the Cors, a profusion of spring growth in the newly created rides attracts grazing animals, and allows cattle access to the more inaccessible places. Gradually, over time, and with further ride cutting, the cattle will make their mark, resulting in a patchwork of vegetation types, with varying height and structure in each. This will ensure that the diversity of the site is retained and the rare and scarce plants that make Cors Penally so special are safeguarded for generations to come.

Niki Hawkeswood,
*Natural Environment Adviser,
Environmental Support Team*

**Geraint Jones, Pembrokeshire Coast
National Park, operating the mower**
Stephen Evans



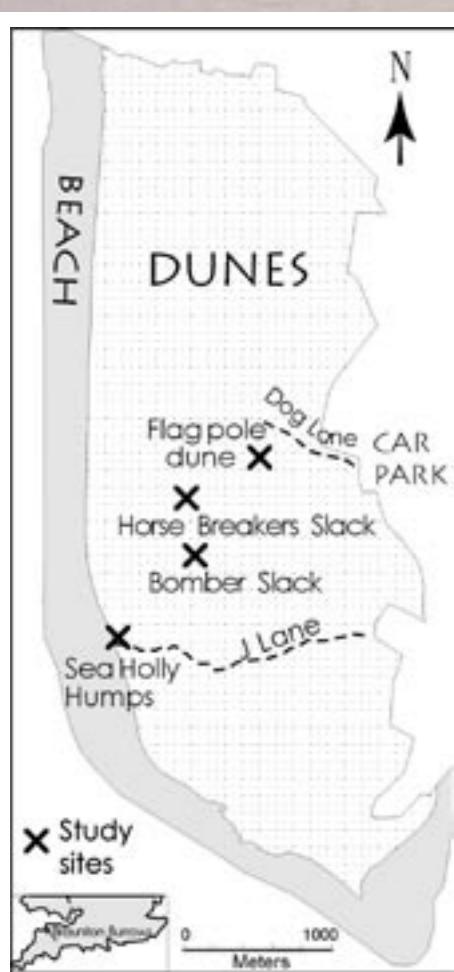
Removing the cut material off-site
Carole Newberry





Ringing the changes

A study of plants and dune movement at Braunton Burrows



Embryo dunes
All photos Vanessa Winchester

left: Braunton Burrows showing study sites

Braunton Burrows, with its 1,000 hectares of sand dunes and low levels of vegetation, is perhaps a surprising place to come to study the annual growth-rings of trees and plants, but if you are a dendroecologist interested in landscape change in arid lands, then it is one of the best in Britain.

The study formed part of the 20th International Dendroecological Field Week held between 28 August and 3 September 2005, with participants coming from eight nations: Switzerland, Russia, Poland, Italy, Germany, France, Britain, and Argentina.

This event, designed to stimulate international collaboration and exchange of ideas, has never before been held in Britain. Together with Dr Holger Gärtner from the Swiss Federal Research Institute (WSL) Birmensdorf as co-organiser, we

thought it high time that the event should be held in the UK. And North Devon, with its temperate maritime climate, clearly offered excellent opportunities for studying growth in a landscape very different from the Alpine one of most former field weeks.

The history and ecology of Braunton Burrows, leased from the Christie Estate by the MOD, is well known. Thus, it made an ideal 'nursery' for us to refine dendroecological methods that, if proved successful, could help further understanding of the physical dynamics of the dune environment.



Marcin, Fritz, John and Brigitte discussing embryo dunes



Brigitte and Vanessa exploring Horse Breakers slack – John Breed's Land Rover in the background

An additional advantage was that John Breeds, range supervisor for the Burrows, was able to pilot us round the best spots (and he did a great deal of the heavier digging). Without him and his roller-coasting Land Rover, the whole project would probably have foundered at the start, since we were rather a small group to tackle this large area in one-and-a-half, extremely hot, summer days. Our numbers, however, were strengthened on the half-day when we also had the energetic support of Professor Fritz Schweingruber, world expert in dendroecology, and Holger Gärtner a specialist in root analysis.

The dune system is maintained by strong onshore winds, a copious supply of sand from a wide shallow bay, and a large tidal range. The prevailing wind from the west has oriented the three main sand ridges north-south, with the ridge crests of the higher dunes running west-east. Between the dunes there are 'slacks': these are flattish, moist areas cleared by the British army after 1945 following use of the area by the Americans in the 1940s when practicing for the D-Day landings. The war-time treatment of the dunes effectively cleared them of vegetation so we could use this as an 'event horizon' for determining maximum plant age.

The obvious question to be answered was: can annual growth-rings from trees, shrubs of all sizes, and plants be used to analyse dune movements? Other questions were: Which of the local plants produce annual growth-rings, and how do they behave when threatened by sand eroding or accumulating around them? Can growth-ring studies show what impact humans are having on the dune system and reveal changes in the water table? Successful answers to these questions could lead to further work in areas where dunes are a problem and people's livelihoods are threatened.

Our plan of work was to take 5 mm cores from trees, dig out and section herbaceous plant stems and roots, then count their annual rings. Analysis of the stems and roots depends on being able to distinguish the

difference between root centres, (usually appearing as dark points), and stem centres, showing a larger disc-shaped area of pith. The samples were taken from three areas:

- the seaward side of the dune system (embryo dunes and fore dunes)
- mid system (the lee flank of a dune, north of Horse Breakers Slack and two trees on Bomber Slack)
- the landward side of the system, on the sand/vegetation margin of the south flank of Flagpole Dune

The answer to the main question: Can annual growth-rings be used to analyse dune movements? is a cautious yes (given the limited nature of this brief study), providing that future studies of vegetation can show that local plant growth-rings are truly annual rather than rainfall related.

The findings on the fore dunes agree with the received wisdom that this part of the system is in equilibrium at present, with erosion and accumulation in balance. The plants forming the cores of the embryo dunes were at least two years and possibly nine years old, and an alder on the lee side of a near-by fore dune was also nine years old.

The human impact on the system is well documented, but it was emphasized by burial (probably by human agents) of a willow stem on a dune in the middle of the system. As regards changes in water table, we only had samples from three trees for this part of the work so nothing conclusive can be said, although there were some indications of growth reduction during recorded years of low water table. More trees need to be sampled to check this aspect.

On the landward side of the system, our findings add detail to the accepted view that the crest of Flagpole Dune is generally advancing at 2–3 m/year. Our evidence shows that the southern flank is accumulating at a much slower rate, with plant cover effectively stabilizing and absorbing the advance. Consequently,

the dune's broad parabolic form is becoming attenuated. We dug out, to a depth of 60 cm, a 1-m long stem of creeping willow. At its base there were nine rings showing that sand had accumulated here at about 6.6 cm/year, with willow growth managing to 'keep ahead' of the invading sand by, surprisingly, growing upslope: surprising, because plants on slopes usually get pushed downhill by soil movement. The plant evidence draws attention to the non-uniformity of movement across the system and highlights the developmental form, and rate of change, of the west-east alignment of this ridge crest.

The associated questions also provided some novel information: we found that sea spurge, sea holly, and possibly sea rocket, have annual growth-rings and that changes in marram grass stem colour (from green to purple to white) due to light exposure could indicate dune areas subject to accumulation or deflation.

It is hoped that the results from this innovative work will encourage further studies using dendroecological methods, with results leading to a greater understanding of dune dynamics useful both for landscape planning in arid lands and for conservationists faced with climate change, especially where change is compounded by human impacts.

Vanessa Winchester, Laboratory of Dendogeomorphology, University of Oxford; Brigitte Klemme, "Gundermannschule" (School of Herbalists), Germany; Marcin Kopowski, Nicolaus Copernicus University, Institute of Ecology and Environment Protection, Poland

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The Uncommonly Dark Beauty of

Strensall Common

Male Dark Bordered Beauty moth
Robert Goodison

Early one summer morning in July last year, a group of people bristling with nets and cameras gathered together under the shade of oak trees at Strensall Common. From all round the country these volunteers had gathered to search for one of the country's rarest and most attractive moths.

Strensall Common, near York, is a 600 ha tract of sandy, lowland heath and mire, not only home to a busy army training area, but also the largest British population of the dark bordered beauty moth. Internationally important for its lowland heath, Strensall Common is designated a SSSI and also as a Special Area for Conservation (SAC).

Strensall Common's lowland heathland is a northern cousin to the southern heathlands - like those made famous by Thomas Hardy - and shares a range of

specialist heathland species such as the dark bordered beauty with Scotland and Scandinavia. Other heathland treasures like the marsh gentian and the green tiger beetle are equally at home on MOD heathlands in the south-east and at Strensall.

Found only in three other tiny colonies in the UK, the dark bordered beauty feeds at Strensall exclusively on creeping willow, a diminutive relative of our taller riverside willows. It grows on the open heathland between the heather, purple moor-grass and deer-grass.

A curious dark bordered beauty exploring the Common for the very first time might come across a really interesting mixture of plants and animals on the heath, mire, ponds and woodland. If in need of refuelling, wild cranberry, marsh St. John's-wort, petty whin or brookweed

might be good nectar sources, but the insectivorous sundews are best avoided.

A whole range of predatory insects, from four-spotted chaser dragonflies to the very rare ground beetle *Amara famelica*, could prove a threat, whereas others such as rare marsh-dwelling craneflies or the Strensall groundling moth would be benign. Our ever-wary moth would need to avoid the attention of nesting tree pipits, reed warblers and skylarks, but could enjoy the sights and sounds of the little grebes, teal and water rails around the ponds. Whether a dark bordered beauty would notice the adders, badger setts, harvest mouse nests or cadets camouflaged in a thicket, we will never know.

Although Strensall Common is the largest of the remaining lowland heaths in the Vale of York, it is only a surviving

Typical lowland heath at Strensall Common
Robert Goodison

fragment of a much larger area. In the eighteenth century there were at least 20,000 ha of heathland in the Vale, while today only about 950 ha have survived. This 95% loss was a result of large-scale enclosure and agricultural improvement of common land and, more recently, the establishment of conifer plantations on the areas that survived the enclosures. Strensall Common survived thanks to the purchase of the Common between 1876 and 1884 by the War Office. A mixture of open heathland and scrub was of more use to firing ranges and for dry training than arable land or dark plantations. Strensall Common had been saved by being used.

All inland lowland heathland is man-made habitat. For centuries, Strensall Common had been a vital part of the local community's livelihood. Sheep and cattle were grazed on the Common, while wood, turf, gorse and peat were collected for fuel. Heather was cut for thatch, and bracken for bedding in barns. Sand and the underlying clay were dug for building materials and the black-headed gull colony would have been raided for eggs. If the Common had not been used by the people of Strensall over hundreds of years, there would have been no heathland but woodland instead.

Creeping willow would not have been able to grow under the cover of other trees and the dark bordered beauty moth, along with Strensall's other heathland wildlife, would never have been present.

During the late nineteenth century when the War Office was buying up land at Strensall, the rural economy was changing more quickly than ever before. Grazing on marginal land was becoming less economic and coal was becoming a universal cheap fuel. Other surviving heathlands in the Vale of York were changing, being invaded by trees and blanketed with dense tufts of purple moor-grass. If the dark bordered beauty had once fluttered across these other heathland fragments, it would do so no longer as the habitat changed.

Thanks to its military use, Strensall Common fared a lot better. Although the Common's traditional uses largely died out, the MOD has to this day encouraged the Common to be grazed. Some parts were for a time used to pasture cavalry horses. The many heathland species that rely on patches of bare ground could no longer take advantage of areas stripped with spades for turf, but could survive on tracks used by troops and around trenches dug for training. The rare fern, pillwort, is found on tank tracks that were made during World War II.

Birch scrub invading heathland
Paul Glendell English Nature

Although the Common was probably no longer burnt routinely to improve the 'bite' for sheep and to prepare for turf-cutting, the use of flares and other military equipment lead to frequent fires. The Common's rich aquatic flora and fauna previously relied on ponds created through peat cutting and clay extraction. As these silted-up, new ponds were dug by the army for fire-fighting and as borrow-pits providing material for the ranges' rifle butts.

However as the new millennium arrived six years ago, Strensall Common did show some signs of deterioration. The grazing and accidental fires were not enough to halt the encroachment of birch entirely, and a large area of lowland heath had been lost to scrub. Larger areas of the Common were dominated by purple moor-grass that smothers out smaller wildflowers like the Common's marsh gentians. Purple moor-grass not only competes directly with creeping willow and heather but also contributes to ideal conditions for heather beetle, which in some years can decimate the carpets of heather. The area around the ranges was fenced away from sheep during the Foot and Mouth epidemic to allow continuation of training, and sustainable management of over 50 ha of heathland was therefore lost.



Female Dark Bordered Beauty moth

Robert Goodison

Today, Strensall Common is in much better shape thanks to the participation of MOD as a partner in the Tomorrow's Heathland Heritage *Restoring the Heaths of the Vale of York* project. The MOD is contributing towards the £713,000 Heritage Lottery Fund (HLF) initiative along with the Yorkshire Wildlife Trust (who own and manage 40 ha of Strensall Common), English Nature, the Forestry Commission and the Escrick Park Estate.

Strensall Common has had over 100 ha of heathland directly restored through clearing a backlog of birch scrub. Thanks to MOD's grazing tenant Chris Dunn, the number of sheep grazing the heathland is to be increased so that the rank purple-moor grass can be grazed back allowing heather to spread. The tradition of digging new ponds has been continued, this time purely for the benefit of nature conservation. The Common's great crested newts, water voles and diverse water beetle fauna are already moving in.

Most exciting of all, the MOD now has its own flock of over 150 Hebridean sheep that complement Chris Dunn's flock of Swaledales. Although the Hebrideans are uneconomic by comparison with the Swales, they are an

ancient hardy breed that keep well on the Common and, most importantly, are efficient browsers of regenerating birch saplings. This innovative approach lead to Strensall Common Conservation Group being awarded the Sanctuary Award and Silver Otter trophy in 2004. The 50 ha of heathland, ungrazed since Foot and Mouth, has now been turned into large paddocks with cattle grids and gates to ensure that use of the ranges is unhindered. These paddocks complement another which was established in 2003 to target the grazing of the Hebridean flock.

Although the *Restoring the Heaths of the Vale of York* project only started work in 2003, the benefits to Strensall Common's wildlife are already apparent. The 2005 annual MOD bird count recorded breeding snipe, stonechat, curlew and long-eared owl. Woodlark were heard singing on the Common and barn owls nested in an unused military shelter. Nightjars were seen, and are thought to have nested immediately adjacent to the Common on an area where the Forestry Commission have cleared 19 ha of conifer plantations to re-create heathland as part of the heathlands project.

Visitors have appreciated the changes too. Interpretation boards have been erected

in the car-parks and a new leaflet produced. These complement a series of guided walks and the development of a new nature trail.

But what about the dark bordered beauty? The July survey proved to be a great success as a record number of this enigmatic moth were found over a large part of the Common. Usually the adult moth can be found by gently searching small bushes of creeping willow, but amongst the 50 seen that day were a flight of free-flying males over heather in the early morning sunshine. Probably nobody has ever knowingly seen the display flight of the dark bordered beauty before. We who did, can thank the thousands of villagers, farmers and soldiers who have contributed unwittingly to the conservation of Strensall's heathland by simply making their living on the Common over the centuries. We can thank the MOD for its conservation work and the HLF for ensuring the good condition of the heathland, and for the opportunity to see the dark bordered beauty dance for decades to come.

Julian Small is a member of the Strensall Common Conservation Group and is employed by English Nature as a Heathlands Project Officer for the Vale of York.

Many *Chamaedorea* species such as the fishtail *C. ernesti-augustii* thrive on the abundant limestone soils in Belize
All photos Dr S Bridgewater

Xaté, leaf of gold

The 40 km hike from the Guatemalan border to the Raspaculo River in Belize is not for the feint hearted. The terrain is unforgiving, as any British soldier serving in Belize will attest, comprising limestone hills covered in jungle and punctuated with impassable cliffs.

This is a landscape that is as vast and wild as any remaining in Central America. Apart from a few long-abandoned logging roads, there is no easy way to make the journey. It's a desperate two-day slog, the expedition made all the harder by the poor availability of water. Rivers are scarce, most of the few permanent water sources residing deep inside uncharted caverns.

Despite the hardships one has to endure to traverse the region, dozens of poor farmers from Guatemala frequently make the extended trek far inside Belizean territory by foot. Propelled by poverty, they leave their own country to face both the hardships of living in the rainforest and the knowledge that if they are caught they face heavy fines or imprisonment.

What they seek is a plant known as the *cola de pescado* or 'fishtail'. To them, the leaves of this elegant palm are like gold, providing a guaranteed source of much-needed currency. Highly prized by the international floral industry, the farmers know that if they can cut enough leaves and carry them back into Guatemala, they can earn far more than working on their farms. However, between them and those who will buy the leaf, lies an arduous journey home.

Gift from the ground

Chamaedorea will be familiar to the troops who have completed their jungle training. It is the most diverse genus of palm in the Neotropics, containing between 80 and 100 species, and occurs as an important understorey component of rainforest from Central Mexico to Bolivia. According to the World Conservation Union *Chamaedorea* species are among the world's most endangered palms, with around three quarters of the species threatened, primarily through the widespread destruction of their rainforest habitat.

Leaves of fishtail confiscated by the Belize Forest Department from an illegal Guatemalan xatero working in the Chiquibul.

Fishtail leaf ready for harvesting (*Chamaedorea ernesti-augustii*)



There has been a great deal of interest in *Chamaedorea* palms for decades due to its considerable economic value. The group has many uses including basket making (the stems of *C. elatior*), and as a food source, with the immature male inflorescences of pacaya (*C. tepejilote*) being particularly important in this regard. However, the striking looks of some *Chamaedorea* species, their ability to grow in shade and their resistance to wilting have attracted international interest, with their trade as houseplants and as a source of foliage for flower arrangements now a multi-million dollar global industry.

The USA and Holland are the two centres of *Chamaedorea* leaf trade. The primary source of the seed and leaf collected to fuel these industries are natural forests, so if your home is enlivened by a palm in a pot, it may well be a *Chamaedorea* sourced originally from a Central America jungle. The regional term used for *Chamaedorea* palm leaf is xaté (pronounced 'shatay'), and the leaves of around twenty species are traded by the floral industry, three of the most important species in Central America being *C. elegans* (xaté hembra), *C. ernestii-augusti* (cola de pescado/fishtail) and *C. oblongata* (xaté macho).

Towards sustainable management

The majority of the world's xaté leaf originates from Central Mexico, with other important centres of harvesting located in Southern Mexico and the Petén district of north-eastern Guatemala. Traditionally leaves have been harvested from the wild. However, in recent years there has been an ever-decreasing yield of wild xaté due to long-term over-harvesting. With local populations now unproductive, individual xaté collectors (xateros) in Guatemala have been illegally crossing into Belize to exploit a pristine resource. This has served to inflame the long-standing border dispute between these two countries.

Belize has not traditionally utilized xaté, and thus, until recently, has enjoyed abundant and un-harvested populations of this palm. The presence of wild xaté in Belize presents an economic opportunity for Belizeans, but also an environmental problem. The Belizean government is keen to establish its own industry, but there is clear evidence from other countries that if they do so, they could endanger the natural populations of *Chamaedorea* and threaten the ecological integrity of their diverse and world-famous rain forests. Undoubtedly, current illegal harvesting is already damaging their forests. The vital question is whether or not it is possible to establish a home-grown xaté industry that is financially lucrative whilst being environmentally benign.

A UK government-funded Darwin Initiative project, co-ordinated by the Natural History Museum, London, and supported logistically by the British Army Training and Support Unit Belize (BATSUB), is providing part of the answer to this complex conundrum. Biological surveys across the country have quantified the abundance of this group of palms and highlighted their distribution. This research has also provided vital data on how many leaves *Chamaedorea* species naturally have, how many commercially valuable leaves one can expect to find in a hectare of forest, how fast they grow and replenish these leaves, and how much the resource has already been degraded by illegal leaf cutting.

For the Chiquibul Forest reserve - Belize's biggest forest reserve - the initiative has ascertained that 37.8 million leaves with a value of US \$0.5 million (to xateros) have been illegally extracted since 2000. The export value of this leaf (based on current export values) is in excess of US \$4 million. In addition, other studies have looked at the long-term impacts of leaf harvesting on the health of populations through monitored defoliation experiments. It is now clear that continual defoliation markedly reduces reproductive activity and increases mortality.

Research on *Chamaedorea* DNA has also clarified some of the confusing species relationships across its geographic range and is providing data on genetic fingerprinting which could form the basis of an eco-labelling scheme. All this data, in addition to improving our



Confiscated illegally harvested xaté leaf being destroyed by the Belize Defence Force

Plantation-grown xaté may reduce the pressure on wild forest populations

knowledge of the natural world, is of direct relevance to conservation, providing Belizean resource managers with the necessary information on which to base their sustainable management plans.

Plantations: The end of wild harvesting?

As the natural resource has become degraded in Mexico, Guatemala and Belize, so there has been an associated increase in interest in plantation-grown xaté. Xaté can be grown in high concentrations under a forest canopy and in the long term it may be that the majority of future xaté exports come from managed plantation sources. Indeed, in Guatemala, 10% of all exports are already plantation-grown. The favourable economics of plantations makes them an attractive proposition. Whereas a natural forest may only have a few hundred fishtail individuals per hectare, a plantation can have up to 60,000.

The numbers speak for themselves. Although some conservationists are in favour of plantations, others are not. Those in favour believe that the wild harvesting of xaté can never be ecologically sustainable and that plantations are desirable as they divert destructive collecting pressure off the natural forest. Those against, claim that plantations are removing an important economic value from natural forests, leaving them more vulnerable to clearance. Trial plantations of fishtail have been established by farmers working cooperatively in the Cayo and Toledo Districts of Belize. The latter hope to grow xaté leaf organically under the shade of cacao, for which they already have a guaranteed market with the chocolate manufacturer Green and Blacks. They hope the xaté they cultivate will increase the stability of their diverse agricultural activities, providing an extra small, but regular income.

Dr. Samuel Bridgewater, Natural History Museum, London: co-ordinator of the Darwin Initiative-funded Chamaedorea conservation management

The British Army and conserving the Chiquibul Forest

Some of the ways in which Belizean forests are used by society would no doubt surprise the many ecotourists and scientists that visit them yearly. From being almost totally cleared by the ancient Maya over 1,000 years ago to the last century's selective logging for mahogany, these forests have long been the focus of human activity.

One of the curious and least known uses of the Chiquibul Forest is its use as a training location by both the British and Belizean armies. Military training here and in other remote regions of Belize not only meets the needs of the army but also supports conservation. BATSUB has close links with most of the conservation groups working in Belize and a constant dialogue between these parties ensures that training does not adversely affect the forest ecosystem.

The army also provides support to scientific expeditions and vital communications for those working in the forest. The long-term conservation of forests such as the Chiquibul depend on their responsible management by a broad alliance of partners, and the British army has an important role in ensuring that Belize's forests are managed sustainably for wildlife and society long into the future.

Acknowledgements

The Darwin Initiative xaté project would like to thank BATSUB for its support throughout the project. Without their logistical assistance, it would have been impossible for the Initiative's scientists to have gained access to some of Belize's remoter jungle areas. The generous casevac support offered to Las Cuevas has been vital to the long-term existence of the station, and very little of the research that has been conducted in the Chiquibul forest over the past decade would have been possible without it.

Bird Crime and Cyprus



Covering 98 square miles, and fifty miles apart, the two Sovereign Base Areas (SBAs) in Cyprus include a range of habitats that contain a wealth of biodiversity. The Sovereign Base Area Administration (SBAA) is responsible for the protection of the environment within the bases and works closely with the relevant government departments of the Republic of Cyprus.

Back in 2000, a campaign was launched by both the SBAA and the Republic of Cyprus to end the illegal trapping of migrating songbirds within the SBAs. Tiny birds of about 16 species are cooked and sold as delicacies across the island, with estimates running to eight million birds trapped each year.

Blackcaps, in particular, are seen as highly vulnerable being the key ingredient of the Cypriot dish *Ambelopoulia*. Fetching very high prices within the restaurant trade (up to £30 a dozen), many hunters have been attracted to earn a quick return through mist netting and/or the use of lime-sticks, both of which are illegal under Cypriot, EU and SBA laws. Lime-sticks are twigs covered in an extremely sticky 'glue' and placed in bushes to provide very inviting perches for birds. As the bird struggles to release itself it becomes progressively more attached.

The Eastern Sovereign Base Area (ESBA) has been seen as particularly vulnerable. It is a migratory nesting stop and a magnet for millions of birds as it contains wide open tracts of coastal habitat within the Pyla range. Traditionally, this has been seen as an ideal place to trap and ensnare transiting bird life, with much of the activity taking place overnight or at dawn. With profits running in the thousands of pounds for a few hours netting, the attraction to organised crime gangs is clearly seen.

One of the most publicised aspects of dealing with the crime has been the destruction of mist nets and trapping equipment. Whilst destroying this equipment may only be a temporary measure as much of the material is easily bought and comparatively cheap, these events have been well publicised in local media. This strategy, accompanied by a public campaign of arrests and punishment, leaves little doubt that mist netting is taken extremely seriously by the SBAA judiciary.

A longer-term, highly successful strategy, lies in school information campaigns, with Officers from the SBA police becoming known within the communities and educating young people to the real implications and aspects of bird crime.

In a 12-week period between September and November 2005, 194 mist nets measuring

some 4 km in length and 300 lime-sticks were seized, as well as generators and stereos used to create bird sounds, worth 12,000 Cypriot pounds (approx 15,000 sterling). Sgt Kyriacos Elia, SBA Police Officer, has overseen much of the success: "Four years ago there could have been up to 100 major poachers - now there are about 15. That reflects a tremendous effort on our part. However we will continue our campaign against poaching and mist-netting in particular, and as long as this kind of illegal poaching continues, so will we."

These achievements have not gone unnoticed outside of Cyprus. In late 2005 Marios Pitsilos, SBA Police Wildlife Officer, was invited to present his work for the first time to the Scottish National Wildlife Crime Officers' Course. Jim Guy, Divisional Police Commander, commented: "Our own fight to stop poaching and mist-netting in the Eastern Sovereign Base Area has been well documented. It is the links with outside agencies that we first forged many years ago that are being held up as a model of partnership policing, and this has enabled us to tackle the problem with a much greater degree of success."

Capt Crispin Coates, SO3 MEDIA OPS

Western Sovereign Base Area Conservation Group

2005 was a very busy year for the Western Sovereign Base Areas (WSBA) Conservation Group in Cyprus. Amongst a variety of other activities taking place, the group provided advice and information to ongoing projects, presentations to schools and youth groups, conducted annual ornithological surveys and assisted in the protection of turtle nests on the WSBA beaches.

Ornithology

The house martin survey (*Delichon urbica*) showed that active nests at Mount Olympus are stable at about 40, but nests at Troodos declined dramatically from 39 to 6 for reasons unknown. Yearly monitoring of the colonies might help understand why this has occurred. The Cyprus Raptor Survey was triggered by my 2004 report on raptor movements through the Akrotiri Peninsular. The Army Ornithological Society, together with the Royal Air Force Ornithological Society have both offered to assist with this in the future. The Survey of Eleonora's Falcon Breeding Sites in Cyprus (*Falco eleonorae*) involved representatives from Birdlife Cyprus, Republic of Cyprus (RoC) Game Fund and the RoC Forestry Department, and recorded 236 falcons and 104 nests.

In Cyprus, the population of wild Griffon vulture (*Gyps fulvus*) is estimated at 15 and is on the brink of extinction as a breeding species in the wild due to indirect persecution. This season the vulture colony at Episkopi started off well with a total of five nests, but for reasons unknown, no chicks were raised. Birdlife Cyprus has raised their concerns to RoC Authorities about the urgency of the situation requesting a long-term strategy for the protection of these birds.

Archaeology

Representatives from the WSBA Safety, Health and Environment Department, in conjunction with the WSBA Archaeological Society, are compiling a report of all archaeological sites on the WSBA to create a pictorial and Global Positioning System (GPS) reference guide.

Searching For Wilderness

Under the direction of the WSBA Safety, Health and Environment Department, a brochure has been compiled and distributed island-wide. Searching for Wilderness was funded by the WSBA to provide a colourful, informative guide to some of the many fauna and flora that can be found on the WSBA. Thanks go to Mrs Marie Allen and Mr Eddie John who both submitted articles.

Mammals

A public request for information on bats brought a limited response: however, the records that were received were very interesting. The bat that most people noticed at night was the large Egyptian fruit bat (*Rousettus aegyptiacus*) which has a wing span of about half a metre and is probably the easiest to see. Various buildings at Troodos Station are used by noctule

Arched tombs, RAF Akrotiri
Below, Juvenile Montagu's
Harrier *Circus pygargus*
Jason Wilson



(*Nyctalus noctula*) and brown long-eared bats (*Plecotus auritus*) either as maternity or summer roosts, and their presence was confirmed by a site visit on 17 August.

WSBA Conservation Group

Patron's visit

Mr Chris Packham, the BBC Wildlife presenter and WSBA Conservation Group Patron, visited during September to get an up-date on the activities of the group since his last visit. He was shown various locations on the Akrotiri Peninsular and Episkopi, and had time for bird watching and photography. The WSBA Archaeological Society's Chairman, Frank Garrod, provided an informative guided tour of various archaeological sites, including Lania Rock Cut Chambers and the Cliff Top Tombs at RAF Akrotiri.

On behalf of the WSBA Conservation Group, we would like to thank Chris for taking time out from his busy schedule to visit us here in Cyprus. He said: "Here in Cyprus the climate is almost perfect and the diversity and richness of the wildlife would satisfy you for a lifetime."

Jason Wilson AIEMA, LCpl, WSBA Conservation Officer for Comd WSBA

Green Turtles Green Mountain



Young volunteer Tiffany Ellick with baby Green Turtle
All photos Andy Rouse/Tracey Rich (ARWP Ltd)

Ascension Island's extraordinary biodiversity

Green turtles *Chelonia mydas* are frequent visitors to the pages of Sanctuary magazine and this year is no exception. However, these green turtles are, as it happens, not in the Mediterranean but way out in the middle of the Atlantic Ocean on the beaches of the UK overseas territory of Ascension Island (7°57'S 14°22'W).

Comprising the second-largest breeding colony in the entire Atlantic Ocean, the turtles of Ascension Island are the largest in the world, weighing in at around 250 kg and up to 1.75 m long. They are world-beaters in another sense too, undergoing a mammoth migration of some 2,500 km from the tropical waters off Brazil in order to nest amongst one of Ascension's numerous sandy coves.

No one quite knows how long turtles live in the wild, but it is suggested that they may live into their hundreds as they don't start reproducing until they are nearly forty. Marine turtles evolved around 100 million years ago and in comparison, Ascension Island (fondly known as ASI), is geologically extremely young. The island is the tip of a dormant underwater volcano, whose last known lava flows were recorded

within the past 1,000 years. Evidence of spectacular volcanic activity is present throughout the island today, from dramatic craters to sculpted lava fields, fumaroles, blowholes, and even Devil's eyeballs (impressions of splattering molten rock).

The exact number of green turtles in the world is difficult to measure but recent estimates are around 11,000 to 15,000 breeding females - less than half the population recorded in the 1820s before the prolific trade in turtles began. The turtles were captured and eventually eaten by sailors on the high seas. Turtle ponds, where the easily-captured females were held, are still evident in Ascension's main town, Georgetown.

Today, with modern-day threats from over-fishing, pollution and the consequences of climate change, green turtles are obviously still in need of their Endangered international status.

View from the top of Green Mountain

Conversely, this year, Ascension Island has seen the most prolific breeding season of green turtles in recent times. The island's beaches supported from 3,000 to 5,000 breeding turtles. A staggering 30,000 clutches of eggs are believed to have been laid with over 100 turtles coming ashore per night. Every morning the island's beaches looked as though they had been the location for a wild 4x4 race with deep tracks snaking their way all across the sand and in and out of deep bunkers. The only clue to the owners of these tracks, in fact the turtles themselves, was their final destination, the sea.

Female green turtles do not eat during the mating and nesting period which ranges from early winter to late spring. Every two weeks they undergo gigantic efforts to haul themselves onto the beach, dig a chamber, and fill it with around 100 or so eggs. At other times they will rest around the island's coast, remaining underwater at about 20 m depth and only surfacing once an hour to breathe. The massive effort required by their breeding ritual means that the turtles can only embark upon it once every three to four years, hence the variation in successful breeding attempts seen from year to year.

Only around one in a thousand hatchlings is likely to survive to adulthood: even if they make it out of the nest and onto the beach they have to run the gauntlet of the patrolling Frigate birds, Sally Lightfoot crabs, and then the piranha-like behaviour of the black fish and many more potential predators in the sea itself.

Going hand in hand with the plight of the Albatross in more southerly regions of the Atlantic, the green turtles of Ascension have also become victims of pirates. Long-line fishermen illegally trawling the waves around Ascension for highly profitable tuna catches have been hooking turtles on their way to the breeding beaches. With no official coastguard, a wide range of volunteers step in: local fishermen, members of the community, the island's conservation department, and those from the military base on Ascension work together and in the process confiscate miles of illegal fishing line, and alert authorities to those vessels maintaining radio silence in the island's waters.

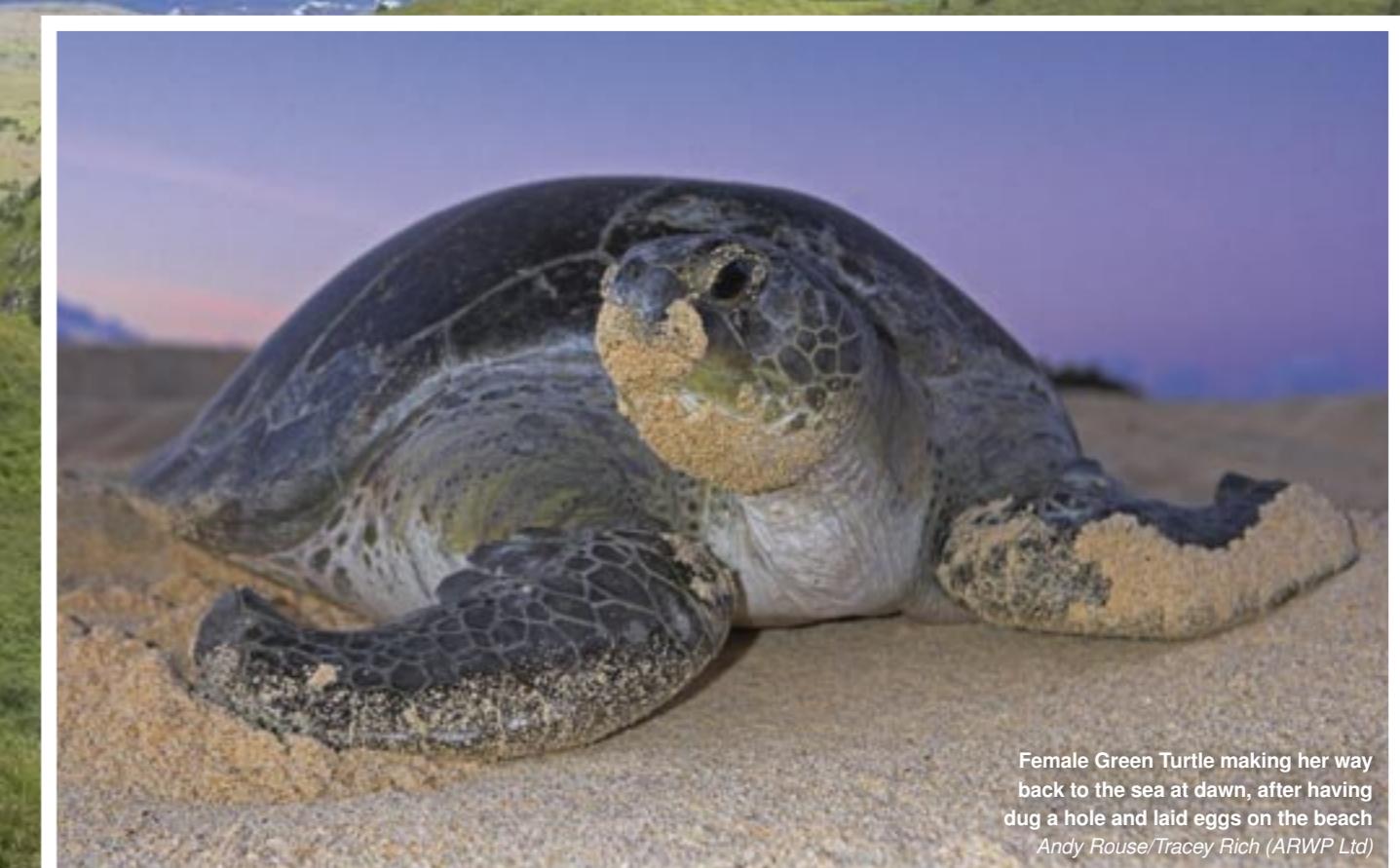
Other potential threats to green turtles are the predicted effects of global climate change. You would think that an animal that is only found in warm tropical waters might

benefit from a warming climate but it could prove disastrous for the green turtle. The sex of turtles is determined by the temperature of the sand in which their eggs are laid.

Warmer sand means that hatchlings will all be female; it doesn't take much to guess what might happen to the population if, in the future, there are no males around! Furthermore, if the beach is too hot the hatchlings do not develop at all and the eggs, quite literally, become hard-boiled.

Female turtles, in their desperation to return to the sea after spending all night digging holes and laying eggs on the beach, often become stuck amongst the jagged volcanic rocks littering the beaches. At this time of year, the Ascension Island Government's conservation department is at full tilt rescuing turtles around the island. It takes several strong men and women to man-handle such lumbering creatures out of harm's way. This year, one particular location had become a most effective "turtle trap", catching at least one or two females a week. With members of the base community always willing to lend a hand to conservation, a bit of military 'might' was required.

The wheels were thrust into motion and the very next day, a work-party was organized



Female Green Turtle making her way back to the sea at dawn, after having dug a hole and laid eggs on the beach
Andy Rouse/Tracey Rich (ARWP Ltd)

GREEN TURTLES GREEN MOUNTAIN

by the Ascension Island Base Commander, Squadron Leader Nat Winsor. The group involved men and women from the Movers, Engineers, Security, and even the Commander British Forces South Atlantic Islands, Commodore Ian Moncrieff, who was visiting his area of command from the Falkland Islands. Twenty minutes later the mission was accomplished. All the potential gaps in the rocks which were proving so hazardous for the turtles were filled, thus allowing the turtles a safe, if not smooth, return to the sea for this season at least.

Collaboration on an island just 6 km by 7 km is essential to the function of the transient human community too. Likewise, conservation efforts are a truly international effort involving teams of experts from Ascension, its sister island St Helena, the UK and as far away as New Zealand. With co-operation between wildlife organizations, scientific researchers, the Ascension Island Government departments and local people, much can be achieved. The Seabird Restoration Project sponsored by the RSPB, FCO and Ascension Island Government is a shining example.

Due entirely to a dedicated feral cat and rat eradication program, early indications show that the critically threatened Ascension Island frigate bird, masked booby, brown booby and fairy tern are beginning to return to the mainland to breed, having been restricted to a single off-shore island. Walking through the lava fields on the western slopes of Sisters Peak, you can clearly see where generations of seabirds once bred. The miles of rocks which look like they have been splashed with whitewash are indeed the remnants of former breeding colonies, some obviously used for a great many years. In places the almost fossilized guano forms stalactites hanging from the sharp volcanic rock shapes. It has been 200 years since the last birds were known to breed in these colonies but one day in the future they might once again be filled by the squawking antics of thousands of birds - not to mention the pungent smell of guano!

It's not only fauna that is peculiar on Ascension. Dominating the island is the aptly-named Green Mountain which was recently designated a National Park and contains a small patch of rainforest. It is rich in history as well as flora and fauna, much of which has been introduced by successive inhabitants

including specimens supplied by Kew Gardens. The mountain was fundamental to life on the island due to the irrigation system originally constructed by the marines in the early 1800s. Nowadays, water is provided via the new technology of reverse osmosis of seawater and supplied by another British institution, the BBC.

Green Mountain, with its lush vegetation, has developed its own climate and is rarely visible without a cloud whistling around its peak. Being a few degrees cooler, it is a refuge from the searing heat coming off the rocks on the rest of the island. An eclectic mix of introduced and native species is found on its steep slopes, with bananas growing alongside ginger and bamboo, as well as rare native ferns. Elusive feral cows and colourful land crabs also call the mountain 'home'.

Ascension Island is a truly unique place: a small volcanic outcrop in the middle of the ocean but with a fascinating natural history to satisfy even the most reluctant of amateur naturalists. From the ancient comings and goings of one of the most spectacular marine animals to the plethora of modern communication technology that is evident throughout the island – you couldn't find any other military base in quite such a variety of tropical eccentricities.

Tracey Rich

The author would like to thank the following for their help in producing this feature: Commodore Ian Moncrieff, Squadron Leader Nat Winsor, the staff of the AIG Conservation Department, Jacqui and Tiffany Ellick, and Annette Broderick from Marine Turtle Research Group, University of Exeter.

Top tips for turtle-watching on Ascension Island:

- Nesting period is between December and May.
- The very best way to view the nesting turtles on Ascension Island is to join an organized tour via the Conservation Centre in Georgetown. You can then be assured that you do not inadvertently disturb the turtles at this delicate time, and can have all of your turtle questions answered by the experts.
- See www.ascensionconservation.org.ac for more details.

Blowhole at sunset



Sally Lightfoot Crab
Grapsus grapsus



Masked Booby *Sula dactylatra*



Sqn Ldr Nat Wilson, Commodore Ian Moncrieff and Flt Lt Phil Hayward

Around the Regions

With the Conservation Groups

There are over 150 Conservation Groups operating across the MOD Estate. The following section provides an update on the dedicated work of some of these groups.



- 1 **Shoeburyness and Foulness Island, Essex**
- 2 **Chicksands, Bedfordshire**
- 3 **RAF Wittering, Cambridgeshire**
- 4 **Penhale ATE, Cornwall**
- 5 **Westmoreland and Furness, Cumbria**
- 6 **Blandford Garrison, Dorset**
- 7 **West Moors, Dorset**
- 8 **Wyke Regis Training Area, Dorset**
- 9 **Horsea Island, Hampshire**
- 10 **Bassingbourn, Hertfordshire**
- 11 **Home Counties**
- 12 **Newtown Ranges and Jersey Camp, Isle of Wight**
- 13 **Canterbury Old Park Training Area, Kent**
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- 15 **Yardley Chase, Northampton**
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- 17 **Barnham, Suffolk**
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- 23 **Ellington Banks TA, North Yorkshire**

30 Years of Conservation

Shoeburyness - Essex

The MOD Conservation Group that cares for the range areas on Shoeburyness and Foulness Island celebrated the milestone of 100 meetings on 28 April 2006, covering just over 30 years of conservation.

The group was founded on 5 August 1975 and still has two original founder members. The current group has representatives from QinetiQ, Defence Estates, English Nature, Essex Wildlife Trust, RSPB, Foulness Conservation and Archaeological Society as well as other local community organisations.

After the formal business of the 100th meeting was over members of the group were joined by over 60 guests, including many islanders, for a celebratory lunch followed by speeches. The event was held in a marquee in the grounds of the Heritage Centre.

The keynote speaker was Ian Andrews, 2nd Permanent Under Secretary of State and MOD's Sustainable Development Champion, who has a close connection with the site from his previous roles as Chief Executive of Defence Estates and Managing Director of Defence Evaluation and Research Agency (DERA). Other speakers were Steve Morley, QinetiQ Centre Manager, Land Ranges; Bob Crump, President Foulness Conservation and Archaeological Society (and one of those original founders)

Heritage Centre Betty Hansell



Ian Andrews 2nd PUS making the presentation to Ron Shadforth QinetiQ Conservation Group Secretary Pat Packenas



and Dr Chris Lewis, Secretary of the Foulness Area Bird Survey (FABS).

Following the speeches guests were taken on a guided tour of the island on a tractor trailer accompanied by locals John Burroughs, Peter Carr and Bob Crump, who gave a fascinating insight into just what it's like to live and work on an island owned by the MOD.

A smaller group of MOD representatives then went on to look at the Avocet Facility and were very impressed with both the facility itself and the staff who operate it.

The volunteer conservationists are dedicated to looking after this unique site, part of which is a Site of Special Scientific Interest (SSSI), and over the years have won three awards for their work including runner up for the internationally acclaimed Sanctuary Award in 2004.

Located within the Shoeburyness Range and lying on the north shore of the Thames Estuary between Southend in the south and the rivers Roach and Crouch in the north, Foulness Island comprises extensive inter-tidal mud and sand flats, saltmarsh, beaches, shingle/shell banks, grazing marshes, rough grass and scrubland. The islands, creeks and grazing land form an integral part of the sheltered feeding and roosting sites for all of these birds, together with foraging sites for wintering hen harrier.

A big thank you to everyone who worked hard to make it such a successful and enjoyable day.

*Ron Shadforth,
QinetiQ Conservation Group Secretary*



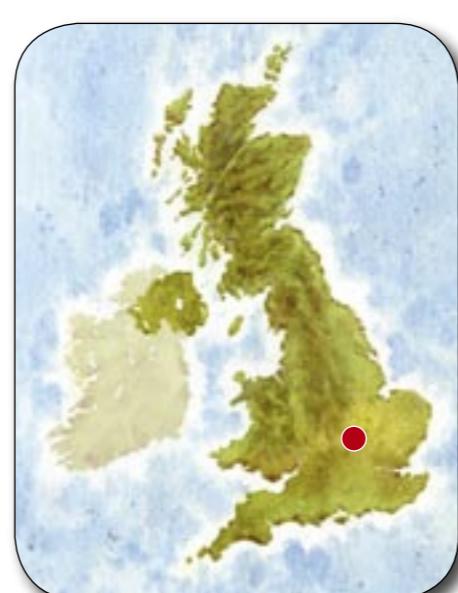
The complex matrix of habitats also supports a diverse range of plants and invertebrates.

With fifteen Grade 2 listed buildings and evidence of a Romano-British settlement dating from the late first century AD to mid-late third century AD, Shoeburyness site is also important archaeologically.

In 2001 The Foulness Archaeological and Conservation Society (FCAS) established the Foulness Heritage Centre. This was designed to hold some of the artefacts relating to rural life on Foulness including domestic life, agriculture, and local industries, as well as all aspects relating to the flora and fauna of the island. The Centre opened on 3 February 2003 and is gaining in popularity, enabling more visitors to experience the uniqueness of the Centre and take part in open days on the site.

A management plan for a herb-rich meadow at Chicksands is being implemented. This involves regular mowing and scrub clearance to maintain the habitat for various species. The meadow is a designated County Wildlife Site and is home to several rare plant species, including the nationally rare bee orchid.

Chicksands has on its training area an extensive meadow of around 45 acres.



Resident barn owls and the implementation of a management plan for a herb-rich meadow are of particular conservation interest at Chicksands for the current year.

Chicksands has on its training area an extensive meadow of around 45 acres. This herb-rich 'unimproved grassland' is a designated County Wildlife Site and a highly important habitat for flora and fauna. Skylarks nest there and are present throughout the year, brown hare flourish, marbled white butterfly and Roesel's bush cricket were recorded in June and the nationally rare bee orchid grows in abundance.

Following a visit to the site in summer 2004, Philip Irving of the Greensand Trust advised that the meadow was in urgent need of mowing, without which coarser grasses and scrub would dominate to the detriment of herbs and orchids.

A management plan was subsequently produced by the Chicksands Conservation Officer in consultation with Philip Irving and implemented in September 2005. Alternate 25 m wide strips were mown in late September when birds were unlikely to be nesting, and the cuttings removed. The un-mown strips were left to provide a refuge for wildlife. These strips will be subsequently mown in late September 2006, and the alternate strips left uncut.

Chicksands' meadow and set-a-side arable fields are an ideal habitat for small mammals and sustain barn owl, tawny owl, little owl, kestrel and buzzard. During 2005/2006, a barn owl pair successfully raised a brood of six owlets in a barn owl box fitted to an old oak tree in 2000. The tree is

located in a spinney between two large set-a-side fields, over which the adult birds were regularly seen hunting at dusk during summer and early autumn.

One evening in mid-June, Mr Phil Cannings, a licensed bird ringer, ringed all six owlets. Some days later, two of the ringed owlets were found by Lance Corporal Ian Quick lying together in long grass below the box from which they had fallen, being not yet able to fly. Fortunately, neither bird suffered injury and both were returned safely to their home.

All six youngsters had a lucky escape in early July when heavy rain and gale-force winds caused the roof of the box to collapse along one side. Sergeant Rose Thompson and her husband Staff Sergeant Kev Thompson made and fitted a new roof the same day. Subsequently, all six owlets successfully fledged.

It was now apparent that the wind-battered barn owl box was in urgent need of replacement. Corporal Des Allen very kindly made a new box from marine ply and Phil Cannings removed the old box and fitted the new, more robust one, in late November. Since then a barn owl has been seen on several occasions perched on a branch near to the box. Hopefully a pair will take up residence and produce more owlets in 2006 and beyond.

Barn owl pellets from inside the old box and the ground beneath are now being examined by Victoria Sage, an undergraduate reading Environmental Studies at the University of Hertfordshire. Victoria will determine prey species from the bones recovered from the pellets. Continuation of this project through the year should enable seasonal variations in the availability of prey species to be determined.

Defence Intelligence Security Centre (DISC), Chicksands Conservation Officer, Squadron Leader Roger F Smith DPhil RAF

Phil Cannings ringing one of six owlets. Feigning death is a self-defence strategy employed by owlets when they are unable to avoid capture by perceived predators Roger F Smith



Phil Cannings fitting new barn owl box to oak branch Roger F Smith

Bedfordshire

Chicksands Barn owls and a herb-rich meadow

Cambridgeshire

RAF Wittering Balancing Reservoir

In conservation terms, anglers are something of a paradox; while most people disagree with the principle of the capture and killing of wild creatures, few can argue that the way to maintain a balance in a semi-natural environment is through human intervention. To this end, anglers have a vested interest in maintaining the environmental relationships that enables them to gain pleasure from their pursuits. This has been the case at Royal Air Force Wittering near Stamford where the Station's Angling Club has been particularly proactive in restoring the Balancing Reservoir situated within the Station boundary.

The Balancing Reservoir is a 2-acre stretch of water that act as a collection area for storm water. It has an outlet to allow excess water to flow away once a certain level is reached. It had, in the past, been a reserve of fresh water for use by the Station fire and emergency services, but has long been left to become overgrown.

Over the past 12 months, the Angling Club has taken over responsibility of the Reservoir. The Club's aim is to turn it into a fishing and conservation venue, for the benefit of Club members and for Station personnel and their dependants to enjoy the natural environment. It will aid in the coaching of new members by the Club's more experienced anglers and generate anglers who can go on to represent the Station in local league matches.

The first task was to make the Reservoir fishable whilst retaining as much of the habitat as possible for wildlife. So before any work could be carried out, outside agencies were brought in to provide advice. In June 2005, English Nature was consulted and it was decided that half of the area surrounding the Reservoir would remain untouched as this is an important bird-breeding site. This decision has proved sound as, despite other work being carried out, nesting has continued. Brash from the clearance of bushes and trees are being



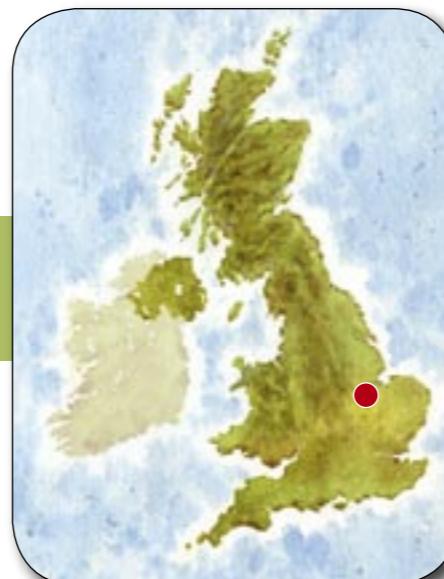
The lake as it was in Sept 2004 before the clean-up
Sgt Andy Wilson



John Smith, Environment Agency nets a fish!
Sgt Andy Wilson



John Smith, Keith Bone & Michael Potter from the Environment Agency electro-fishing as part of the fish count
Sgt Andy Wilson



placed at two sites adjacent to a public road to form a habitat for snakes and other reptiles. This is clearly working because two adders over 18 inches in length have been seen sunbathing around these areas. Also observed around the water have been water voles and countless wild fowl.

During the late summer of 2005, the Environment Agency assisted the Club in doing a fish count. This count showed that fish stock levels were low. The Club has been placed on the fish 'want list' with the Environment Agency, and so far they have supplied the Club with 250 rudd between 3 and 7 inches. Crucially, from an environmental perspective, the Club is now on the 'rescue list' for fish, which means the Reservoir has the capacity to take extra fish for whatever reason at short notice.

In order to make the Reservoir fishable, six "pegs" (angling points) have been built including a family peg. There are plans to build a further four pegs, which will include another family peg. Raking and cutting of the reeds has started, but this is a never-ending task until we get more colour in the water - this should be achieved by stocking more fish.

By improving the facility of the Reservoir, Club members are balancing the natural habitat of the area with a Station resource that will enable members and, importantly, their children to use this facility. This will help ensure that personnel are able to enjoy the environment and develop an understanding and appreciation of wild animals in their natural habitats.

*Flt Lt Andy Brown, Officer in Charge,
RAF Wittering Angling Club*



Shetland ponies have been introduced as a special conservation measure to help improve the habitat of Penhale Army Training Estate sand dunes.

Ray Lawman of English Nature was able to supply us with nine ponies to graze the scrub and tall grasses which have started to invade the marshy dune slack area where the rare fragrant orchid and marsh helleborine are found. It is hoped that the grazing will encourage the growth of these rare flowers and other dune species by reducing the competition and crowding from the faster growing plants.

Penhale Camp's 940 acres of Training Estate is part of the most extensive dune system in Cornwall and is so important for its plants, wildlife and geology that it has been designated both a SSSI and a Special Area of Conservation (SAC).

Grazing with the ponies was trialled last year on an area of Penhale outside of MOD land. Due to its success, it has been expanded this year and hailed as a



Moss-covered dunes at Penhale Crown copyright



Penhale coastline showing typical habitat and dune slack areas
Crown copyright

Cornwall Penhale Army Training Estate

training exercises, although, since the birth of the new foals, I've asked the Sergeant Majors not to shout too loudly!"

The ponies grazed the site until late spring but were returned to the Lizard National Nature Reserve (NNR), Cornwall, before the flowering plants started to appear. So far the results look promising and we can see notable improvements in the condition of the grazed areas.

We plan to use the ponies again to help manage areas of the headlands overlooking Perranporth and Holywell, where large scale scrub-clearance has been carried out.

Beth Tonkin from English Nature has overseen the project and commented: "Penhale Dunes is the largest dune system in Cornwall and is of international importance. The successful introduction of grazing to control scrub invasion using hardy Shetland ponies is the result of a continuing partnership between the MOD, the Conservation Ranger and English Nature."

Sarah Taylor, Penhale Sands Special Area of Conservation Ranger and Jodie Harris DE EST Environmental Advisor, West Down Camp, DE Operations South.

Cumbria

The Westmorland and Furness Bat Group



Concrete bat box
T H Campbell



at some point by three different species: soprano, common pipistrelles and daubenton's bats. The most common bat found was the soprano pipistrelle at approx 89% followed by common pipistrelle 7% and daubenton's 4%.

As a new member of the Bat Group and recent devotee of bats this was my first proper outing with the W&FBG and I would like to say how welcome I was made. It was wonderful both to learn more about bats and to spend time with people who have a great appreciation and understanding of the countryside. So it is an honour to be asked to write this article. If you are interested in bats and the countryside I can recommend you join your local bat club - it's fun!

T H Campbell, Major (C2 MSF), Comdt/RSO

Pipistrelle bat
Ian Davidson-Watts



It was with some trepidation that we set off for a bat survey on the Warcop Ranges during the first weekend in October 2005, despite the safety briefing. It was supposed to be a non-firing weekend, but what if they were carrying out a special exercise and had forgotten to fly the flag, or there was an unexploded shell?

I shouldn't have worried: after all this is the British Army and their ranges are well known for safety rules as well as their conservation status. The land is largely unimproved upland, consisting of moorland interspersed with pockets of mature deciduous mixed woodland which is where the bat boxes are. Our mission was to locate over 120 bat boxes, in two days, over an area of approx. 8 square kilometres.

Our group was led by John Martin, followed by Jenny Holden who located our position using GPS. Also with us were: Chris Waite who had been in the Army and could identify all the shells – which was potentially very useful; David MacLean who wore galoshes and knew a thing or two about bats and carried all the equipment to repair their homes; and Eve Burrino who knew more than me – so I volunteered to carry the ladders.

In the first two woodlands we visited, 42 boxes were located with 28 bats in residence in eight of the boxes. Two of the bats were daubenton's, a male and female found in a NW facing wooden box next to a small stream. The

rest were soprano pipistrelles, who appeared to be forming harems: five of the boxes held three bats and over, with a maximum of eight in one box. Many of the females showed signs of having mated already.

The boxes were all fixed in mature trees. One woodland had a higher proportion of concrete bat boxes to wooden ones, and these showed a significant preference with 100% of the pipistrelles in residence found in them. If we looked at evidence of bats in boxes rather than actual residence, there was still a preference over wood, but only by 65%. One could deduce that the extra insulation of the concrete boxes and heat retention during the night was attracting the bats.

The first wood we checked on the second day had one box with soprano pipistrelles but little else apart from fine views of a great spotted woodpecker. However, as we moved further west and the activities of the Army became more apparent, the first and only box with common pipistrelles was found – two females and one male. Some of the mature oaks had been damaged by shellfire, along with a number of bat boxes, but for every box that was damaged more residences would have been created in the splintered branches.

Over the two days we managed to locate and check 91 boxes. Evidence of bats was found in 33 and actual bats in another 13. Approx 50% of the boxes had been occupied



Blandford had a very busy and productive year in 2005. All three SSSIs were in urgent need of attention in order to meet the MOD and English Nature target of attaining 'recovering' or 'favourable' status by 2010.

Although much of the downland has been able to retain its quality despite a complete lack of grazing for at least eight years, the provision of grazing was of paramount importance in turning the current 'unfavourable declining' assessment back to a more positive outlook.

The Regional Prime Contractor (Debut) took on the task of ensuring the sites were fenced for grazing stock, and also placed water troughs where required. The tenant farmers have all agreed to maintain stocking levels on the downland in line with an English Nature agreement – and spring 2006 saw the first cattle start grazing the site. English Nature has recognised the work that has been put in, with the result that we have already been upgraded to 'recovering' status.

Additional work on the downland has included the removal of the old assault course, coupled with a scrub clearance programme that has helped to vastly improve the quality of the landscape. We are now in a maintenance situation rather than a restoration one.

The downland SSSIs were notified primarily due to the presence of dwarf sedge *Carex humilis*. This nationally scarce species is doing particularly well at Blandford, with what is regarded as being one of the largest colonies in Dorset. It has even managed to find its way into some of the gardens in the married quarters estate!

Blandford Garrison was entered into an RSPB Wessex farmland bird feeding competition, along with several other MOD sites

Blandford Garrison



Pair of chalk hill blues on squinancywort
Steve Davis



Flowers of dwarf sedge
Steve Davis

in the region. A ground feeding station was set up, with grain kindly donated by the Garrison Game Shoot and a local farmer. The resultant feeding flock of up to 78 yellowhammer, plus a merlin attracted by the flock, helped to ensure that Blandford Garrison emerged victorious when the results of the competition were announced.

The Game Shoot has also been very active in its conservation role, maintaining habitats that have helped boost the species lists for both flora and fauna. The rides and clearings that have been created have produced new records for early purple and greater butterfly orchid, whilst the huge numbers of violet have enabled a small population of up to five silver washed fritillary to establish themselves. In addition, dark green fritillary were recorded for the first time in 2005.

Butterfly monitoring reaped rewards, with several new colonies of small blue *Cupido minimus* being located. New species for the site included silver-washed fritillary *Argynnis paphia* and dark green fritillary *Argynnis aglaja*. Chalk hill blue *Lysandra coridon* numbers again reached four figures. With an early August count in excess of 2,000 individuals, Blandford Camp is proving to be the Dorset stronghold of this species as numbers have crashed dramatically elsewhere.

Conservation is not just about nature of course, and the Garrison has been working to clear a long barrow that was heavily covered in scrub. The result of a couple of days' work is that although much of one side of the barrow is almost clear, there is still much more work ahead. However, the view of the barrow is vastly improved and English Heritage is very keen to investigate further as the barrow is much larger than was first envisaged.

The conservation group will again be monitoring the flora and fauna of the site this year – and keeping a close eye on the effect that cattle grazing may have on the dwarf sedge.

Steve P Davis,
Deputy Garrison Staff Officer

Dorset

Dorset

West Moors Conservation Group Lowland Heathland

Lowland heathland is a semi-natural ecosystem which was developed around 3-5,000 years ago. It is a naturally rare habitat that has suffered major historic declines, with 86% being lost since 1800. This is not only on a UK scale, but on an international scale. Britain is internationally important for this habitat, with over 20% of the NW European total found in the UK.

West Moors' extensive SSSI is approximately 122 ha and largely comprises vegetation of humid heath with smaller fragments of dry and wet heath scattered throughout. There are many small ponds and a few larger lakes, plus an extensive system of drains. Pine plantations and secondary birch woodland are also present.

Many areas of the site, especially around the perimeter, are tightly mown and this mowing regime has produced a mosaic of heath and acid grassland. The site contains amongst its many species, the nationally rare but introduced liverwort *Lophocolea bispinosa*, and the nationally scarce mossy stonecrop, coral necklace and marsh clubmoss *Diphasiastrum inundata*. All in all, this makes for a busy habitat for the feeding woodlarks and is one of their most important breeding sites on the Dorset Heaths.

The site is home to many species of bird, ranging from the buzzard to the goldfinch. The most notable birds are the Red Listed woodlark, Dartford warbler and the nightjar.

The site contains dense gorse blocks which are important for the winter survival

The Red Listed Dartford warbler thrives on young gorse.
Colin Barber



and breeding success of the Dartford warbler. With the assistance of the RSPB, these blocks are rotationally coppiced to prevent degeneration. The Dartford warbler is unusual in being a sedentary - and wholly insectivorous - species. It is therefore highly vulnerable to hard winters, especially snow, and is dependent on good quality habitat and especially well-managed gorse for its survival.

All six species of British reptile are found on site, including the rare sand lizard and smooth snake. Dorset's heathland is of critical importance to both these species as they support 80% and 90% of the UK population respectively.

Our site has many species of invertebrate,

moth and butterfly, with the existence of strong colonies of the restricted silver studded blue butterfly which are associated with mown heath. Due to the large area of open water on site we are particularly rich in Odonata with 24 of the 38 species of dragonfly and damselfly occurring in the UK being recorded. Important species include the uncommon small red damselfly, scarce blue-tailed damselfly, keeled skimmer, hairy dragonfly and the black darter.

West Moors Conservation Group, with the aid of our local experts, English Nature, RSPB and the Dorset Wildlife Trust, will continue to carry out the kind of management that was practised in the past, such as grazing, cutting and controlled burning, to ensure that this important habitat is not invaded by scrub and trees.

Major Paul Wells RLC, West Moors Conservation Officer, Defence Fuels Group

One of a herd of British White cattle brought in to control the gorse and restore the heathland.
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There are three small training areas which make up Wyke Regis Training Area in South Dorset: Verne Yeates, Tidmore Point and the Fleet. These are located only a few miles west of the holiday resort of Weymouth and are home to some rare and interesting flora and fauna.

The past year has seen one of these



Small eggar larval web
M J Kerby



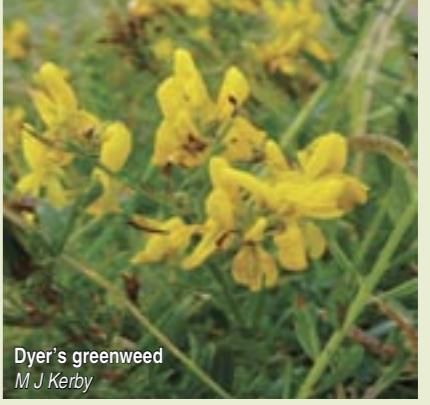
Newly emerged marble white butterfly
M J Kerby

Environmental Conservation Officer, Mr Dai Davies, has worked tirelessly to produce an Environmental Management System that will safeguard this fragile marine ecosystem.

It is an alarming experience when your local botanist informs you that there are several 'red data book' species on a single rock! We are now moving forward with a complete survey and hope that this will result in the area outside the SSSI being designated a Site of National Conservation Importance (SNCI).

Wyke Regis Training Areas (WRTA)

Tidmore Point is at the bullet-catching end of a Defence Training Estate small arms range and, as such, has remained relatively untouched amid the growing camp sites in



Dyer's greenweed
M J Kerby

areas, located on Portland, attract a great deal of attention due to the interest of Dorset Wildlife Trust in the adjacent Kingbarrow Quarry.

Verne Yeates was for years thought of as a barren piece of land with little top soil covering its windswept, eroded rock, and only good for bridging and signalling exercises. However, the 2.4 ha of Verne Yeates contains a deep cutting which was used as a tramway in the construction of what is now the Verne prison. Although this cutting has SSSI status, it has lain untouched for many years. However, Weymouth & Portland Borough Council are now planning to open up the area with a series of paths connecting the disused

this beautiful area. Overlooking the Fleet and Chesil Beach, this area is located in one of the most ecologically sensitive areas on the south coast. Designated a SSSI due to its calcareous grasslands, these areas had become overgrown with scrub and been in decline for many years. A new management plan has seen habitat improvements balanced with the need to maintain the area for training purposes.

The Fleet is a tidal lagoon that adjoins Chickerell Camp and Wyke Regis Bridging Camp. It is designated a European Conservation Site, SAC and SPA. These designations impact on all of the training conducted at the Bridging Camp where the

from the Marine Conservation Society and Dorset Wildlife Trust to conduct a baseline survey into the decline of pink sea fan corals. The survey found 577 washed up specimen on our 59 m of beach. This is an alarming number and the surveyors fear that local scallop trawling and entanglement in nets could destroy the population. The survey is being repeated every three months and we hope that through publicity on the local news and media outlets people's attention will be brought to this environmentally sensitive issue.

Major Harry Reddick, Commandant Wyke Regis Training Area

Hampshire

Horsea Island Conservation Group

Horsea Island lies along the north shore of Portsmouth Harbour and is where the Defence Diving School does much of its training. It was formerly an island but was reclaimed by landfill during the 1970s, when it was connected to the surrounding mainland. Part of Horsea Island falls within the boundary of the Portsmouth Harbour SSSI, and was included because of its chalk grassland habitat, thus increasing the range of species and habitats present within the designation.

SSSIs represent some of the best of the country's wildlife and geological features, which are irreplaceable aspects of our national heritage. Horsea Island supports a wide range of flora and fauna including five species of orchid, many rare species of butterfly, and the very rare bird, the grey phalarope *Phalaropus fulicarius*. The SSSI at Horsea consists of five main habitats: an area of established woodland and dense scrub; secluded pockets of chalk grassland with dense thickets of shrubs; calcareous grass with scrub; a large meadow of tall, coarse grass and shrubs; and an area of dense scrub with a potential for a wetland area. These had remained largely untouched for fifteen years and had fallen into 'unfavourable decline'.

Following a period of consultation by Dr Tony Cosgrove, English Nature's Conservation Officer, a 5-year management plan was agreed

and set up in June 2005.

In order to restore the meadow to a suitable condition, Ian Mackfall, the Maritime Warfare School Environment Manager, who was working closely with Defence Estates Environmental Support Team, with support from the Chief Environment and Safety Officer (RN), contacted the Hampshire Grazing Project to investigate whether the scrub could be removed using natural methods. The meadow supports the majority of the site's small heath butterfly colony but had become increasingly encroached by scrub vegetation, threatening this habitat.

The Hampshire Grazing Project is a partnership project supported by Hampshire County Council, English Nature and the Environment Agency. It facilitates appropriate grazing of areas of nature conservation interest in Hampshire such as chalk downs, heathland and lowland pasture. For such sites grazing is a vital management tool to help maintain and even enhance the diversity and richness of the habitats and species found there.

The result of this investigation was the delivery of a three Highland cattle on a meadow south of the Deepwater Building, for a three week trial period in May, which created a lot of local interest. The security guards were soon acting as 'herdsman', carrying out daily checks on the cattle and ensuring they didn't stray from their task.



Aerial view of Horsea Island showing the five main habitats included in the Portsmouth Harbour SSSI in 1991 prior to the degeneration of the site.
Crown copyright



Commander Chris Lade, Commanding Officer of Defence Diving School welcomes the Highland cattle onto the SSSI
Crown copyright



Hertfordshire

Bassingbourn Army Training Regiment

During the last year we have been subjected to various audits and inspections. All have gone well with good reports from these especially for our Environmental Management System (EMS). There are plans ahead for Babcock Dyncorp (the Regional Prime Contractor) to carry out an Environmental Management Plan for the OTA.

The upgrading of the windows and doors of our hangars threatened the nesting of two pairs of barn owls, which seem to have made a permanent nesting area within the rafters. The Quartermaster sought a solution to this problem and the contractor who was installing the windows - aptly named Eagle Construction - offered to put in two holes where the owls could enter/exit at no extra cost! The work is now complete and the owls are happily using their new openings.

**Mr Terry Simpson, Unit SHEF Advisor,
ATR Bassingbourn**



around the OTA and these are observed for any nesting birds. There are 19 different varieties of grasses growing within the OTA as well as bee orchids and many other wild flowers and shrubs.

On station we have one of the few remaining control towers from WW II. This has been turned into a museum displaying a variety of USAF memorabilia from the era of the Memphis Belle. The Tower Museum is a Grade II Listed Building and is run by volunteers from the East Anglian Aviation Society.



Main lake habited by various species of water fowl
Terry Simpson

Conservation Groups

Home Counties

Aldershot & Minley, Ash & Pirbright, Bramley, Browndown, Longmoor, Barton Stacey, Otmoor and Hankley

After some quite outstanding work by a varied group of people there is at last a very tangible programme of works, supported by considerable funding, aimed at restoring the condition of our SSSIs in the Home Counties. In such a geographically widely spread area it can be difficult to construct a cohesive plan but it has been achieved and the future looks exciting.

There has been much mechanical clearance of scrub, brush and trees to facilitate the restoration of our lowland heaths. To fully achieve this there has to be extensive and sustained management of the rural estate - it will not happen naturally - and we have entered into agreements with the Surrey and Hampshire Wildlife Trusts to graze those areas that have been mechanically cleared. Fences and grazing animals are not to the liking of everybody who has an interest in the area, and much effort has been spent in appeasing and accommodating the detractors and doubters. Our priority must be to ensure that military training can go on. This is being made yet more difficult by rising pressure on

MOD to provide additional amenity land to reduce the pressure of public access that is threatening the Thames Basin Heaths SSSIs.

Otmoor, north of Oxford, is enjoying a particularly rich period of conservation growth and diversity due almost entirely to the good efforts of the conservation group members working together. Tenant farmers, range wardens, English Nature, RSPB, DEFRA et al are clearly demonstrating the benefits of team work, understanding and compromise.

A clever series of works has been undertaken on Long Valley (Aldershot) to alleviate the silting up of Fleet Pond. Early observations indicate that this has been a success. Great credit is due to Entec, our environmental consultants, for their expertise in this work. It is hoped that now English Nature will feel that they can give their assent for the pond to be dredged.

Aldershot, Longmoor and Hankley Training Areas have been the main recipients of the SSSI works. Longmoor is fenced and cattle have been deployed. Aldershot is to be fenced imminently and



plans are being developed for fencing at Ash Ranges.

Meanwhile, there have been reported sightings of an otter in the vicinity of our self-constructed otter holt at Barton Stacey, north of Winchester.

We are working closely with English Nature, Hampshire County Council and conservation group members to balance the needs of military training, public access and improvement of the condition of the SSSI. We are now particularly interested in the challenge of managing the shingle bank at Browndown on the Hampshire coast, near Lee on Solent.

Lt Col Andy Westcott, Comd DTE(HC)
Chairman of Home Counties' Conservation Groups: Aldershot & Minley, Ash & Pirbright, Bramley, Browndown, Longmoor, Barton Stacey, Otmoor and Hankley.



Heathland clearance, Aldershot
Liz Rowan



Pond restoration, Longmoor
Liz Rowan



Newtown Ranges and Jersey Camp Conservation Group

Team (Defence Estates) for an expert to try and locate our spider in 2006.

The staff at the Range assisted the National Trust at Newtown to top up a shingle bank in the estuary to provide a better and safer nesting site for terns. Close liaison between us, and the help provided by a Landing Craft from 17 Port & Maritime Regiment, ensured the task was carried out successfully.

Bird counts are carried out monthly by John Willmott our ornithologist; his findings are used on a local and national basis as well as contribution to the MOD count. He recorded a total of 118 species this year with sightings of a marsh harrier over Elmsworth and a grasshopper warbler at Spur Lake. Little grebe and coot raised their young on Clayden's Pond.

Towards the end of the flowering season a new species of orchid was found by Range staff on the meadow, believed to be southern marsh orchid. The areas were recorded and a close watch will be kept to see what evolves.

September is the time to check the nesting boxes. We have 34 located in Locks Copse, mainly used by the great tit and blue tit families. With the assistance of John Willmott and Richard Grogan (Mammals) the boxes are emptied of nesting material and a record taken of a successful nesting. Frequently dormice set up home after the chicks have flown and this year 12 were recorded which, according to our mammal expert, is healthy.

Coppicing is carried out by the staff in the autumn on areas agreed by the conservation group. One of the Cadet units in Jersey Camp clears the ground for us on an annual basis. This, together with learning about coppicing, contributes to an academic award for the students.

Maj (Rtd) Dave Maidment,
Range Officer & Estate Manager



Nest box clearance
Dave Maidment



Dormouse lodger in nest box
Dave Maidment



Open Day, May 2005
Dave Maidment

Kent

Canterbury Conservation Group Old Park Training Area

The Old Park Training Area (OPTA) is a back door training area to Howe Barracks Canterbury and, presently, home to The Argyll and Sutherland Highlanders. The public has access to most of it with a Sustrans cycle track running along the northern extremity from Canterbury to Fordwich. Much of the land is designated as a SSSI as it is an important area of predominantly acid grassland. Under an arrangement between the MOD and English Nature the site is managed in such a way that military training and nature conservation operate in partnership.

However, the area is prone to vandalism, abuse by fly tipping and damage by motorbiking. Within a six month period thirteen burnt out cars have been removed. Despite covert police surveillance the incidents have increased. Coordinated multi-agency efforts are in hand in an attempt to control the problems.

Situated on the northern edge of the Old Park Training Area and close to a housing estate is an expanse of water generally known as the Reed Pond. This pond is of considerable historical importance since it formed a natural head of water for Canterbury Cathedral's own water supply established by the mid twelfth century. The original arrangement comprised two ponds, one upper, the Reed Pond, and a lower one which is now filled in and overgrown. Water was fed from the upper and lower ponds to a nearby conduit house and from the house through a system of lead pipes and filter tanks to the Cathedral precincts. There are few such monastic features surviving in Britain.

The pond was last cleared in 1996 and is now in a poor state principally as a result of no regular maintenance and the accumulation of domestic refuse. With public footpaths and the Sustrans cycle track alongside, this area is in the public eye. The improvement of it and its surroundings



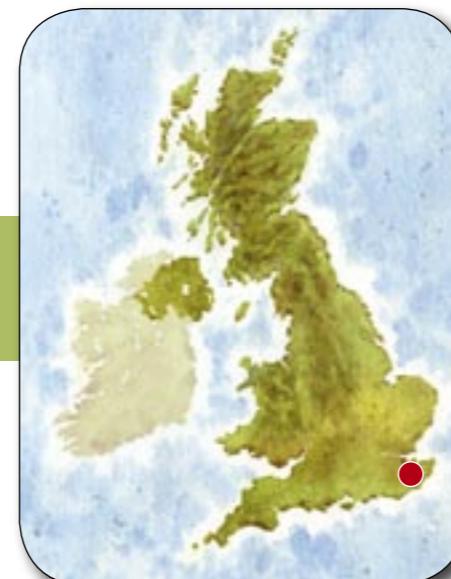
A number of the trolleys pulled out of the pond
David Handforth



Jack Handforth and Sky Chettenton
lend a helping hand
David Handforth



Some of the team with some of the rubbish
David Handforth



by both hard and soft landscaping is now a prime objective of the Canterbury Conservation Group. To this end the MOD is working with Canterbury City Council, the Kentish Stour Countryside Project and other organisations including local residents' groups and statutory agencies. Such was the interest shown and support given by local residents that a sub-committee of the Canterbury Conservation Group was established.

"Clean-Up Action Days" were arranged in November and April last, to which members of the public as well as military personnel were invited. At the initial event over five tonnes of rubbish were cleared and 200 bags filled. The items included eight shopping trolleys, a sofa, a mattress, fencing, a washing machine, and three abandoned motorcycles!

With the assistance of Kent County Council and Canterbury City Council a new style of kissing gate was installed nearby to prevent unauthorised access to the area by motorcyclists.

There is also a proposal to restock the pond if required. Prior to doing this, however, it would be necessary to assess the current contents by electro-fishing.

The intention is to make environmental improvements an ongoing project. Regular clean-ups combined with activities such as pond dipping and fishing competitions are planned. With continued maintenance the pond will no doubt become established as a place of special interest to the public.

SSgt Dave Handforth, Military Clerk of Works, 2nd Infantry Brigade, and John Port, Estate Surveyor, Defence Estates



Kirkcudbright Training Centre

Lieut. Commander Nigel Davies RN (Rtd) at the fissure opening where the carving was found

Crown Copyright



Sitting in my office looking across the Solway Firth at the 'Blue Remembered Hills' of the Lake District National Park, I have to remind myself how fortunate I am to work in such a beautiful part of the world.

Commandant of the Defence Training Estate at Kirkcudbright is a job of fascinating diversity. Yes, I have to worry about where the chemical toilets for the next troop exercise are going to be positioned. Has anything been done about the fence line at so-and-so? What's the deadline for the annual range report? And so on and so on... But to get the paperwork into perspective, all I have to do is just look up and take in the timeless beauty of Skiddaw, Helvellyn and Scafell Pike, across the sparkling waters of the Solway.

Kirkcudbright, the Royal Burgh of the Stewartry, is in that undiscovered southwest corner of Scotland, the 'Cornish peninsula' of North Britain, where the Galloway hills roll down into the fertile farmland, machars, cliffs, salmon rivers and sandy bays and beaches of Dumfries and Galloway. Tourists, passing swiftly along the A75 en route to Stranraer and the Ulster ferries, are unaware that they have passed by the 5,000 acres of the Kirkcudbright Training Centre, jutting into the Solway Firth, not six miles south of the road.

In 1941 the range area was a farmland peninsula, a little south and east of Kirkcudbright town. By 1943 it had been requisitioned by the War Office and turned into a training area for troops destined for the re-invasion of Europe. The first troops to train over the land arrived in early 1943 and were from Poland.

On Thursday 1 April 1943 Polish Rifleman, Z Wladyslaw, with time on his hands, found himself in Howwell Bay and carefully carved his name into the rock in a fissure in the bay. There it remained, forgotten and undisturbed, until Thursday 9 March 2006 when it was re-discovered by an itinerant Range Safety Inspector with a penchant for beachcombing. Although only a recent graffiti in terms of 20th century history, it opened up a valuable peephole across time to the very earliest days of the range.

Who was Soldier Wladyslaw? He probably originated from the Russian Polish Division and came with his compatriots from Russia, via Persia (Iran) and South Africa, (at Winston Churchill's behest to his new Russian allies), to join his countrymen in preparation for the invasion of Europe. Was he staring across the sparkling Solway Firth at those blue distant hills that Thursday in April 1943, wondering what the future had in store for him in those troubled times? Did he feel moved to leave his mark on the landscape in defiance of his own mortality? How long did he stay in Scotland? Did he take part in 'Operation Overlord'? Did he survive the War? Was he still alive?

We contacted the Polish Embassy in London and explained what we had found. The young lady seemed interested and

Scotland

Kirkcudbright Training Centre

Z Wladyslaw's name carved into the rock at Howwell Bay
Crown Copyright

suggested that the Defence Attaché might contact us in the near future with a view to visiting the area. In the meantime we continue to speculate about the man whom the range wardens have nicknamed 'Wlad the Engraver'. We hope one day to welcome him to the Range or, if history was not kind to him, at least show his family a little corner of Scotland which was once his home. Watch this space...

Nigel Davies, Lieut. Commander RN (Rtd), Commandant, Kirkcudbright Training Centre

Northampton

Yardley Chase

Weather

Overall 2005 was a warm year, with the average temperature for October an unusually high 19.5°C. This year's rainfall was well down on 2004 producing only 542.5mm. Pond levels started to drop in May reaching an average low in September, with some ponds not reaching full even by the end of the year.

Botany

The mild winter encouraged early blooms and seeding, and consequently a second flowering for a lot of species, some extending well into November. This pattern of flowering seems to be becoming the norm when accompanied by our mild winters of the past decade. A walk on 10 November produced a list of 15 flowering species – red campion, white deadnettle, yarrow, bristly oxtongue, speedwell, poppy, cinquefoil, dandelion, hawkweed, wild strawberry (flower and green fruit), lesser periwinkle, groundsel, hardhead or common knapweed, ragwort and red deadnettle. Fungi have had a good year, with many colourful waxcaps seen amongst the meadowland grass. A new species for the area was recorded in 2004, an Earthstar *Gastrum sessile*.

Entomology

We have a new county record for this year with a micro-moth *Cameraria ohridella* which mines the leaves of horse-chestnut trees *Aesculus hippocastanum*. This leaf-mining moth was first discovered in 1985 in Macedonia, and does not yet appear in any reference book.

In 1989 it appeared in Austria and has since spread across Europe reaching England in 2002 where it was first recorded in July at Wimbledon. Spreading steadily northwards, it was first recorded in Northampton on 11 August 2005 by the conservation group on the Compton

Estate which neighbours MOD land, and subsequently on MOD land. Identification needs care as there is a fungal look-alike *Guignardia aesculi* which develops into large brown blotches.

Dispersal of the moth from infested areas occurs on a broad front by adult flight with wind assistance, and also through transport of adult moths and infected leaves by various vehicular means.

Reptiles and amphibians

Frogs were spawning on 16 March, followed by toads a few days later. Both frogs and toads are spreading across the whole area and at the right time of the year are very vocal. The many ponds on our site are proving to be a very suitable habitat since they were first recorded in 1987, with the great crested newt and the smooth newt recorded as early as the 1960s. Slow-worms and grass snakes are still regularly seen.

Ornithology

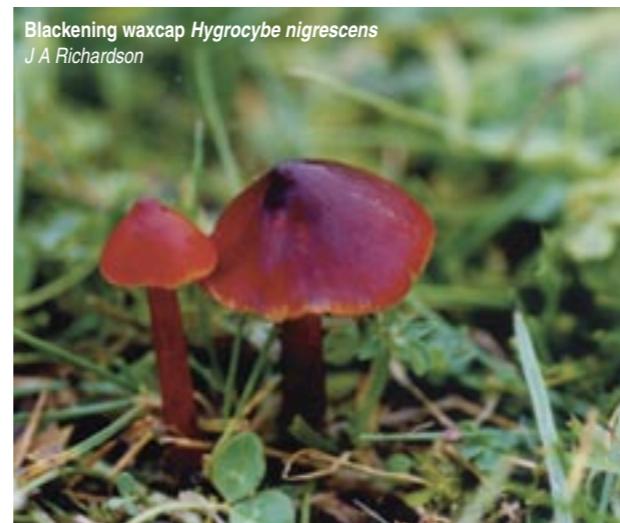
A highlight for 2004 in August was a short visit by a corn crake *Crex crex*. It was clearly heard by three members of the conservation group in the west meadow and was seen by the warden: probably a bird migrating south. Unfortunately it has not reappeared this year.

It was good to see the return of a pair of ravens over the deer park area. As a breeding species, the bird disappeared from lowland England in the latter half of the nineteenth century following persecution from landowners and gamekeepers. The raven is now making a steady comeback eastwards across the Midlands from its former stronghold in Wales and the border counties. In 2004, pairs of ravens were recorded on eleven occasions in Northampton, leading to hopes that breeding may occur in the not too distant future. Our area of deer park



with surrounding woodland is an ideal location for this purpose.

Tony Richardson
Compton Estate Conservation Officer



In common with many large MOD sites built in the 1940s, the Defence Storage and Distribution Agency (DSDA) site at Donnington in Telford, Shropshire, has a large number of redundant Air Raid Shelters (ARS) scattered around the estate - over one hundred, in fact.

These structures are generally over 25 metres long and about 3 metres wide, built of brick, with concrete roofs and have a wooden door at each end. They are all very dark inside but surprisingly dry. Many of the ARS at DSDA Donnington are partially buried in grassy embankments, while others are free-standing. All of them have, at one time or another, been used as storerooms and, inevitably, one or two have fallen into disrepair.

Acting on advice from his Safety, Health and Environmental Protection Advisor, the General Manager of DSDA Donnington decided to clear all of the ARS and seal them for health and safety reasons. It was during this clearance work that the local Site Services team made an interesting discovery in ARS Number 58, of a live bat which proved to be quite a challenging matter.

Declining bat numbers have made it necessary to legally protect all UK bats and their roosts, whether they are in residence or not. This protection also makes it an offence to block their entrance and exit holes without seeking advice. The clearance and sealing work was immediately suspended and the Shropshire Bat Conservation Group (SBCG) was called in to advise. A thorough examination revealed signs of active bat roosts in some of the ARS and, in one, a long-eared bat was found. The Group has requested permission to return to carry out a full survey as the ARS have the potential, with minor internal modification, to attract a varied selection of bats. A member

Shropshire

DSDA Donnington Bat Conservation



Greater horseshoe bat Ian Davidson-Watts

of the Group commented that the rare greater horseshoe bat had been observed just a few miles to the south of Donnington and that the ARS would make an ideal roosting site.

The greater horseshoe bat has declined by over 90% in numbers during the last 100 years due largely to habitat loss caused by modern intensive farming methods.

They often roost in buildings during the summer where their presence is advertised by large piles of excrement on the ground, and hibernate in caves, cellars or disused mines from late September to mid-May. They reach maturity at around three years old and may live for thirty years. Their preferred food is large beetles, such as cockchafer and dung beetles, large moths and caddis flies.

This species is listed in the UK Biodiversity Action Plans (UKBAPs), and has been included in English Nature's Species Recovery Programme. The main effort in their conservation is to encourage landowners and farmers to manage their land in ways that benefit the bats. As more people learn about bats, it is hoped that the efforts to conserve them as a breeding species will gain more support.



An air raid shelter door modified to accommodate the bats Andy Randles,

Suffolk

Barnham Conservation Group Sheep grazing at RAF Barnham

Barnham Training Area (BTA) is a small infantry skills training area of approximately 436 acres managed by RAF Honington. It was designated a SSSI in 1954 as an outstanding example of lowland heathland, and is part of the much larger Thetford Heaths SSSI. It also has European designations as part of the Breckland Special Area of Conservation (SAC), and a proposed Special Protection Area (pSPA) to be classified SPA by the end of 2006 for its wood larks and stone curlews. These European designations recognise the importance attached to the site by the outside world.

The issue of military training and these designations have been the subject of some conflict in the past. Tree cover, being a necessary feature of operational training requirements, sits uncomfortably with the 'heathland' designation. Following the analysis of aerial photographs of the site which showed the gradual encroachment of trees and shrubs, English Nature (EN) expressed concern that the site was deteriorating. Eager to play our part in preserving the SSSI whilst maintaining the functionality of BTA for training, a compromise was reached and formalised in an agreed Management Plan.

As part of the Management Plan, EN advocated introducing sheep onto the SSSI

to help reduce the height of the sward, thereby encouraging the spread of the lichen, *Cladonia rangiferina*, or reindeer moss. Although not a rare species, the huge expanse of lichen heath (one of the largest in Europe) is one of the reasons for the site's designation as a SSSI. Not surprisingly, EN are eager to extend its range and so, under Defra's Environmentally Sensitive Area (ESA) Grant Scheme, a grazier was contracted from 2004 to graze some 150 Scottish blackface sheep on BTA between April and September.

Grazing proved more successful than anticipated but it had an unfortunate side effect; the sheep also proved to be partial to the bird's-foot-trefoil, *Lotus corniculatus*, the food plant for the caterpillar of the dingy skipper butterfly. The 2005 survey of the dingy skipper was disappointing: just one male, where previously there had been 20 or more of both sexes. The grazier is obliged, under his contract with Defra, to mitigate any unforeseen conservation concerns and agreed to provide electric fencing around two locations which support the bird's-foot-trefoil: not quite as easy as expected. An 800 lb hammer was used to site the supporting poles but the ground beneath was 'chalk solid' and the poles kept breaking. An anticipated afternoon's activity



spread into three full days. We hope that the butterfly will appreciate the enormous effort the MOD has put into preserving its habitat; but with only one male sighted in 2005 we await the 2006 survey with trepidation.

It is some consolation to losing so many trees that the emerging heathland has encouraged the return of breeding stone curlews. These are monitored and the chicks ringed by the RSPB. The British Trust for Ornithology (BTO), whose HQ is just two miles up the road in the town of Thetford, is also monitoring the breeding efforts.

It may be difficult to reach the full 'favourable' condition status whilst BTA is still an active Training Area. But as tree and shrub clearance continues the site is clearly regaining the features of the heath and is well on its way to gaining 'favourable recovering' status – with EN and other conservation bodies expressing satisfaction with our efforts.

Gwyn Smith
Station Environment Protection Officer



Fencing off the bird's-foot-trefoil proved to be problematic
Gwyn Smith



Scottish Blackface sheep
Ron Hayden



I believe this is the first contribution from the Royal Military Academy, Sandhurst, Conservation Group for some years, and I am happy to say that the group is flourishing under the current chairmanship of Major Matt Hing.

The ornithology of the area has had consistent coverage for many years, but since 2002 there has been a detailed botanical survey carried out by Prof. Mick Crawley and his group from Imperial College at Silwood Park. In 2004 Maxwell Barclay from the Natural History Museum carried out the first invertebrate survey.

For the last ten years Derek Barker and Patrick Crowley have conducted surveys of the important heathland bird species in the Barossa training area (containing Wishmoor Bottom and Old Dean Common) and the Range Danger Area (containing Broadmoor Bottom). These areas consist of heather and scrub heathland, much coniferous woodland, along with smaller areas of deciduous and mixed woodland. The occurrence of good populations of woodlarks, nightjars and Dartford warblers on the training area means that it now forms part of the Thames Basin and Wealden Heaths Special Protection Area (SPA), which was formally confirmed in March 2005.

SPA status gives a high level of protection but entails extra obligations on the MOD and English Nature to conserve and extend the heathland. I am happy to say that MOD has risen to the challenge, and a large amount of work has already been done, which will be complete by the end of 2006. On the Berkshire side, 50 hectares of Broadmoor Bottom have recently been cleared of scrub and pine to regenerate

Royal Military Academy, Sandhurst

good numbers of redstarts, tree pipits, and stonechats, many willow warblers, whitethroats, several singing firecrests, several pairs of cuckoos, and a few spotted flycatchers. Two or three pairs of sparrowhawk breed, a kestrel has been seen regularly, and hobbies are seen from time to time. In late winter and early spring there are variable numbers of crossbills, bramblings, and redpolls, along with smaller numbers of siskins.

The heathland on the MOD estate is probably now in its healthiest state for many years, and we are looking forward to a steady increase in heathland flora and fauna.

Patrick Crowley



Tackling the big stuff in Wishmoor Bottom
Patrick Crowley



Newly restored heath near Paschal Wood
Patrick Crowley

Surrey

Royal Military Academy, Sandhurst

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Newly restored heath near Paschal Wood
Patrick Crowley

Warwickshire

Kineton Conservation Group
Marlborough Barracks

We would like to acknowledge the services of Joe Hardman as a founder member and mainstay of our group, who has regrettably moved to Australia. We are also sorry to report a further loss to the committee of Louise Slack, who has given up her post as ecologist with the Warwickshire Museum Field Service and departed to a remote part of the Knoydart Peninsula. Her expertise and sound advice are much missed. In her place we welcome Anna Swift and the return of Helen Gibbs of DE Shrewsbury.

Bird counts

Our 18th annual bird count held on 22 May showed no partridge for the second year running, warblers continuing a downward trend, only two nightingales, but our two common woodpeckers to be at a record high. Jackdaws were down to a more typical 28 after the 2004 high of 120. The previous high was 41 in 2002, with a 16-year average of 12. The bird list for 2005 contained 92 species. A new species for the site in 2004 was the common crane *Grus grus*, seen by tenant farmer and group committee member Phil Douthwaite.

We are grateful to the Banbury Ornithological Society and the Warwickshire Wildlife Trust for their customary, valuable support.

Ecological reports

An outline ecological report on a "walkover survey" by R Wilson of White Young Green Environmental Ltd in June was based mainly on existing information, with recommendations relating to badger setts, hedgerows and a possible great crested newt survey. The study was linked to a future development project. A further report on the site was received from Brey Services Ltd, prepared by Dr D Meaden of Earth Tech Engineering Ltd, and covered visits made in March and July

2004. This comprehensive report included valuable additions to the species list, 46 of which were new. However, the inclusion of the wood ant in the area is considered by the County Recorder to be unlikely. Whilst no voucher specimen is held, the record is from the woodland in the Felix Training Area leading towards the SERCO area which Dr Meaden indicated is an important reservoir for biodiversity and has significant conservation potential.

Flora and fauna

On 9 June 2005 a party, led by Maurice Arnold, produced a most valuable list of 151 flowering plants, with 58 species of six other groups. Of these, 12 proved to be new additions to the site list. The species list now shows 1932 species of 42 groups.

At a meeting of the committee in October 2005 we were surprised to learn that a bat, about the size of a pipistrelle, has been recorded at 66 kHz. Do we have yet another new entry for the list – the falsetto pipistrelle *Pipistrellus screechus*?

Habitat management

There has not been a further meeting of the Habitat sub-committee, but it is hoped that funds for the planned Phase 2 study will be made available to enable an eventual start to be made in accordance with the November 2003 brief. This particularly important project is likely to lead to upgrading to a Site of Importance for Nature Conservation (SINC) and has gained further weight from Dr Meaden's remarks.

Biological recorders in the County have been contacted by Warren Priest, the Local Records Development Officer who is heading a project to improve ecological data handling in Warwickshire and VC38 (Watsonian classification of counties and vice-counties). Our recorder has held discussions with him and he is aware of our database. It seems that the preferred format will inevitably be



that used by the Recorder software, as is proposed for the DE Conservation Group Office – perhaps we should warn the IT section here!

**Maj (Retd) MG Woodhams,
Conservation Group Recorder**



Archaeology sub-group

Membership has increased and there is a buzz in the air which is in no small way due to the enthusiasm, guidance and direction of Richard Osgood, the local DE archaeologist. He has shown us the practical ways in which we can be involved on the Plain and, together with Giles Woodhouse who trained as an archaeologist before joining the army, organised a field walk at Milston Down which produced an amazing collection of pottery, flint and stone. The Milston site lies close not only to the Bronze Age cemetery, but also to the great linear to the north which runs from Beacon Hill to Sidbury.

It appears that a new settlement may have been found near Chisenbury Field Barn, where there are definite features mirroring those of Chisenbury RB settlement – house platforms and hollow ways. It is a huge area and would be an amazing discovery and addition to our knowledge of the prehistoric use of the Plain. Richard is organising aerial photography and, if possible, a laser survey.

Nell Duffie

Ornithology report

Stone curlews returned on, or before, 23 March and we now have a barn owl in a box on four eggs. We have sent our barn owl box report to the BTO recording – a record of 74 fledged and ringed in 2005.

Sightings over the six months to March 2006 include both male and female hen harriers, a lesser spotted woodpecker behind Bulford Rifle Ranges, and a very welcome return of the short-eared owl all over the east, with the maximum of five on

Bulford Conservation Group
SPTA (E)

this was richly deserved. She has been a tremendous source of support, inspiration and expert knowledge to us over the years. Thank you, Audrey.
Terry Light



East Yorkshire

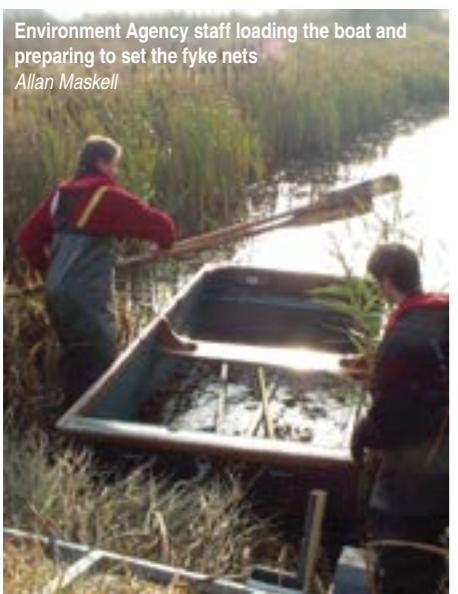
Leconfield Carrs Conservation Group

The Leconfield Carrs Conservation Group made a determined start to the 2005 season following the dismal weather of the previous year. The first moth survey took place in May with Dr David Chesmore recording five new species for the site. Also in May we had the first sighting of a red kite flying over the Training Area. There are two pairs known locally, at South Dalton, and South Cave.

Later in May, Mr Alan Mullinger, the fisheries manager for the Environment Agency (EA), visited to assist with the control of water milfoil on Wyndham Water. This is the largest lake on our site and has an island on which oystercatcher, little ringed plover, greylag, and great crested grebe regularly breed.

In June, Mick Bassett and I assisted Jon Traill from the Yorkshire Wildlife Trust, to place bottle traps on Little Carr Lake. This lake had previously recorded large numbers of great crested newts (111 in a 15 minute period in daylight, in 5% of the total lake area), but had recorded only a few recently and was deserving of investigation. We confirmed

Environment Agency staff loading the boat and preparing to set the fyke nets
Allan Maskell



great crested newts both in Little Carr and in another smaller pond on site but, more importantly, we managed to catch a rudd in one of the bottle traps. I contacted Alan Mullinger and he kindly agreed to use fyke nets as previous electro-fishing of this lake had clearly not worked. Fyke nets are conical traps with two non-return valves. Alan was amazed when the first one netted 59 rudd in the 30 minutes that it took him to set up the other net further along the lake. The young of great crested newts swim midstream and are highly likely to be predated by rudd.

Over the period of one week, 350 rudd were trapped and relocated to another lake on site, designated as the EA stock lake for rudd and tench.

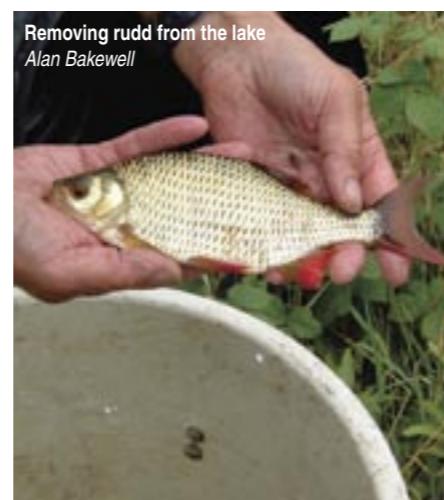
In July, we were very surprised when a young female merlin stunned itself when it flew into a colleague's window. They occasionally over-winter when they come down off the Moors, but certainly not during the summer. What made the story even better was that the merlin is the official emblem for 15 Brigade, which covers the North East area. Chris Sandbach our Birds member mentioned the bird in discussion with Jim James of the Hawk and Owl Trust and, because we recorded the details on the bird's ring, he was able to provide information on her. She was ringed in Helmsley as one of a brood of four, and had been reported as missing. The bird was taken to a sanctuary at Norton by the RSPCA, and made a full recovery before being returned home to Helmsley. Jim also confirmed that our new owl house was in use and managed to ring a young male barn owl.

We also held our second moth count in July. Conditions were near perfect and our survey site near Fox Wood yielded an impressive 75 species. Twenty-five of these were new to our list, and included the white satin moth - a species which is notifiable local. This takes the overall total for Leconfield to 164 with one nationally notifiable and seven locally notifiable species.



In August Chris Sandbach was delighted to report that a pair of common tern had bred on the island in Wyndham Water and that there were three young. On another occasion he rescued a very small grass snake which was found in one of our training buildings.

Alan Bakewell, Leconfield Conservation Officer



Removing rudd from the lake
Alan Bakewell

White satin moth
Dr David Chesmore



North Yorkshire A further Conversation between Tony and Tim

of moorland with illicit cross-country vehicles are commonplace activities. Their anti-social behaviour impacts on our agriculture and conservation efforts; but we are fighting back, and the North Yorkshire Police Wildlife Liaison Team is on the case of your owls.

“Tony, you must be joking, the 2005 edition of Sanctuary only came out last month! But to tell you the truth I have been thinking about it and am not sure where to start. I have those depressing headlines in front of me right now. “Fury over the shooting of rare eagle owl.” “First eagle owl to breed in the wild found shot dead.” “Eagle owl shot dead after TV film.” I think we have to mention them. Are you sure it was shot, Tim?”

“No doubt. A rambler picked up the dead owl and passed it to Jack Lynass the local farmer who has been the unofficial eagle owl custodian for the past ten years. I arranged for a post mortem and the findings were conclusive – shot with BB size pellets usually reserved for geese. Wounded and unable to feed herself, the star of the BBC2 film shown only last November died of starvation.”

“Tony, somebody went out of his way to kill that bird. Nobody in this part of the world walks around with BB on his cartridge belt unless he is on a mission. I have been at Catterick ten years now and I continue to be baffled by the way people treat the countryside and our MOD estate, in particular, poaching with lurchers, fly-tipping and petty theft. Trashing swathes

“Thanks to a very generous grant from HQ ATE, the new permissive footpath which we opened on 4 May, and the associated viewing point and car park, has proved a great success. The artwork done on the viewing point panorama by Adrian Bury is a particularly

Members of the conservation group at the viewing point overlooking Swaledale on 4 May 2005
Graham Newcombe



effective representation of the Swale Valley. It's nice to see the facility well used by the public.”

“I agree. I'd like to mention the colony of that mini-mollusc that turned up on Dicky's Edge, *Clausilia dubria*. Only 6-8mm in length and 2-3mm at their widest point.

Apparently the species is only found on the limestone Pennines. We have probably got thousands of them but no-one has looked in the right place. Anything else, Tony?”

“For a brief moment in time ATE North (E) had a full house of British owls on its territory, if you include the barn owls that unexpectedly took over the derelict range hut on the Strensall Ranges and successfully reared a clutch of quintuplets.”

“Thank you Tony, I think we have said enough about owls! I will get typing or we will never beat the deadline.”

Tim Helps, Range Officer, and Tony Crease, Deputy Commander ATE North and secretary of the Catterick Training Area Conservation Group.



Stuart Ogden with an armful of Strensall barn owl quintuplets
Graham Newcombe



The Rt. Hon William Hague opens the tree-top bird hide at Foxglove Covert on 28 May 2005
Graham Newcombe

North Yorkshire

Ellington Banks Training Area

The Ellington Banks multi-functional training area lies to the west of the cathedral city of Ripon and has an extraordinary mosaic of habitats.

Magnesian limestone grassland is a nationally rare habitat type and deserves special mention. It is an important feeding area for micro-moths. Bird's-foot-trefoil *Lotus corniculatus* covers large areas, and is an important food plant for the dingy skipper butterfly *Erynnis tages*. The population of dingy skippers has increased four-fold since the sympathetic management of the grassland area, although it is otherwise in decline across the UK.

This grassland is surrounded by mixed, native, broad-leaved woodland together with plantations of pine and spruce. At least 23 species of butterfly have now been recorded on site, including purple hairstreak which favours the old oaks, small heath - another grassland specialist - and speckled wood, a new coloniser in the north of England.

Craters of all shapes and sizes have been formed by explosives, creating mini-habitats in their own right. The larger craters have proved attractive to amphibians, with five British species occurring, including the spectacular great crested newt, a protected species in the UK. Dragonflies are also very much in evidence from early May until the first frosts of autumn and last year saw the first records of broad-bodied chaser, black-tailed skimmer and Emperor dragonfly, formerly a southern species and now expanding their range northwards.



Scarce Merveille du Jour, or *Moma alpium*
Charlie Fletcher

Some wildlife monitoring work was carried out in the early 1980s but effectively there was a dearth of records for nearly 20 years, until the turn of the century when a renaissance in recording began. This was driven by a team of three enthusiastic moth trappers and a local bird ringing group. Moth trapping had only once been carried out, in July 1987. Now it is undertaken at different times of the year, starting in late March/early April and running until November, in order to record as large a cross-section of the moth population as possible. Four or five mercury vapour (MV) traps are placed in a variety of different habitats for maximum effect.

To date, 519 different species of macro and micro-moths have been recorded, including Blomer's rivulet (dependent on mature elms); plain clay and white-marked (both local specialities); small yellow underwing and burnet companion (day-flying species, declining nationally) and a new species for Yorkshire, *Acleris abietana*, not forgetting the 15 vice-county 64 records.

The grassland has also proved attractive to the nocturnal glow-worm, *Lampyris noctiluca* a species of beetle, the males of which are often attracted to the MV lights in early summer. There had been no records of this intriguing insect since 1987, but in 2005 some 14 males were counted at the moth traps.

A bird ringing project has been initiated and is carried out by members of the East Dales Ringing Group, supported by the



Lilac beauty *Apeira syringaria*
Charlie Fletcher



Commandant, Major Paddy Ennis. Since July 2004, over 1200 birds, of 35 species, have been ringed, from the diminutive goldcrest to sparrowhawk and tawny owl.

Ellington is one of three sites used for the annual Catterick Ringing Course, organised by Major Tony Crease, which attracts trainee ringers from across the UK to take part in a long weekend of intensive bird ringing and handling techniques under the watchful eye of experienced trainers.

As members of the local MOD Conservation Advisory Group, it is a privilege to be able to study such a diverse site, record the multitude of species dependent on it and in the process, contribute to a greater understanding of Yorkshire's wildlife.

Charlie Fletcher, member of Ripon Conservation Group, and Jill Warwick

Blomer's rivulet *Discoloxia blomeri*
Charlie Fletcher

