SANCTUARY

Number 36, 2007

THE MINISTRY OF DEFENCE CONSERVATION MAGAZINE

SANCTUARY

The Ministry of Defence Conservation Magazine Number 36 - 2007

Editor Wendy Sephton, Estate Strategy and Policy, Defence Estates.

Designed by: DGMC DPR (Publicity) Graphics

Printed by: Corporate Document Services (CDS)

Editorial Board Alan Mayes (Chair)
Martin Coulson
Keith Maddison
Pippa Morrison
Julie Cannell
Bob Morris

Editorial Address:
Sanctuary Team
Estate Strategy & Policy
Defence Estates
Kingston Road
Sutton Coldfield B75 7RL

email: sanctuary@de.mod.uk

Sanctuary is a free publication.
For further copies please write to:

DSDC(L)3A
Recurring Publications
Mwrwg Road
Llangennech
Llanelli SA14 8YP

email: formspubsales@gtnet.gov.uk

Sanctuary 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.

Cover image:
Water Vole by Richard Ford – Digital Wildlife.co.uk

A Gunner from the Machine Guns Platoon, Delta Company 1st Battalion, The Royal Anglian Regiment, taking part in Exercise Druid's Dance, Copehill Down
Crown copyright

Submissions

Guidelines for contributors can be obtained by e-mailing the editor at : sanctuary@de.mod.uk
Editorial proposals should be e-mailed to the editor.

Foreword

Vice Admiral Tim Laurence *CB MVO ADC*
Chief Executive Defence Estates

As an avid reader of 'Sanctuary' for many years, I am delighted to introduce the 2007 Edition. Sustainable Development and Biodiversity remain high on the Government's agenda and Defence Estates has some tough targets to meet in this respect. We very much welcome the challenge and are making good progress across the board. But targets are merely a tool to help us measure achievement. The story of conservation on MOD land and buildings is much more effectively told through the pages of this magazine. It is largely a story of enthusiastic individuals and small groups working hard to balance the needs of the military and civilian users of our estate against the vital importance of managing it in a sustainable and environmentally conscious way. Add to that our objective to allow access to the public, wherever we can do so without either interference with military activity or detriment to wildlife, and the balance becomes even more complex.

I have been greatly impressed with the many enthusiasts I have already met in my first few weeks in the post of Chief Executive, and I take this opportunity to make clear my wholehearted support for what they do. My particular congratulations go to those Sanctuary Award winners whose projects are described on pages five to seven. They have set particularly high standards for us to emulate.

I hope that everyone who picks up this magazine will enjoy reading it. For those outside Defence, it will give you a feel for the efforts we are making to look after our estate for future generations. For our internal readership, I hope some of you will pick up ideas which you can try out in your own area. And to the hard working production team, my thanks and congratulations for another first class edition.

I hope you enjoy reading this edition of *Sanctuary*.

Tim Laurence

Vice Admiral Tim Laurence CB MVO ADC

38 **Crimson and Gold Moth** *Robert Thompson*

38 **Magilligan Training Area** *Defence Estates*

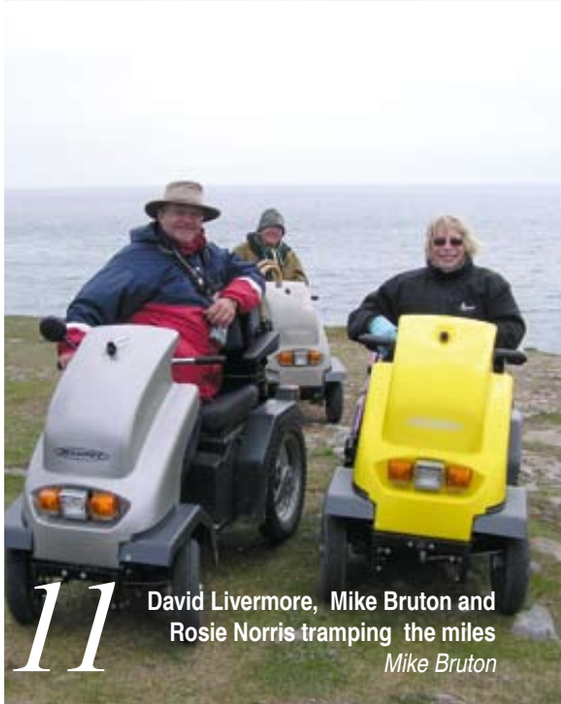
14 **Yellow Flag Iris** *Sue Rowley*

One of the well preserved cist burials *Cambria Archaeology*

35

24 **Holland 1 in new gallery** *Royal Navy Submarine Museum*

16 **Bechstein's Bat** *Ian Davidson-Watts*



11 **David Livermore, Mike Bruton and Rosie Norris tramping the miles** *Mike Bruton*

CONTENTS

Regulars

Features

Around the Regions

Contacts

For details on public access to the Defence Estate go to

www.access.mod.uk

The aim of the Sanctuary Awards is to recognise and encourage group and individual efforts that benefit wildlife, archaeology, environmental improvement (for example waste or energy projects) or community awareness of conservation on or within land and property that the MOD owns or uses in the UK or overseas.

As a mark of recognition the overall winner holds the Silver Otter Trophy for a year and receives a cheque for £600 to support further conservation or environmental improvement projects. The runner-up receives a cheque for £300. Highly commended entries receive a certificate.

SANCTUARY AWARDS

The Sanctuary Award Board

The members of the Sanctuary Award Board for 2007 were Martin Coulson, Head of Land and Property Policy, DE Estate Strategy and Policy, Bob Morris, Head of the Environmental Support Team, Defence Estates and Pippa Morrison, Biodiversity Adviser, DE Estate Strategy and Policy. Marcus Yeo, Director of Resources and External Affairs, Joint Nature Conservation Committee, acted as external judge.

Special Contribution Award

2007 marks the second year of the Sanctuary Special Contribution Award for individual achievement. The panel faced an extremely difficult task in selecting a winner and runner up from the six excellent entries for this category.

Bob Crump BEM has been the guiding light behind conservation and heritage protection at MOD facilities on the Essex coast for over 30 years. He was a founder member, and is now President of the Foulness Conservation and Archaeological Society. He was very much the driving force behind the establishment of the Foulness Heritage Centre, which has been an outstanding success and is the established base for the display of artefacts showing up to 2000 years of island life. The Board noted that Mr Crump is still hard at work and is about to manage a project involving the intrusive survey of the former encampment of the locally raised Rochford Hundred Volunteer Regiment.

Peter Gay has been an active member of the Cinque Ports Training Area Conservation Group for over 25 years. Peter has an exceptional knowledge of the training area's flora and fauna and his monitoring of the orchids on the chalk hills has been of great help when planning management and explosive ordnance clearance. His enthusiasm and knowledge are an inspiration to people of all ages.

Bob Crump working on the excavation at Great Burwood Farm on Foulness Island

Peter Gay

Eight very different entries were submitted for the Sanctuary Award Silver Otter Trophy. After a great deal of deliberation and discussion the Board decided to award an outright Winner, Runner-up and two Highly Commended certificates.

The Winner

Voids and tunnels left by the badger sett *Cambria Archaeology*

South Pembrokeshire Ranges Recording Advisory Group (SPRRAG)

Badgers and Bones of Brownslade - the Brownslade Barrow Project 2004-06. Brownslade Barrow on Castlemartin Range is a Bronze Age burial mound designated as a Scheduled Ancient Monument. In 2001 range staff noticed human bones on the ground close to the designated area. Carbon dating revealed that these were evidence of a later cemetery dating from the early medieval period. Badgers living in the area surrounding the barrow were disturbing the bones. Action was required to prevent further disturbance to this new cemetery and stop the badgers reaching the protected area. The project involved arranging for licences to resettle the badgers, constructing a new sett, working with specialist ecologists to ensure that all the badgers had moved and then arranging for archaeologists to carry out excavation. Over 1,000 bone fragments were discovered and are being analysed by specialists at the University of Lampeter. The Board felt that this project was an excellent example of MOD's stewardship of the rural estate. It also demonstrates highly effective partnership working between SPRRAG, Defence Training Estate, the National Park Authority, Cambria Archaeology, the Countryside Council for Wales and the Badger Consultancy, amongst others. (See Badgers, burials and bombs: excavations at Brownslade Barrow, Castlemartin p35)

One of the dug graves on the site. Badger disturbance has removed the skull *Cambria Archaeology*

Runner-Up

Defence Geographic Centre (DGC)

The Green Initiative is an innovative recycling project at DGC Feltham. Since the launch of the project in April 2006 DGC has increased its recycling figures from less than 10% to 77%. This has been achieved through effective staff involvement and close co-operation with the commercial partner, Grundons. The Board was particularly impressed by the careful planning behind this project, which began with an extensive internal publicity campaign, the introduction of recycling stations across the site for the collection of all recyclable materials and the introduction of new methods of recycling and composting amongst all staff and contractors. Engagement and education of staff across the establishment has paid huge dividends.

DGC Poster *(DGC)*


Glass recycling *(DGC)*

Highly Commended

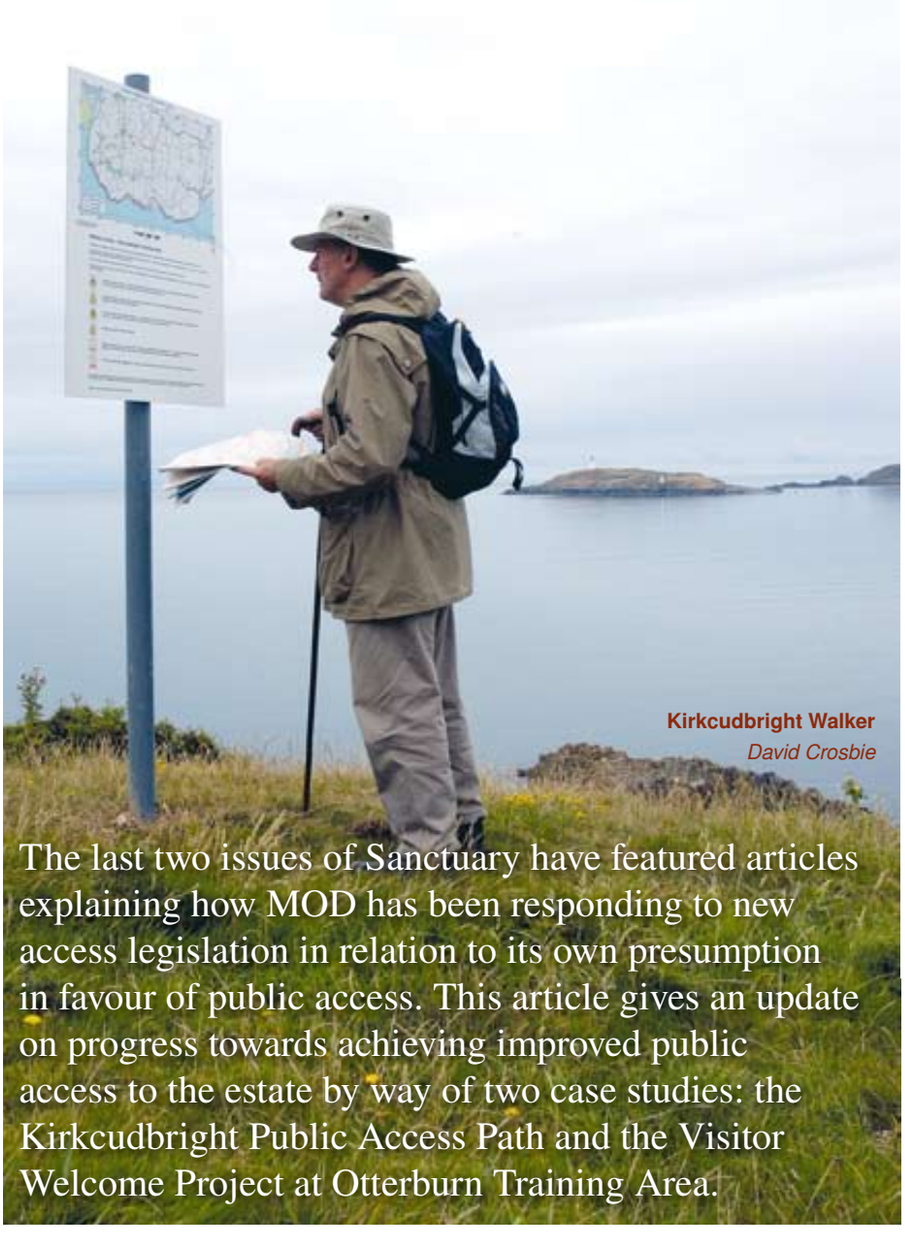
The first certificate was awarded to RAF Honington/RAF Barnham Conservation Group for their work to restore a Site of Special Scientific Interest to favourable recovering status whilst allowing military training to continue. Innovation included using the Probation Service to provide 'volunteers' to help with clearance work and the introduction of 150 black-faced Scotch sheep to graze the site to reduce the height of the sward and encourage the spread of the main lichen heath. The stone curlew returned to the site in 2002 and has been successfully breeding each year.

The other certificate goes to CESO(RAF)/RAF Utility Management Bureau Service for the RAF Kinloss Integrated Energy Management Project – Carbon Emission Savings. This is an outstanding project in terms of energy reduction involving partnership working with the Carbon Trust. Funding from DE was used to introduce a Building Energy Management System and dedicated sub-metering across some of the more energy hungry buildings at this major operational air station. An investment of £200,000 has led to a 21% reduction in the station's carbon emissions and financial savings in excess of £450,000. The Board felt that this project was an exemplar and demonstrated that technical solutions combined with raised awareness and education can make a significant contribution to reducing carbon emissions.


Sheep arriving *Rich Denton*


Kinloss Boiler House *RAF Kinloss Photographic Section*

ACCESS OPPORTUNITIES ON THE DEFENCE ESTATE – A Progress Report



Kirkcudbright Walker
David Crosbie

The last two issues of Sanctuary have featured articles explaining how MOD has been responding to new access legislation in relation to its own presumption in favour of public access. This article gives an update on progress towards achieving improved public access to the estate by way of two case studies: the Kirkcudbright Public Access Path and the Visitor Welcome Project at Otterburn Training Area.

Otterburn Training Area *Crown Copyright*

Kirkcudbright Multi-user path

As explained in the last copy of Sanctuary, public access to the Kirkcudbright Training Area on the Dumfries and Galloway Coast was only by prior arrangement and then only after a safety briefing due to the nature of the training undertaken and the risks of unexploded ordnance (UXO). At the time of last year's article, following an access audit, work had begun on constructing a multi-user path, which would be open to the public when the red flags that indicate live firing were not being flown – or at night the red lamps displayed. It would also connect with the coastal walk from Kirkcudbright Town to Torrs Point, enabling walkers to continue through to Abbey Burn Foot and Dundrennan and to enjoy some of the most spectacular coastal scenery in the Dumfries and Galloway region.

In November 2006 Councillor Jane Maitland officially opened the seven mile path, which can be used by walkers, cyclists and horse-riders alike. Briefings are no longer required and the only stipulations are that the route should not be used when the red flags are flying and that users should stick to the marked path for their own safety. Units undertaking dry training are warned that the public access path is in use and are aware of the need to keep vehicle speed down and to keep a sharp lookout when they use the short section of concrete tank road that forms part of the path.

Nigel Davies, DTE Kirkcudbright Commandant, has been delighted by the success of the path in its first few months. Whilst he is not able to say exactly how many people have made use of the facility, users have been spotted on every day that the range has not been in use for training. The fears expressed by the tenant farmers in the

Torrs and Ross Island *David Crosbie*

area about uncontrolled dogs causing problems during lambing and amongst the cattle have so far been unfounded. Dogs and their owners have behaved impeccably.

He also feels that the range path has encouraged other local landowners to consider helping the local council to develop a Dumfries and Galloway Coastal Path. The very fact that MOD was one of the first organisations to get involved with the local Access Officers belies the wrongly held belief that MOD does not like visitors on its land.

Several suggestions for improving the route have been put forward including providing more information about the landscape along the route and installing additional access notice boards in several locations to indicate where the route goes through the range. The possibility of extending the route down to Mullock Bay and up to Dunrod so that users can take a circular route has also been raised. We hope to be able to implement some of the suggested changes if funding becomes available.

The route and its accessibility to different user groups have also impressed Dumfries and Galloway Local Access Officer Alison Keith. "Local people were very keen to try it out and most had not been across the range before. Because it is waymarked the route is welcoming and encourages people to use the well defined route. There is a good surface throughout and it provides a great opportunity for cyclists who may link the route with some of the quiet roads in the area to provide a full day out". She went on to say, "All round, a great addition and I'd be very interested in seeing how the proposed developments to the route develop."

The Gibbet *© Victor Ambrus*
Taken from interpretation panels at Otterburn Training Area

Black Rory *© Victor Ambrus 2006*
Taken from interpretation panels at Otterburn Training Area

Visitor Management at Otterburn

The issue of welcoming users on to the estate lies behind another access project at the Otterburn Training Area in Northumberland

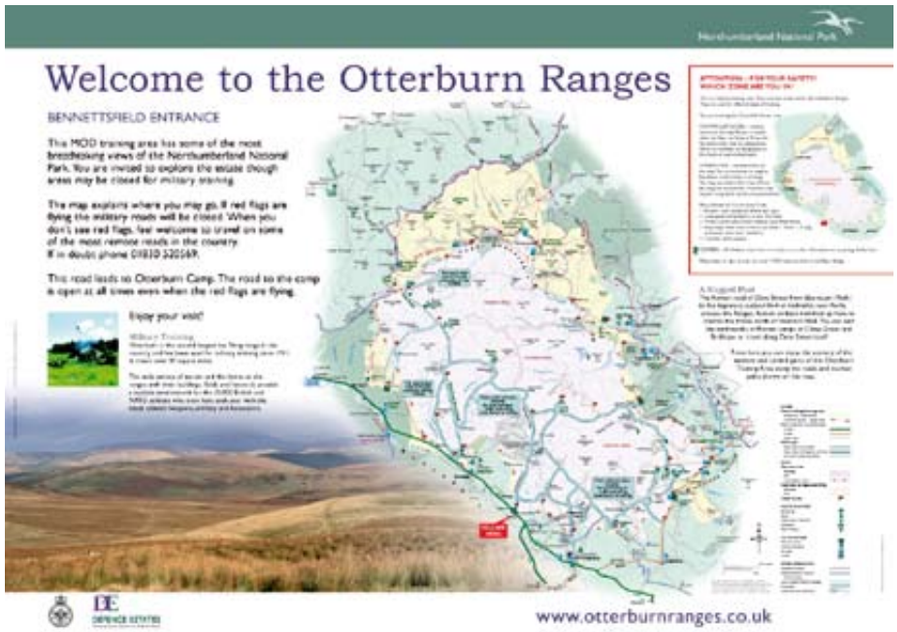
Otterburn Training Area is the second largest training area in the country. It represents 23% of the Northumberland National Park. The Visitor Welcome Project was committed to via public inquiry as part of the AS90 development at Otterburn. The project, which is being led by Chris Livsey and the Otterburn Land Management Services North team, recognises that warnings about the presence of UXO and the need to stick to defined routes for safety reasons may deter some potential users. It aims to build user confidence and to reassure them about where they can go and what they can see as they exercise their legitimate rights of access.

A variety of resources are being used to achieve this aim. The respected wildlife film maker Charles Bowden has produced a 13 minute DVD which explains the need for military training and explores agriculture, forestry, conservation and archaeology on the Training Area. A suite of access leaflets has also been produced giving suggested routes for all users including parents and children. In addition to general access and safety information these leaflets depict stories from local folklore and culture such as the Reivers and Black Rory who smuggled illicit whiskey across the border to the infamous Slimefoot pub. These will be made available to users at National Park Visitor Information Points and local retailers.

The project team have also developed a website which includes downloads of the DVD and copies of the leaflets. The site also allows users to take a virtual tour of the area before they visit. Links to the Defence Estates and MOD websites are provided for those visitors who wish to learn more about estate policy or military training. Links to partner organisation websites, such as Northumberland National Park Authority and Natural England are also provided. This can be viewed at www.otterburnranges.co.uk.

On the training area itself a series of interpretation panels have been placed along the main access routes explaining all the necessary precautions that need to be taken whilst on the training area. The panels have been illustrated by Victor Ambrus, who is best known for his work on the Channel 4 Time Team programme, and show historic and social scenes from Otterburn's past.

www.access.mod.uk



Results

Both of these projects demonstrate that military training and public access are not mutually exclusive. With thought and careful management it is possible to welcome visitors on to the estate and for them to experience the varied and often dramatic landscapes that we manage on their behalf. They also demonstrate the need and success of working with partner organisations to achieve our aims. Both of these projects have involved close working with local authority Access Officers and other staff as well as local users and tenant farmers.

Head of Access and Recreation within the Environmental Support Team - Richard Brooks - has welcomed these projects as excellent illustrations of how pro-active access management can greatly improve the experiences of our visitors whilst ensuring that clear safety messages and directions are given. He adds, "these gold standard projects are leading the way in showing how the MOD's presumption in favour of public access can be driven forward across the estate. They set very high standards which we should aim to achieve with further projects and initiatives across the whole of the defence estate. Many thanks to all of those involved in making these two projects such great success stories".

Experiences of The Disabled Ramblers

Steeply down to the sea *Mike Bruton*

The 'Disabled Ramblers' is an organisation run by disabled people for disabled people, with the specific purpose of promoting access to the countryside. The organisation started in 1992 as a special interest section of the Disabled Drivers Association. For several years we concentrated on a single annual event involving a challenging trip along the Wessex Ridgeway National Trail, covering 40 miles in two days. This may seem an impossible venture, particularly as none of the participants can walk more than just a few yards as a maximum! We rely on a variety of pavement vehicles, including wheelchairs, scooters and buggies. In law, these count as 'Invalid Carriages' and can be used, where practical, anywhere a person can go on foot.

The organisation has grown substantially over the years and we are now constituted as an independent Charitable Company. We organise around fifteen events each summer season, covering many areas of England and Wales (separate groups exist to cover Scotland and Northern Ireland). An event usually involves one or two days of rambling, travelling 7 or 8 miles each day, mainly off-road. In practice, we face big problems because so little of the National Rights of Way network of paths and trails are accessible to us, to a large extent due to man-made obstacles and barriers.

Two years ago, we made our first visit to Pembrokeshire, where we wished to see as much of the coastline as possible. We rapidly encountered major difficulties. Most of the Pembrokeshire Coast National Trail is confined to a very narrow belt of land, mainly made up of scrubland, right by the cliffs. It is kept there by farmland which takes up all the cultivable land sometimes almost to the cliff edges. The National Trail is virtually forced to corkscrew through the scrub margin, often needing to confront steep slopes both forward and to the side. This type of going is frankly too dangerous and difficult for us and our pavement buggies.

However, we were delighted and intrigued to be told about the Castlemartin Military Range, which now permits some public access. The subject of use by the Army of beautiful countryside usually attracts consternation and often hostility, but we have found quite another angle on this matter. The Castlemartin Range extends for more than 10 miles along a beautiful stretch of coast characterised by limestone rocks and cliffs. Away from the cliffs the range goes back up to two or three miles inland, across totally empty and undeveloped land except for a few military buildings, some communications towers and some scattered disused and wrecked tanks used for target practice. In effect, the entire site is a huge nature reserve, uncultivated and untreated by fertilisers or weed killers. There is an abundance of wild flowers, and the coastal bird life is rich and varied. On various rock stacks out in the sea there are thousands of nesting guillemots, razorbills and kittiwake. Further out we saw many gannets dive bombing the sea in search of fish. We have also seen several pairs of choughs, a rare member of the crow family, peregrine falcons, and, slightly inland numerous skylarks and a few wheeling buzzards.

The greatest joy to us is the accessibility of the site! There is a gravelled military track along this whole stretch of coast, where the going is fine for heavier scooters and buggies, but harder on powerchairs. This degree of accessibility exists nowhere else in the entire Pembrokeshire Coast National Park. The track runs parallel to the coast, but is able to divert inland to bypass numerous deep valleys and steep, rocky defiles. The views are open, dominated by the sea and the cliffs, but with extensive views inland over grassy, downland terrain.

The range is, of course, still an active firing zone and opening to the public is restricted. The eastern half is open every weekend, but the western piece, up to Linney Head is opened more rarely and then only for access by organised and authorised groups. For visits to this part of the range it is necessary to have a leader who has attended a training session with the army and all visitors are signed in and accounted for individually. The purpose of this is to ensure that no one collects shell fragments – apparently these can be highly corrosive and dangerous to touch. It is also possible that unexploded shells may lurk unseen in undergrowth. Several million shells have been fired along this western section over the years and not all can be accounted for. Not surprisingly dogs are not admitted!

Disabled Ramblers near Linney Head *Mike Bruton*

We have now spent three days at the Castlemartin Range in two separate years. We have had a wonderful time – with variable weather, cold one year but warm the next. We were led and well looked after by Mick, an excellent guide from Tenby, on both occasions. In addition, Charles, the National Park officer, who is responsible for leisure and coastal trail management, came on one day. We also had volunteer drivers for the accompanying Land Rover each day. Once again we were able to bring along our Mobile Support Trailer, which was towed along by the Land Rover to provide much appreciated toilet facilities in remote places! Above all, our warmest thanks are owed to David MacLachlan, a manager of the National Trail which goes right round the coast across the entire National Park. David has been very supportive and has done a lot of work surveying the coastal path for accessible places for disabled visitors. He has produced a model guidebook, which can be obtained from the National Park Authority based in Haverfordwest.

Apart from the Castlemartin Range which has miles of accessible trackway, there are sites along the rest of the coast which offer more limited access, usually only a few hundred metres at best. This is due to the topography and the many deep ravines that line the entire Pembrokeshire coast.

This year we are moving on to visit two military ranges in the south of England, both new to us. In June we are visiting Dartmoor, with a day planned high up on open moorland south of Okehampton. In August, we will make our first foray into the Lulworth Military Range, set on the Dorset coast around the evacuated and deserted village of Tyneham. We are looking forward to both trips very much.

In the future we would like to visit further ranges. Our needs? Basically, we are looking for fine scenery, reasonable trackways and perhaps, the ability to position our Mobile Support Unit, with its handy portable toilet at the ready!

Mike Bruton

Dr Mike Bruton is Chairman of the Disabled Ramblers. He is disabled, and unable to walk. He was awarded the MBE in the New Year's Honours List for 2005, for work on promoting access for disabled people in the countryside For more information: www.disabledramblers.co.uk

David Livermore, Mike Bruton and Rosie Norris tramping the miles *Mike Bruton*

Economical Grassland Management *Sue Rowley*

Much valued local volunteers tackle the succession *Sam Hackett*

FOXGLOVE COVERT CATTERICK

Regular readers of Sanctuary Magazine will remember previous articles featuring Foxglove Covert at Catterick. The reserve has twice won the coveted Sanctuary Silver Otter Award. However, many first-time visitors are surprised to find such a well-equipped reserve openly accessible on military land.

Juvenile Robin on bench *Sue Rowley*

In 2002 a high quality field centre was opened, built using funds sourced from a number of grant-giving bodies and MOD. The centre has a purpose-built bird ringing room and two large classrooms looking out onto the reserve through one way windows. The initial aim of the field centre was to provide environmental opportunities for the local community in and around the large North Yorkshire garrison town and training area. The centre caters for all ages and abilities and seeks to increase public awareness of biodiversity, while providing a well-equipped nature-based facility for groups and schools.

Foxglove is a charitable trust governed by an independent Management Group. This consists of the founders of the reserve, along with representatives from Natural England, Richmondshire District Council, Defence Estates, members of the local community and volunteers. This mix gives the reserve a well-balanced and eclectic decision-making body and creates a good working partnership between the military and the surrounding community.

The site was established in the early 1990s for bird-ringing and still actively takes part in the British Trust for Ornithology (BTO)

Constant Effort Sites (CES) scheme. The number of birds ringed within Foxglove now exceeds 32,000, an impressive total which makes a real contribution to ornithological research. Because of the affiliation with MOD and the Catterick Training Area Conservation Group, Foxglove volunteers have recorded increasing numbers of species on the wider training estate, aided by the active habitat management. Rare birds such as the parrot crossbill and icterine warbler have been caught in the mist nets used during ringing sessions. The recorded increase in reed bunting numbers has also become an indicator of the ongoing habitat improvement, with an established night-time roost of about 50 individuals now found throughout the reserve. Less than one reed bunting per year was caught in the first 10 years of bird ringing on the site.

Three years ago a Friends Group was started which allows the local community to share 'ownership' of Foxglove. Numbers are continually growing and several local schools have joined as 'corporate members'. Resources on the local training area are available to Friends, giving them the chance to participate in wider species recording, to see raptors and waders being ringed, to check owl boxes or walk some of the defence estate's more remote moorlands. Many Friends play an active role in the Conservation Group giving local residents a voice. This partnership allows greater use of the defence estate for volunteer conservation work.

In 2006 more than 2,300 school children visited the reserve, 1,600 of these during the summer term! The field centre is equipped to provide education and understanding for all, so all levels of education are covered from Key Stage I to degree. One of the most rewarding relationships is the ongoing partnership with the Dales School, a school for those with severe learning difficulties, whose students have become integrated with the volunteers and reserve wardens to help complete environmental projects to the benefit of both parties.

On another level the reserve has a strong partnership with Askham Bryan College (part of the University of York) and provides facilities for students to complete practical modules in Environment and Land Management. It is also the base for hydrological components for students on conservation degrees. Other degree students have chosen the site to complete research for their final-year dissertations, highlighting once again the value of the MOD and Foxglove partnership as an outstanding and successful educational resource.

Other regular visitors to the reserve include Guide and Scout groups from all age ranges. Groups with mental health issues such as 'Just-The-Job Boys' and the Haven Centre come to either enjoy the peace and tranquillity or to lend a hand. Other health based organisations regularly using the reserve include heart groups and stroke recovery groups. Several national rural clubs and societies arrange guided walks and outings, including the Women's Institute, ProBus clubs, University of the Third Age, the Royal Society for the Protection of Birds (RSPB) and lesser satellite volunteer groups, naturalist and natural history clubs. Military wives' clubs also regularly use the covert along with the families of soldiers deployed on operations.

A close affiliation with the Swaledale Ringing Group and the Richmondshire and District Beekeeping Association ensures that a number of professional courses are run each year. The ringing courses are very popular and routinely over-subscribed attracting students from all over the UK. The beginners' beekeeping course is another focused area of expertise and is again extremely successful. The courses are open to everyone and provide excellent interaction between military and civilian participants.

The number and variety of habitats found at Foxglove means that it rivals many larger Local Nature Reserves. The principle habitats are willow and alder carr; however, there are several others worthy of mention. These include Biodiversity Action Plan (BAP) habitats such as lowland heathland, semi-ancient woodland, reed beds, herb-rich meadowland and raised bog. This specialisation and diversity of habitats means that the reserve also supports many BAP species including bullfinch, song thrush, lapwing, sedge warbler, reed bunting and nightjar, several of which are found breeding on the reserve. There are also four different bat species recorded, all the national newt species, and an abundance of orchids and other wild flowers. Pepper saxifrage (a rare local species) is found on the meadowlands. The list of invertebrates would fill a textbook and in moth species alone Foxglove now has three vice county records!

Management of the reserve could not be achieved without the help and support of the local community and MOD. Site management and visitor satisfaction could not exist without the dedication and commitment of local volunteers. Foxglove volunteers can - and will - turn their hand to everything, from leading guided walks, showing school children around and encouraging and fuelling their interest, bird ringing, fundraising, species monitoring and recording, not to mention plenty of physical work! It is thanks to this help that the boardwalks and paths are of an incredibly high standard and large sections of Foxglove are fully accessible to wheelchairs.

The continuous succession of gorse, willow, brambles and birch is harnessed by the dedicated volunteers, allowing the more diverse habitats to expand and prosper. In addition to the volunteer work force, the reserve has some recently acquired bovine assistance: highland cattle. Their purpose is to eat the tough tussock grasses on the meadow opening and vary the sward. Their impact is already visible and this summer is promising to be even more colourful than the last! Needless to say the cattle have proved very popular with the general public and have featured in all the local newspapers. The reserve has also featured on BBC prime time news, illustrating the close community links between the natural environment and a local school. This is not the limit of television exposure and other national programmes have also been attracted to the various features within the reserve. The publicity has benefited MOD and Foxglove.

The future for the Foxglove looks bright. Its ability to act as an intermediary between the local community, the expanding garrison and the training area continues to develop and grow stronger meeting the directives of the MOD estate strategy. It enjoys both a favourable and popular standing in the local community and has an excellent working relationship with naturalist organisations, local businesses and volunteers in a predominantly military catchment. Careful habitat management is set to continue further increasing biodiversity and the opportunity for all to participate in imaginative and exciting environmental projects.

Sue Rowley, Reserve Warden and Tony Crease, Deputy Commander, ATE North

Rare bats found

'holed' up at Newtown Ranges

Bechstein's Bat
Ian Davidson-Watts

Newtown Ranges and Jersey Camp Training Area are situated on the north-west coast of the Isle of Wight. Purchased in 1911 by the War Office, the busy ranges and Jersey Camp are now managed by the South-East Reserve Forces and Cadet Association (SERFCA). MOD land holdings in the area total approximately 328 hectares (ha). The site is active, with the ranges and surrounding land used by a wide range of military users for live and dry training, particularly low level infantry tactical training.

The area is dominated by Newtown Harbour, the largest estuary on the Isle of Wight, which is considered to be one of the best examples of a natural bar-built estuary in Southern England. The estuary, and much of the adjacent land, including grasslands, ponds and ancient woodlands, has been designated as a Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC) due to its nationally and internationally important habitats and species. Internationally important bird populations also use the site leading to further designations as a Special Protection Area (SPA) and as a Ramsar site due to its importance as a wetland ecosystem for birds.

Although the area is dominated by the coastal habitats of the estuary, the local woodlands are home to a variety of rare mammals and other wildlife associated with ancient woods, including dormice and red squirrels. Last summer these woodlands were targeted by a team of bat researchers as part of a wider island project to try to locate colonies of rare woodland bats. This work, supported by the People's Trust for Endangered Species (PTES), Mammals Trust UK (MTUK), the Environment Agency and a number of conservation orientated landowners, aimed to survey all of the Isle of

Wight's major woodlands over two years. The very rare Bechstein's and barbastelle bats, both of which are generally found to roost in trees, were of particular interest to the survey team. It is possible that the Isle of Wight is a European stronghold for these species. An old record of a Bechstein's bat at Newtown ranges from the 1980s, gave the research team hope of rediscovering them.

Tree roosting bats are notoriously difficult to study. These are small, highly mobile, nocturnal mammals which secrete themselves in the smallest of cavities within a tree. Catching the bat, working out how it uses the landscape and where it roosts requires a great deal of self discipline and patience on the part of the researcher and a lot of hi-tech gadgets.

The survey work at Newtown started at the end of May 2006 in Locks Copse, a 7 ha oak dominated wood, heavily used by visiting units as a harbour area. With assistance from the range staff, mist nets were erected across suitable rides within the wood. An ultrasonic lure (to draw bats to the nets), hi-tech bat detectors and, most importantly, deck chairs and flasks of tea were also produced. It proved to be a good night with 10 bats from six species being caught in mist nets, including a male Bechstein's bat! There was much excitement over this find and the decision was made to electronically tag the bat to try to locate its roost the following day. Using surgical glue (tested on humans first), a small transmitter weighing less than 0.5g was temporarily secured (they drop off after two weeks) to the bat's back between the shoulder blades. Shortly after tagging the bat was released.

The following day Trianna Angele, a placement student with the EST Natural Environment Team, set off, armed with a receiver, to find the tagged bat. The signal was soon picked up and led to a small area of woodland bordering the MOD land boundary. The bat was then tracked to a woodpecker hole in an oak tree. A good start to the survey!

The next night saw the team sample a different kind of woodland; the much smaller (3.5 ha) and isolated Hummet Wood. This wood has received little management and is only used on an ad-hoc basis by visiting units. Netting locations were difficult to find, but using the same techniques a small number of bats were caught, including a female Bechstein's bat, a very rare find indeed. Again the bat was tagged and quickly released. The following day she was found roosting in a woodpecker hole in an ash tree on the northern part of the ranges. Unusually the roost was located at the cliff edge within 50m of the coast.

At this point the research team had to split up. The third night saw part of the team carry on netting, this time in the conifer dominated Burnt Wood (32 ha). The remainder of the team were on sentry duty outside the new tree roost to undertake an emergence count. Counting bats leaving a tree hole is a very difficult task with the Mk 1 eyeball. The darkness associated with the tree canopy and the later emergence times of Bechstein's bats generally, required the assistance of infrared cameras and night scopes to make an accurate count. To our surprise 55 Bechstein's bats emerged from the tree during an hour and a half period after sunset, confirming that this was a breeding colony and a truly amazing find. Previously only one other breeding colony had been identified on the Isle of Wight and only seven others have been identified across the UK as a whole.

Meanwhile the netting party in Burnt Wood were having a slow night. The conifer woodlands provided poor netting habitat, as some of the rides were wide and high meaning that the bats could easily avoid the nets. However, at midnight two bats were caught in quick succession. To the team's amazement one was a breeding female Bechstein's bat and the other a female (non-breeding) barbastelle bat.

The final night of sampling took place in Robin Wood (4.5 ha) which borders the Clamerkin brook, a very unmanaged and mosquito infested place. Bat activity was generally low. However, as well as a couple of long-eared bats, a male barbastelle bat put in an appearance (no doubt after the mosquitoes) rounding off the collection of rare woodland bats that appear to be present at Newtown Ranges and Jersey Camp.

The bat survey showed that even in a few days, using the right techniques, an enormous amount of data can be obtained. As well as the Bechstein's and barbastelle bats, another five species were confirmed, including natterer's bat, brown long-eared bat, common pipistrelle, soprano pipistrelle and whiskered bat. The presence of the rare woodland bats at Newtown is no doubt related to the sensitive management of the area by the range staff, who without knowing it appear to have been sustaining the populations of these two UK Biodiversity Action Plan species. The importance of trees with rot holes and other cavities to woodland bats cannot be overstated, but this does pose a challenge to land managers, particularly in relation to safety issues. Finding out what you have, even with difficult species, however, can make all the difference.

The research team went on to survey a total of 16 woodlands during the summer of 2006. Bechstein's and barbastelle bats were confirmed in 14 woods, making the Isle of Wight a truly remarkable place for woodland bats. Early analysis of the data obtained is showing a clear trend of female colonies relying on ancient, well connected, sensitively managed woods. Male bats of both species appear to be making use of a full range of woods.

The research team is indebted to Dave Maidment and the range staff at Newtown for their assistance in this project.

Ian Davidson-Watts, Defence Estates and Research Team Leader

Bat Roost in Woodpecker Hole
Ian Davidson-Watts

RATTY RETURNS to Warcop

Water vole standing *J Dickson*

Ratty, the practical boat-loving gentleman from "The Wind in the Willows", is in trouble. The water rat, or water vole as it is more correctly known, has declined nationally by 94% since the publication of Kenneth Grahame's classic tale in the early 1900s. This makes it Britain's fastest declining mammal. However, with help from the MOD at Warcop in Cumbria, Ratty is now set to return to part of his former range.

Over the last fifty years water voles have been hit by the dual pressures of agricultural intensification and the rapid spread of the American mink. The Cumbria Water Vole Project is jointly managed by Cumbria Wildlife Trust and the Eden Rivers Trust and works closely with partner organisations including Natural England and the Environment Agency. It has also maintained close links with the MOD at Warcop since 2003, when a suspected water vole sighting directed widespread surveys of the estate. With plenty of suitable habitat and historical records of sightings close by, there should be a healthy water vole population. However, survey work not only at Warcop, but throughout Cumbria, suggests that the situation is very different. Water vole colonies have been found only in the North Pennines around Alston where they thrive in small peaty burns. Elsewhere in the county they appear to have vanished.

Water voles are preyed upon by almost every carnivore large enough to tackle one including foxes, herons, owls, stoats and weasels. But unfortunately, Ratty no longer has to deal just with old-fashioned enemies from the Wild Wood. The mink is a non-native predator that was brought to Britain for fur farming in the late 1920s and since then has colonised almost the whole of the country. Mink are strong swimmers and females are small enough to fit down a water vole burrow, causing devastating impacts on a population over a very short period of time. It is thought that mink predation is behind the absence of water voles at Warcop, so for the past three years staff have been monitoring mink movements on the estate. Fortunately only two mink have been tracked and subsequently trapped in this period indicating that numbers are now low in the area.

After careful planning, consultation and the completion of a full feasibility study, the Cumbria Water Vole Project has embarked on a scheme to reintroduce water voles to part of their former range at Warcop. MOD has worked closely with the project to restore existing ditches and ponds and to excavate a new channel to provide additional habitat. Habitat created for water voles is good for wildlife in general, so areas that have been enhanced as part of the reintroduction will benefit a whole range of plant and animal species and contribute to the already high conservation value of the estate.

Underweight young voles from Alston were taken into captivity in October 2005 in order to form a captive breeding colony. By using only late-litter babies that would not otherwise survive the winter, impacts on the wild population were minimised. The voles quickly gained weight in the captive breeding centre in Devon and over 60 babies were produced. Half of these returned to Cumbria Wildlife Trust in autumn 2006 to spend the winter in large cages, well provisioned with straw bales, carrots and apples. Although in the wild water voles eat a wide variety of bank-side plants, they do not seem averse to sampling rabbit food, fruit and vegetables when these are offered!

The current plan is to reintroduce the voles in July 2007, using "soft-release" cages well spaced around the water margins. These consist of lightweight aluminium pens with a floor area of approximately 11ft^2 sunk into the ground to a depth of one foot. The animals must dig their way out over a period of days, enabling them to orient themselves in their new environment in comparative safety. Only sibling groups, which have remained together all their lives, will be introduced into each release pen. The animals usually disperse from the cages after seven to ten days, however, food can be provided within the pen for several weeks to give the voles a helping hand during their first forays into the wild.

The exact timing of the release depends on the vegetation growth in spring, as a good density of cover is vital if the voles are to evade predators and create secure burrow networks. However, by the time you read this article, it is hoped that the voles will have become established on the site.

To encourage wider use of the estate by visiting groups, a dipping platform and interpretation boards are being sited on the release ponds. It is hoped that local schools will make use of the site for educational visits and more ambitious plans are afoot to build an eco-friendly cabin as a resource for the variety of visitors that make use of Warcop for natural history, geology or recreation purposes.

With its wealth of wildlife habitat, from large tarns to tiny becks and ponds, Warcop offers a watery paradise for the return of Ratty. It is hoped that our captive-bred voles will expand their territory beyond the boundaries of the estate onto the River Eden and become once again a familiar sight to all those who enjoying messing about on the river.

Ruth Dalton,
Water Vole Reintroduction Officer
Cumbria Wildlife Trust & Eden Rivers Trust

Warcop release site *Ruth Dalton*

Carved handrail of the dipping platform *Ruth Dalton*

Lydd Ranges, a great place for newts

Newt pond *Richard Goslett*

Lydd Ranges is part of the famous Dungeness shingle beach, an arid habitat and at first sight an unlikely spot to expect large numbers of amphibians. It is, however, one of a series of sites designated under the Habitats Directive because it supports large numbers of great crested newt. Brian Banks from Natural England explains the significance of Dungeness and Lydd Ranges for great crested newts.

Smooth Newt *Jim Foster - English Nature*

This species has been found in 55 ponds across the shingle beach. Although only 6 of these ponds are on Lydd Ranges they supported a mean of 27% of the newts reported on the whole of the beach during the last three extensive newt surveys. This positive state of affairs is not down to chance, but is a reflection of the interest shown in the species by a number of Range staff.

The great crested newt is an impressive amphibian. Adult females may reach a length of 16cm and are large enough to occasionally consume adult smooth newts - the second largest British newt species. Seen from above these animals are dark brown, with a scatter of black blotches. In contrast their bellies are bright orange. To get a good chance to see them the best approach is to visit the pond on spring nights with a powerful torch. Then you will probably be able to see females laying their eggs, taking great care to wrap individual eggs in the leaves of plants such as water mint. These eggs can be easily found and are one of the easiest ways to confirm the presence of this species in a pond. Alternatively, you may see the males courting the females, with arched back, a jagged crest down the back, and wildly vibrating their tail adorned with a very obvious silver flash down its centre.

Although a widespread animal the range of this amphibian has been fragmented in recent years due to the destruction of the fish-free ponds in which it breeds. Great crested newts are most likely to be found in areas of countryside with a high density of ponds. On the Romney Marshes, which developed as a result of the protection from saline flooding provided by the Dungeness shingle barrier, they have been found in 40% of the ponds. In recent years, however, many of the ponds on the Marsh have been infilled, or become overgrown with willow. This means that the newts are often confined to isolated ponds and are much more vulnerable to chance extinction caused, for instance, by the colonisation or introduction of fish, serious predators of newt larvae. The best ponds for newts on the Marsh are on Dungeness and here the area of habitat has been increasing due to the active interest of some of the landowners, and careful management of emergent vegetation in recent years.

The significance of Dungeness for newts was only discovered by accident during a 1992 survey for medicinal leeches, another speciality of the area. Whilst surveying at London Ashford Airport (Lydd) a dead great crested newt was found, covered in the scars inflicted by the leeches (they resemble a Mercedes car badge, because the mouth-parts have three jaws). This has been a surprisingly rare observation, although in 2006 I observed a very large newt swimming in a cork-screw motion with a very large leech firmly clamped to its flanks. The discovery at the airport prompted both surveys to assess the abundance of the newts across the shingle beach and surprise that in some areas numbers were sufficiently high to qualify the site as an Site of Special Scientific Interest (SSSI) for this species alone. A count of more than 100 animals is sufficient for a site to be considered as an SSSI. In 2002, a peak count of 673 animals was obtained.

Male Great Crested Newt *Jim Foster - English Nature*

Great crested newts are not the only amphibians found on the site. Smooth newts are abundant in some ponds, although they appear to be uncommon in some of the ponds with the largest numbers of crested newts. The other common species is the marsh frog, a species introduced to Romney Marsh in 1935 from Hungary.

So why do newts thrive on an area of arid, sun-scorched shingle beach? Part of the answer lies in the quality of the ponds that occur on the shingle. Because shingle is very nutrient-poor, invasion of the ponds by tall shading plants such as reedmace and reed is very slow, resulting in fairly stable areas of warm open water. This is ideal for the newts. The shallow ponds on this substrate abound with aquatic life with large swarms of daphnia. Water quality is good. Many of the ponds occasionally dry out and so are free of fish, providing ideal breeding habitat.

The terrestrial habitat though is a more of a mystery. In places there are small stands of shading scrub and pine plantation and patches of rough grassland to provide shelter for terrestrial newts, but the bulk of the site is composed of large areas of dry bare shingle that bakes in the summer sun. One possibility is that the newts are able to crawl down into the cracks between bands of coarse shingle to find cool, damper conditions during the summer months. One of the interesting features of Dungeness is that the sea has sorted the shingle into fine and coarse bands, but over much of the site the shingle would appear to be too fine to provide crevices of suitable size for the newts to occupy. Another possibility is that the large deep gravel pits, full of fish, provide non-breeding habitats for the adult newts. This is all speculation, but it is a question that needs answering if we are to ensure that sufficient areas of terrestrial habitat are maintained for this species.

Moderately large numbers of newts (74) were counted in two ponds on Lydd Ranges in 1994, and were of interest to Derek Howells, the Lydd Ranges Foreman, who drew my attention to their presence. On learning of the significance of the animals he organised some early habitat enhancement works including excavating two further damp, rubbish-filled hollows to create more ponds, trimming shading willows around the ponds and fencing them to avoid disturbance of the ponds. Numbers have increased and in 2002 the best ever count was obtained from the Range ponds - 285 animals (more than 40% of the animals counted on the whole site that year).

Derek has now retired but it is pleasing that the Defence Training Estate continues to care for these ponds in what is a heavily used range complex. The largest breeding pond was cleared of encroaching reedmace. Willows were also removed on the remaining smaller ponds. This project was undertaken using a 360^0 13 tonne excavator, which was already on hire for ditch clearance elsewhere on the Ranges. The works were carried out over several days and approximately 70% of the reedmace removed. The Landmarc operator, John McGuinness, carried out the clearance expertly with only minor disruption to adjoining areas. At the direction of English Nature (now Natural England) the arisings were spread at the edge of an adjacent pine plantation to provide a possible habitat for hibernating newts. Range staff have also kept the Ranges open late at night for pond surveys to monitor the newt population. Monitoring is continuing and the Shingle Sub-group of the Cinque Ports Training Area Conservation Group will be visiting the site in 2007 to help identify newt numbers.

In conclusion, MOD is one of two large land-owners on Dungeness the other being the Royal Society for the Protection of Birds (RSPB) who are leading the way in enhancing conditions and helping to increase numbers of this impressive amphibian.

Brian Banks, Natural England

View of Kidney Pond at Strensall *Roy Crossley*

DIPTERA
OF STRENSALL COMMON

With about 6,700 species in Britain, the diptera (*'di-ptera'* = two-winged), or 'true flies', represent a significant proportion of our national biodiversity. They range in size from the largest 'daddy-long-legs' to minute insects not much bigger than a couple of pin heads. Entomologists who specialise in these insects are dipterists.

The precise life-cycles of the majority are unknown, but most species undergo a four-stage development: egg-larva-pupa-imago as in butterflies. Unlike the almost universally vegetation-munching caterpillars, the feeding habits of fly larvae are hugely varied, ranging from living as parasites within the bodies of caterpillars or snails, as predators in soil or moss, as scavengers in the nests of bees or wasps, underneath decaying bark as predators of beetle larvae and so on. The list seems almost endless!

The MOD Ranges and Training Area at Strensall Common with its varied habitats, and even more richly diverse micro-habitats, is an important site for diptera. It supports a wide range of species, some of which are nationally scarce or rare. Amongst these, the rarest to have been discovered so far is a small daddy-long-legs, known as *Idioptera linnei*. With a slender, orange-brown body, silvery-grey thorax, beautifully patterned wings and measuring about ten millimetres, it truly is a little gem.

Prior to 1991 this species, then called *Limnophila fasciata*, was known historically in Britain from only eight or nine sites in northern England and southern Scotland and only at three of those post-1960. In the 1991 national review the species was recommended a threat status of 'Endangered', or 'RDB1' (Red Data Book). Within Northern Europe the fly is rare but widespread. It also occurs as far afield as Mongolia. It is likely that peat-bogs and other wetland landscapes offer the most suitable habitat throughout its range.

In 1996 specimens were found along the margins of Kidney Pond at MOD Strensall by a visiting dipterist. Subsequent searches have shown the fly to be present in at least three widely scattered sites on the Common. All three are ponds of varying sizes and depths, one being little more than a wet sedge-filled hollow. In all cases the flies are found amongst the squelchy mossy edges where, at times, they swarm in large numbers. In 2003 Peter Boardman began a study of the life-history of this species as part of his Masters degree project at the University of Birmingham. He chose a known population on the National Nature Reserve 'mosses' on the Shropshire/

Idioptera linnei *Chris Spilling*

Welsh border and has established that the larvae do, as suspected, live as presumed predators in wet sphagnum moss. An inventory of the different habitats occupied by the species was made and old sites were targeted in Cheshire and Cumbria. The phenology (flight period) of the cranefly was examined and it was discovered that populations within the south of the species range (Shropshire / Cheshire) fly over two generations, whereas those towards the north of its range occupy a single generation (Cumbria / Scotland). Records for Strensall suggest it belongs to the more northern group of sites that exhibit a single generation.

As part of his field studies, Peter spent a day on Strensall Common with Roy Crossley and together they re-discovered the fly in abundance in the three known locations. In fact the fly was present in such numbers that Peter suspects that Strensall supports the major British population of this rare species.

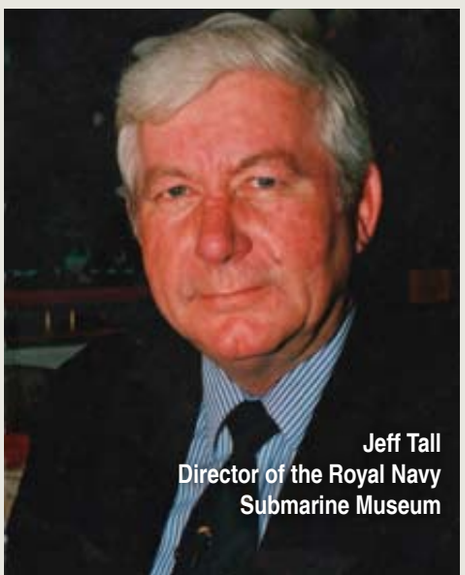
A number of the sites within the United Kingdom where the fly has been recorded are lowland peat-bogs, schwingmoor and lakes in-filling with boggy vegetation. It is only too clear to see the potential for habitat loss attached to agricultural drainage, peat-cutting and plantation forestry that must have affected the distribution of the species during the recent past. Fortunately the conservation needs for such often overlooked creatures are slowly being recognised through the work of dipterists and other entomologists but there is still a long way to go.

Now that the habitat conditions have been established, the needs of this rare species will be incorporated into the overall management plan for Strensall. This must be fitted in with the management of the surrounding heathland areas with their growing populations of woodlark and stonechat, not to mention the tree-pipits and adders, and the distinct possibility of breeding nightjars in the near future. The logistics of including the management of this rich wildlife site within the primary demands of on-going military training is always a challenge, and it is encouraging to know that the needs of 'mini-beasts' like *Idioptera linnei* are taken seriously by the Conservation Group with much welcome encouragement and support from the military staff.

Roy Crossley, Entomologist, Strensall Common MOD Conservation Group, and Peter Boardman, Biodiversity Training Project Officer at the Field Studies Council.

ROYAL NAVY HERITAGE –

X24 an example of the miniature submarines used for special operations. This craft was responsible for sinking the floating dock at Bergen *Royal Navy Submarine Museum*



Jeff Tall
Director of the Royal Navy Submarine Museum

The John Fieldhouse Building and HMS Alliance
Royal Navy Submarine Museum

Holland 1 in new gallery
Royal Navy Submarine Museum

the Royal Navy Submarine Museum

"Of all branches of men in the Forces there is none which shows more devotion and faces grimmer perils than the submarines…Great deeds are done in the Air and on the Land nevertheless there is no part to be compared to your exploits"
Winston Churchill, 1943

Commander Jeff Tall OBE has been the Director of the Royal Navy Submarine Museum since August 1994 following his retirement from the Royal Navy. Jeff was a submariner for 28 years and commanded four submarines during this time, HMS Olympus (SSK), HMS Finwhale (SSK), HMS Churchill (SSN) and HMS Repulse (SSBN). Jeff's brother David commanded HMS Turbulent at the same time as Jeff commanded HMS Churchill in the 80s, which they followed up by commanding Repulse and Resolution at the same time in the 90s, making them the first pair of brothers to simultaneously command nuclear powered submarines. Jeff served as Admiral Sandy Woodward's submarine staff officer on board HMS Hermes during the Falklands conflict.

As Director his task is to promote the past, present and future heritage of the submarine service and to tell the story of the submarine as comprehensively as possible. After a few hours in his company there is no doubting his enthusiasm for this task or his pride in the UK's submarine service. Jeff is due to retire from his post in March 2008. Talking to the Sanctuary Editor, he took some time to explain the history of the submarine service and to speak about his aims and some of the challenges he faces in running the museum.

The Royal Navy Submarine Museum is situated in Gosport adjacent to the former HMS Dolphin, home of the Royal Navy Submarine Service for 100 years. The museum forms part of the National Museum of the Royal Navy alongside HMS Victory, the Royal Naval Museum, Royal Marines Museum and the Fleet Air Arm Museum. The role of this overall organisation is to promote understanding of the Royal Navy's role in the nation's history. Each museum is dedicated to promoting understanding of the heritage of its own branch of the Service.

The Submarine

Holland 1 underway *Royal Navy Submarine Museum*

The Early Years

The story of the British submarine service began in earnest in 1901, when senior officials, realising that Britain was the only major maritime nation without submarines, reluctantly agreed to invest in five experimental Holland class vessels. These were petrol powered, had a top speed of 7 knots, a radius of action of about 50 miles and could go to 100 feet in depth. By 1910 the diesel electric class had been introduced. This was safer and faster than its petrol engined predecessor and along with the introduction of improved torpedo tubes and a deck gun meant that the submarine had the potential to be used as an offensive weapon rather than for coastal defence.

The World Wars

By the start of World War I Britain had 100, mainly E class, submarines. The submarine service constituted only 3% of the Royal Navy's strength but it soon began to make its mark. Submarines predominantly operated in the Baltic, the North Sea and the Dardanelles, often tasked with stopping trade and the resupply of enemy troops. The service succeeded in sinking 54 warships, including 19 enemy submarines. Additional roles were also taken on, including convoy escort, surveillance, shore bombardment and special forces landings. 5 Victoria Crosses were awarded and 28% of participating submarines were lost.

The submarine had proved itself to be a highly effective weapon but development was still required. As yet it was still unable to keep up with the surface fleet. Britain embarked on a programme of experimentation and development to try to resolve this. Whilst innovations such as steam-powered submarines (K-Class) and equipping submarines as aircraft carriers (M1) failed, the Royal Navy demonstrated its foresight in trying to expand capability.

At the start of World War II Britain had 67 submarines, some 4% of the Royal Navy's strength. This small element of the Royal Navy demonstrated its worth in home waters, the Far East and the Mediterranean; the latter campaign proved to be the most significant and the bloodiest of the three. Left as the last line of defence to stop supplies and reinforcements reaching Rommel and the Afrika Korps, 47 out of 94 submarines were lost. This campaign is the perfect illustration of the spirit, determination and "live together, fight together, die together" ethos of the submariner. There was never a shortage of volunteers to replace lost crews.

By the end of the war 78 major war vessels, including 38 enemy submarines had been sunk or damaged by British submarines. 9 Victoria Crosses had been awarded and 36% of submariners at sea had died.

The Cold War

The main threat to Britain following the defeat of Germany was the rapid expansion of the Soviet navy, particularly its submarine force. Economically it was not feasible for Britain to maintain a large surface fleet to counter this threat so submarines moved to the forefront. However, improvements were still needed to the vessels particularly in relation to speed and endurance.

Whilst Britain experimented, unsuccessfully, with the use of High Test Peroxide as a fuel, the US Navy had successfully developed the first nuclear powered submarine USS Nautilus. Earl Mountbatten was the driving force behind the introduction of nuclear powered submarines to the British fleet and HMS Dreadnought took to the seas in 1963 equipped with a US built Skipjack reactor.

The introduction of Polaris missiles to the British submarine fleet in 1968 marked the next stage of submarine development. However you view the decision to deploy nuclear weapons, the Polaris project was an amazing achievement for the Royal Navy and industry. Four Resolution class submarines, along with all the necessary infrastructure and training were built and developed within 5 years. The first test missile was fired 15 milliseconds later than initially planned in 1963.

Polaris provided an effective deterrent for the cat and mouse game of the Cold War. 229 unbroken patrols were undertaken by the Polaris equipped Resolution submarines until their replacement in 1995 by Trident and the Vanguard class.

Post Cold War and the Future

The adoption of the Tomahawk missile by the Royal Navy in the mid 1990s means that submarines can influence land battles by using the traditional strengths of stealth and surprise. Tanks and aircraft can be heard coming but a submarine can be inserted quietly and quickly, carry out its task and leave almost before the enemy is aware of its presence. This makes it ideally suited for the new kind of war being fought today.

Whilst we watch the high-tech, video game style air attacks from recent conflicts it is easy to forget that the submarine service has been present in all recent conflict zones. They are still one of the platforms for special forces operations and can be used for surveillance and intelligence gathering. But these are not new uses; the fore-runners for these functions can be seen in the X-craft operations and the shore bombardment in both World War I and II.

The new Astute class will provide a flexible platform for future operations meaning that the proud traditions of the submarine service will continue for the foreseeable future.

The Museum

The museum was founded in 1963 at HMS Dolphin and moved to its current home in 1983.

It has developed considerably since the move. HMS Alliance, a diesel-electric submarine has been a constant attraction for a number of years and was joined in 1982 by Holland 1. This was one of the first 5 submarines purchased by the Royal Navy and is an invaluable part of naval heritage. In 1993 it was noticed that Holland 1 was beginning to corrode and deteriorate rapidly and a substantial programme

of conservation and preservation work was required to save the submarine, involving soaking the submarine in a giant tank of sodium chloride to remove the chlorine that was causing the corrosion. Four years later the tank was drained and the treatment was proved to have been successful. Following the soaking, Holland 1 was subjected to further refurbishment work and in 2000 work began on constructing a special dehumidified display gallery to enable the vessel to remain on public display whilst ensuring it was protected from further corrosion. The gallery opened to the public in 2001.

The John Fieldhouse Building was opened in 2005. This submarine shaped building is located close to HMS Alliance and was built with assistance from the Heritage Lottery Fund. The building is home to X24 and houses the Submarine and Science Gallery, which has proved to be an important educational resource. An Area of Remembrance for those who lost their lives on submarine service in both war and peace has also been developed on the starboard side of the building.

For further information on the museum go to www.rnsubmus.co.uk

Entertaining and Educating

– Jeff Tall talks to Sanctuary

Who do you see as being your audience?

Families. The role of this museum is to present the submarine service to the public and to promote interest in the service. We are always looking for different ways to do this. The John Fieldhouse Building provides the home for the Submarine and Sciences Gallery and we have also just obtained the last builder's model of Vanguard for the museum.

We aim to give a thought provoking, enjoyable family day out with something for everyone to enjoy. We have a picnic area and an underwater journey exhibition. We have also produced a children's book on the training of sea lions for anti-submarine warfare.

We have to act as a reminder that Britain is an island nation and to emphasise the importance of the Royal Navy and the Submarine Service in protecting the nation and our freedom. There is also a tendency for all the focus to be on the German U-boat, we need to remind people of the Royal Navy successes.

What about education?

Our education programme is highly thought of and follows the national curriculum. It covers the science behind the submarine and the homefront aspects by comparing the living conditions of a wartime family with the conditions that a submariner would face. A typical school visit would consist of a tour of the museum followed by either science or home front sessions led by the museum's specialist education workers.

We have paid for buses to bring children into the museum for visits. This was done to compensate for reductions in school budgets, which inevitably impact on school trips. This has been especially beneficial for schools in more socially deprived areas where parents are less able to contribute to costs. 45 bus loads were paid for last year.

In addition to school children, staff also give external lectures to the Submarine School and have developed a heritage area there. This area is also shown to sea cadets and other visiting groups.

On an even broader scale staff are involved in broadcasting, writing books and providing advice to film, TV programme and documentary makers. For example I was adviser on Ghost Boat starring David Jason.

Do you play a role in recruiting?

Yes we do, particularly in representing the ethos of the submarine service. Second Sea Lord has stated the importance of reinforcing ethos to recruits and young sailors in the Royal Navy and we are well placed to do this. Beyond this our influence is difficult to clearly define. We do have a large number of young visitors and many recruits do refer back to museum visits as being part of their influence for joining the Services. I think maybe our role is to sow the seeds rather than to directly recruit.

The seeds can be sown in many different ways. To effectively engage with our visitors we have to appeal to a range of emotions and we can do this through film, the area of remembrance, exhibitions of machinery, demonstrations of science and technology, weaponry and displays of personal memorabilia.

How do you measure success?

The number of visitors is the most obvious indicator. However, we also ask people what they think through comments forms, visitor books and visitor surveys. When we developed the John Fieldhouse Building we asked users what they would like from such a facility. Last year we were surveyed by the Heritage Lottery Fund on projects for which we had received funding. These surveys looked at whether we were achieving the goals that the projects had set. We came out well.

We have also been accredited by the Museums and Libraries Association, which means that we meet certain official standards for museums.

We have a strong Board of Trustees and a very supportive Society of Friends. The Museum is also the Regimental Headquarters for the Submarine Service. In short we provide the glue for a very close band of brothers.

Do you receive public funding?

Yes. 75% of our funding is received from Second Sea Lord. However, my biggest regret is that, unlike the other Service museums, the Royal Navy still charges the public to see some of the most important elements of our national heritage.

What is your greatest achievement?

My greatest achievement is saving Holland 1 for the museum. I have also built a museum which is fit for our main purpose – promoting the submarine service as widely as possible. I also have the privilege of looking after the heritage of the greatest bunch of fighting men the world has ever seen.

What do you see as being the museum's biggest challenge?

My biggest concern at present is the conservation and preservation of HMS Alliance which will require significant investment over the coming years if we are to be able to maintain it.

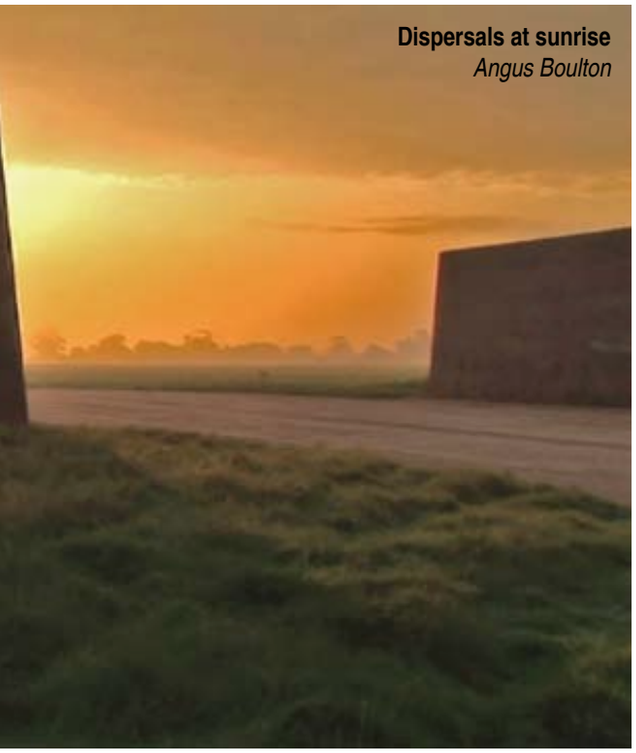
What would the most important message you could give to Sanctuary readers?

Always bear in mind the adage you don't know where you're going until you know where you've been. So view heritage as the best investment in order to reap the dividends of the future.

LEAVING COLTISHALL

DOCUMENTING THE DRAWDOWN AND CLOSURE OF AN HISTORIC AIRFIELD

RAF Coltishall, Norfolk *Damian Grady © English Heritage 24369/012*



Dispersals at sunrise *Angus Boulton*

The assembly of the last Rolls Royce Turbomeca Adour engine *Steve Cole © English Heritage DP029249*

The defence estate contains a wealth of archaeological sites and historic buildings ranging from prehistoric burial mounds to grand country houses and monuments of the Cold War. In recent years a greater awareness has emerged that the comparatively modern military history of the defence estate is just as important as its more ancient remains. Each of the armed services have heritage and ethos committees and are developing strategies to identify their own built heritage and the value it can provide in fostering esprit d'corps. Work by English Heritage has provided official recognition that historic barracks and the events and associated structures of the two World Wars and the era of the atomic bomb are as significant as any in Britain's long history. Defence Estates has worked closely with English Heritage to ensure that a record of many recent defence sites has been made for posterity. The drawdown of RAF Coltishall in Norfolk provided a unique opportunity to not only record the structures, but also the life and people of the base in the months leading up to closure.

RAF Coltishall closed at the end of 2006. It was one of many new airfields completed immediately prior to the Second World War, when these symbols of modern airpower were spread across a rural England where horses remained the chief source of motive power. Covering many hectares the aerodromes severed historic routes as lanes were truncated, or as at RAF Coltishall, new roads were created. Contemporary concerns about the impact of airbases on the countryside led to advice on their architecture being sought from the Royal Fine Arts Commission. This is evident in their symmetrical layout, the careful zoning of activities and the roads with wide grass verges and ornamental trees. Many of the buildings, especially in the domestic areas, were brick finished in neo-Georgian style.

The airfield opened on the eve of war and a Spitfire from the base was credited with shooting down the first German aircraft in the Battle of Britain. For the remainder of the war the operations were focused against shipping in the North Sea, bomber escort duties and attacks against the continent. After the war, the airfield was modified to accept the new jet fighters, including the Venom, Javelin, and Lightning. From the mid-1970s the base became synonymous with the Jaguar Force.

Despite the widespread enlargement or reconstruction of other NATO bases during the 1970s and 1980s, RAF Coltishall retained its 1930s character. As a relatively small airfield with the singular task to prepare 'the Jaguar Force for expeditionary operations', it had a reputation as a particularly friendly and efficient station, with strong links with the local community.

Since the end of the Cold War, English Heritage has documented many defence sites after the withdrawal of the Services. After the personnel had left these were typically derelict, lifeless places, with stripped buildings devoid of meaning. Uniquely, in the months leading to the closure of RAF Coltishall, the RAF granted English Heritage unprecedented access to record the base's drawdown and closure.

We photographed the Jaguars in their hangars and the air traffic controllers at work. Maintaining the squadrons at a high state of readiness required the efforts of the whole station, and we recorded 'behind the scenes' activities and places that were rarely seen. These included the maintenance of flying clothing, brake-chute packing, engine assembly and testing, stores and paint shops. We were also keen to capture the social life of the base with photographs of the messes and their kitchens, barracks and housing estates, the supermarket and chapel. Another new departure for this project was the close collaboration of three sound and video artists, Angus Boulton, Gair Dunlop and Louise K Wilson. Their work will bring new perceptions to complement the stills photography, capturing, for example, the essential character of the place, the trauma of closure and the rituals and ceremonies that accompanied it. Together these records constitute a characterisation of the base at this time, and a documentation of the processes of change and their effect on service personnel, the local community and landscape.

English Heritage is grateful to the personnel of RAF Coltishall for their friendly assistance in creating a record of this historic base and a unique snap shot of air force life in the early 21st- century. More images from the project may be found on our website www.english-heritage.org.uk/viewfinder/

Wayne Cocroft, Steve Cole and John Schofield (English Heritage) and Niall Hammond (Defences Estates)

Looking for the (not too distant) Past – aviation architectural heritage at RAF WITTERING

RAF Wittering Officers' Mess today *Gp Capt Clive Montellier*

RAF Wittering Officers' Mess with Bomb Damage *Station archives*

For the student of 20th century architecture, military aviation establishments present a frustrating curate's egg. Our determination to adapt and re-use our existing building stock, where the commercial world might simply demolish and rebuild, means that our airfields often house buildings dating back to the beginning of military aviation. Conversely, the same tendency to convert existing buildings on a tight budget means that there is often little trace of the original fittings, fixtures and interior design. Research, too, presents a sharp contrast. As a public body, our records are usually well-ordered and we have the continuity that prevents building plans and the like being arbitrarily destroyed. However, the nature of military service means that our people, certainly those in uniform, move on regularly and there is not the body of oral history that one can often draw on in the civilian environment.

Researching the architectural heritage of a flying station such as RAF Wittering reflects all these factors. Although there has been a military airfield at Wittering since 1916, comprehensive rebuilding in the 1920s means that there is little sign of its First World War origins. However, the absence of any 'inherited' (pre-RAF) buildings and the extent of construction to support the 1920s Central Flying School means that there are several good examples of early RAF architecture and many buildings still carry date stones from the period. The progressive expansion of the Station before and after the Second World War means that older buildings tend to be concentrated in the heart of the technical/domestic site, with the post Second World War additions linked to the expanded airfield. That said, the constricted domestic site bounded by the Great North Road (the A1), Wittering Village, farmland and the airfield itself, means that later development has meant the demolition of older buildings. Others have changed markedly in appearance, not least the Communications Centre, formerly the Sector Operations Centre, which has been relieved of the surrounding earth revetments designed to protect it from air attack.

The genesis of the current airfield which, until the Second World War, was two separate airfields some 3 miles apart, is also important to an understanding of its architecture. A temporary linking of RAF Wittering to its satellite, RAF Collyweston, mid-way through the Second World War, created a runway some 9,000 feet long. That temporary extension was regularised following the war, making Wittering an ideal site for the new generation of nuclear-capable bomber aircraft and resulting in its post-war rebuilding in its current layout. As little building was carried out on the expanded airfield prior to this wholesale post-war redevelopment, it now provides a particularly good example of a V-bomber Cold War airfield layout with many of the associated buildings still intact, albeit in different usage. This layout was retained when RAF Wittering was subsequently selected to house the new Harrier aircraft. The multiple dispersals proved ideal for training Harrier aircrew in operating from deployed strips and there has been little need to alter the airfield itself. With a varied inheritance of buildings to adapt and re-use, there has been comparatively little new building since the arrival of the Harriers in 1969. The Station's recent re-roling as the RAF's expeditionary logistics hub has largely been absorbed within existing infrastructure, the most obvious addition being three modularised barrack blocks.

So what benefit comes of such research? For those who work on the Station, the resultant architectural heritage guide helps them understand some of the apparent illogicality of the legacy layout of buildings and hopefully sparks an interest in the Station's rich aviation heritage. For the outsider, it helps to explain how MOD uses its public funding and how it manages the estate it holds on trust for the nation. Perhaps a better insight comes from an article written by a member of the 20th Century Society (the leading special interest group for architecture post 1918) in the wake of a visit earlier this year:

"There were many enlightening examples but it was, perhaps, the workings of the site as a whole that was most impressive. The station is a distinct and separate place, unified through its planning, landscaping and buildings, as well as the language and dress of its inhabitants. Our visit was a chance to glimpse this other world."

Gp Capt Clive Montellier, HQ Air Command, former Chairman of the RAF Wittering Conservation Group

Revealing the Pathfinder:

Excavation of Avro Lancaster Mark 1 PB911. Swayfield, Lincolnshire.


.303 machine gun live rounds


1936 Penny


Fragment from a life jacket

Images courtesy of Richard Osgood

AT 8:55 am on 30 March 1945, Lancaster PB911 of 635 (Pathfinder) Squadron took off from RAF Downham Market. The role of the Pathfinder Squadrons was to mark out targets for attack by the Bomber Squadrons through the use of flares. Despite their relatively young age, the pilot was 25 and the flight engineer 19 – the seven man crew were experienced - this was their 22nd flight. They were undertaking a training flight to practice usage of the 'fishpond' warning set. Fishpond was an add-on to the Lancaster's H2S ground looking navigation radar system and provided additional coverage of the underside of the aircraft to display attacking fighters in the main H2S screen. According to the official reports, the aircraft was seen to come out of cloud in a steep dive from which it did not recover. Lancaster PB911 crashed at 11:10am in a field north west of Swayfield Church in Lincolnshire with the loss of all of her crew. Less than 6 weeks later Victory in Europe was declared.

Lancaster PB911

Crew of PB911
F/O D. Dixon (Pilot)
Sgt S.E. Robinson (Flight Engineer)
Sgt S.A. Pimm (Navigator)
Sgt R. Goddard (Bomb Aimer)
Sgt N. Davis (Wireless Operator)
Sgt J.G.W. Harcourt (Rear Air gunner)
Sgt R.W. Wilson (Upper Air Gunner)

Lancaster PB 911 was manufactured by A V Roe at Woodford as part of contract number A/C 1807. It was in use with 635 Squadron from 28 February 1945 to the date of the crash. Between 5 and 30 March 1945 Lancaster PB911 made 12 operational flights. 11 of these involved raids on places such as Essen, Dortmund, Bremen and Dorsten. The twelveth was the fatal training flight in the UK.

Despite being on a training mission at the time of the crash the aircraft was fully armed. This was because in eastern England bombers could still encounter forays made by enemy fighters. The ammunition was a mixture of incendiary (manufactured in 1943 at Spennymoor in Durham) and armour-piercing (manufactured in 1944 at Radway Green in Cheshire). This combination was ideally suited to destroying enemy aircraft through hitting their fuel tanks.

The Excavation of PB911

Some sixty years after the crash of Lancaster PB911 excavation work was carried out on the crash site. Because much of the aircraft's story was already known but little was known of the aircraft's final moments the excavation work concentrated on trying to discover what caused the aircraft to crash.

An examination of the artefacts associated with the crash site was informative. The alignment of the engine remains seemed to indicate that the aircraft struck the ground at an angle of around 45^0 and that its left wing, which was embedded deeper into the ground, struck first. The buckling of the engine valves indicated that the engines had been working at the point of impact and thus were probably not the cause of the crash. If the engines were functioning then, other than pure pilot error, the crash must have been caused by another major malfunction of the aircraft. The initial RAF report suggested that icing up of the controls was the most probable cause. This was a common concern amongst Second World War bomber crews, particularly at high levels when even the hydraulic oils of the gun turrets could freeze up.

Whilst a great deal of material was recovered from the site of the crash, not all of it was identifiable. The high impact crash and the resultant fire had reduced much of the aluminium to amorphous lumps, which had then been subject to the effects of sixty years worth of corrosion. Much of the airframe was simply removed, placed on a tarpaulin and returned to the impact crater on completion of the work. Many of the identifiable finds including large pieces of the Merlin engines, propeller blades, flash-eliminators from the machine guns and part of the air-gunners toolkit were retained by the Pathfinders Museum at RAF Wyton.

Throughout the excavation a Defence Estates archaeologist and WO Jeff Vaughan of the RAF Aircraft Recovery and Transportation Flight were on site. They had two key tasks; firstly, to record the airframe, and

War Grave of Flying Officer D Dixon *John Pelling*


Excavated debris *Richard Osgood*

635 Sqn crest *RAF*

any other unforeseen archaeological deposits and secondly, to ensure that the correct procedures were followed in the event of the discovery of human remains. Although all members of the crew were provided with war graves and local accounts suggested that the bodies had been retrieved in 1945, there was still the possibility that some elements had not been recovered at the time. Arrangements were made so that immediate contact could be made with the Coroners Office in the event that any remains were encountered. In addition any items which could be considered to be identifiable personal effects were to be collected on site by the RAF and, if possible, returned to the families.

In terms of personal property nothing was recovered other than a 1936 penny, which could have belonged to any member of the crew. Parts of flying kit such as parachute fragments and fittings, life jacket, and tunic pieces were uncovered along with elements of flying boots but again there was no evidence to connect these with a specific crew member.

The Ethics of Air Frame Recovery and the Work of the Joint Casualty and Compassionate Centre

The recovery of air frames from crash sites is a complex subject, perhaps more so than it would at first seem. The airframes are archaeological deposits in their own right; they may truncate and lie within other archaeological deposits and might be the last resting place for the crews that flew in them. There has been a great deal of recent interest in the subject and English Heritage have produced a guidance document for groups that excavate these sites.

It is seen by some that excavation of these sites is wrong, that we know enough about these aircraft from film, documents and, at time of writing, oral testimony of those that flew them. Consequently we gain little by digging them up. Where human remains are still present (or possibly present) the issue is perhaps even more controversial. To this end, it is essential that the sites, if permission to excavate is granted, are treated with due dignity and that a record of the work undertaken is kept.

The work of the Joint Casualty and Compassionate Centre (JCCC), located at RAF Innsworth in Gloucestershire, is essential in ensuring that any attempt to recover airframes of crashed aircraft is dealt with appropriately and that the sacrifices of those that died are not forgotten. Military aircraft crash sites are controlled under the Protection of Military Remains Act 1986. The Act requires that licences are issued to authorise any recovery or excavation of crash sites. Any person wishing to undertake such work must apply to JCCC for a licence at least 3 months in advance of their planned start date. Before a licence is issued the applicant must research and supply all relevant information on the aircraft that they are interested in, including the location of the site and the fate of the crew.

JCCC will check the information provided against official records before they make a decision on the granting of the licence. A licence will not be issued if human remains are likely to be found or if significant amounts of ordnance are likely to be present.

In addition to the work undertaken by JCCC, the Historic Environment Team at Defence Estates will carry out an environmental screening check of the application. This is to ensure that the work would not disturb elements afforded statutory protection. The team is also putting together guidelines for excavation groups to ensure that their findings are systematically recorded.

Richard Osgood and Avril Gibson

Ministry of Defence Joint Casualty and Compassionate Centre. Crashed Military Aircraft of Historical Interest: Notes for Guidance of Recovery Groups. (2005).

Extending the Cemetery — fieldwalking in the footsteps of Crawford on SALISBURY PLAIN

OGS Crawford and aeroplane
Image courtesy of the Institute of Archaeology , University of Oxford

Fieldwalking *Richard Osgood*

Osbert Guy Stanhope Crawford was not only an archaeologist; he was also the pioneer of aerial photography of archaeological monuments in the UK. Having worked on excavations in the Sudan and England, he served in the infantry (the London Scottish) in the Great War before joining the fledgling Royal Flying Corps as an observer in 1917. Crawford was shot down in 1918, residing in Holzminden prison for the remainder of the war. Nonetheless, his experiences in the air had served him well and he appreciated that aerial survey could be of huge benefit for archaeology, enabling the plotting of cropmarks, field systems and other features otherwise hidden below ground. Some of the results of this work were published in "Wessex from the Air" in 1928.

In 1927 Crawford founded the internationally important journal 'Antiquity', which continues to be published to this day. He was also the first Ordnance Survey Archaeology Officer. His presence in Southampton with this job enabled Crawford to record the damage to the city resulting from the Luftwaffe's raids in the 1940s.

Crawford wrote on his desire that archaeologists in Wiltshire should focus their attention on the Marlborough Downs as the army had caused so much damage on Salisbury Plain. Yet, conversely, it is this military presence that has largely prevented the scourge of the industrial deep-ploughing that the Downs have suffered. Thus, today, the Plain's archaeological assemblage is much more visible. Crawford had long associations with Salisbury Plain where flights over and walks on would result in assiduously annotated maps and plans with notes and perceived areas of archaeological interest. One such site was Milston Down in the Bulford Ranges of the Training Estate. His copy of the 6-inch Ordnance Survey map for this area being gridded with field systems, truncated by linear ditches and dotted with circles representing burial mounds. He was certainly of the belief that there was more archaeology on the Plain than the experts of the day knew about.

At Milston, Crawford noted a series of round barrows that are still there today and to the west of these he had sketched in some rough circles – possibly further burial mounds, though not clear to even his trained eyes. These burial mounds known as 'round barrows' or 'tumuli' date to the Early Bronze Age, with some of the earliest, 'Beaker', phases perhaps dating as far back as around 2500 BC, this would be contemporaneous with the later phases of nearby Stonehenge. The Defence Training Estate (DTE) of Salisbury Plain contains around 500 such round barrows or ring ditches that we know of.

The area to the immediate west of the extant Milston Down barrow cemetery was ploughed in the past. The Sites and Monuments Record of Wiltshire County Council noted the presence of some worked flint and pottery (Record numbers SPTA 1928 & 1929), finds which were made by Nell Duffie and Eileen Rollo of the Bulford Conservation Group.

This area seemed perfect for archaeological examination to establish whether Crawford had been correct and so on a frosty Sunday in January, the authors led 16 hardy members of the Bulford Conservation Group in a fieldwalk on the site. As the area had been disked, lightly roughing-up the ground's top surface, to provide suitable nesting conditions for the stone curlew, the conditions for such a survey and the chance to check Crawford's theories were ideal.

After 5 hours of methodical, back-aching searching, some 159 pieces of pottery had been recovered – several with rims or decoration. These are vital 'signatures' to pottery experts if the vessels are to be identified and dated. Barring one glazed sherd, this phenomenal assemblage was prehistoric, dating from around 1200BC and earlier, and of a quantity that is often not seen on large excavations of sites of this time period.

For the most part, the pieces of pottery were of quite rudimentary form not being wheel-thrown. They included rough pieces of grit within their fabric and their colours ranged from black to orange. Also discovered were pieces with decoration, one sherd had the decorative impression of fingernails, made by a potter around 4,000 years ago. Three other fragments came from a vessel type known as a 'Beaker', dating from the mid third millennium BC. These vessels have been associated with all manner of theories in the past, ranging from large-scale migrations of people to Britain from Europe, to the burial places of warriors, to being evidence of early drinking cults. As such, these three sherds were very exciting finds, particularly as they are generally associated with a funerary assemblage and could come from the burial mounds plotted by Crawford.

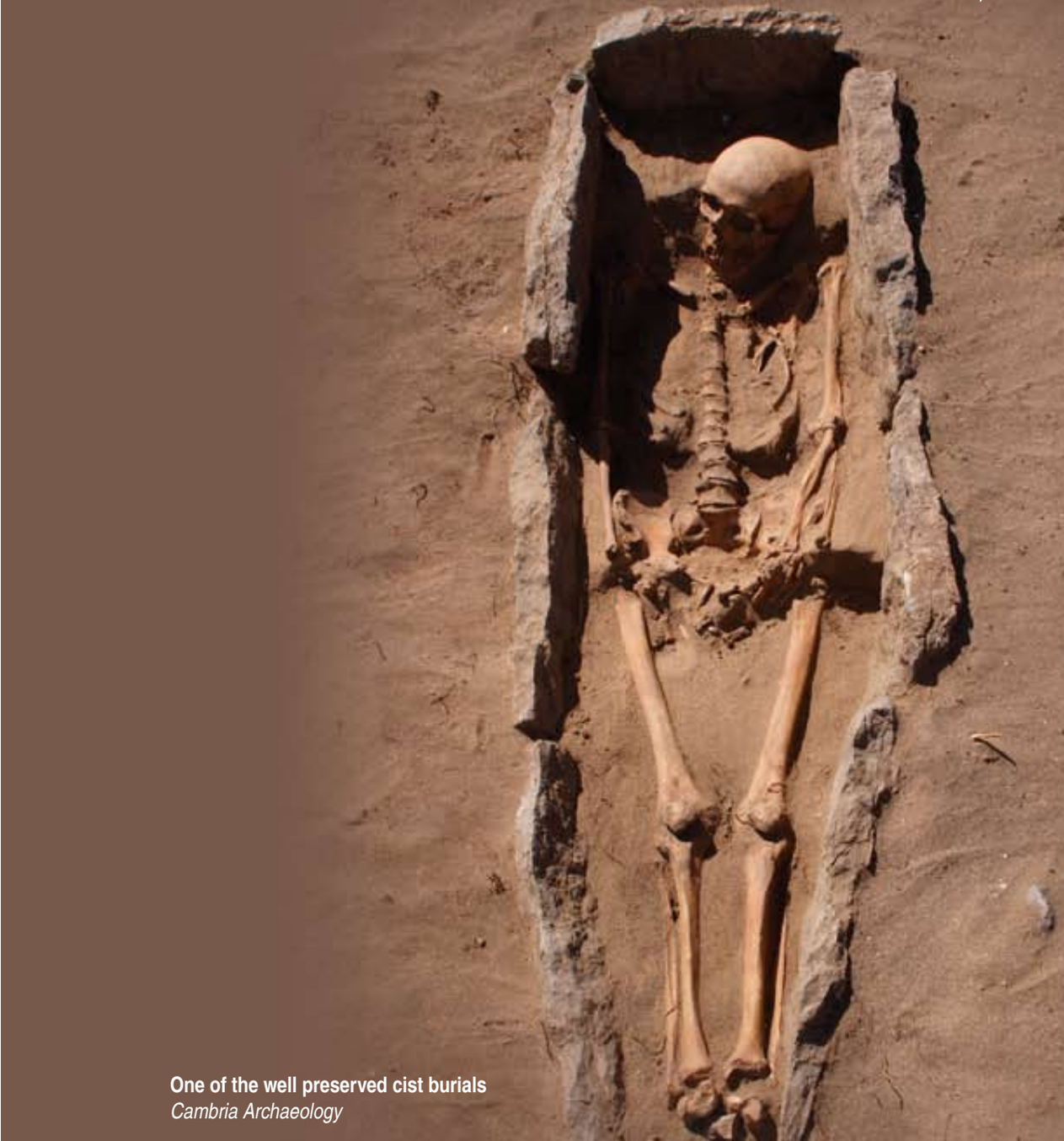
The finds were plotted by the Geographic Information team at Westdown Camp and their distribution noted. There were some clear 'hot spots' with large quantities of material, something that the team had noted in the field. Some of these were located at slight rises in the ground or 'false crests', which would fit with the traditional location of burial mounds at visible points in the landscape. The finds were plotted using Ordnance Survey mapping layers and modem aerial photographs as the base layers. We then compared our plotted results with Crawford's sketch and found astonishing correlation. Our discovery of material followed a linear 'spread' within which the obvious clusters of finds mentioned above lay. Crawford had noted a line of possible barrows and our 'hot spots' matched these.

As the finds we retrieved would not have been moved any great distance by the plough, it seems reasonable to assume that they reflect, quite accurately, underlying archaeology and corroborate Crawford's theories on the presence of burial mounds. Our work had served not only to advise future management plans, but also to confirm that the suspicions of one of Britain's archaeological pioneers were correct - Milston Down cemetery was once much larger.

Crawford died on November 28th 1957 but his pioneering work left an immense legacy to the study of archaeology.

Richard Osgood, Major Giles Woodhouse, Struan Haston and Chris Maple

Badgers, burials and bombs:
excavations at Brownslade Barrow, Castlemartin



One of the well preserved cist burials
Cambria Archaeology

The Bronze Age burial mound of Brownslade Barrow is, at first sight, a fairly unremarkable archaeological feature. A low mound at the landward edge of a sand-dune system, which is almost totally hidden by vegetation in the summer, the barrow has often been overshadowed by more impressive sites and by the splendour of Castlemartin's coastline. But Brownslade Barrow has a remarkable recent history.

Voids and tunnels left by the badger sett *Cambria Archaeology*

The story begins in the 1880s when the antiquarian Edward Laws decided to carry out an excavation at Brownslade Barrow. Notes from his work tell us that on the 'east side' of the barrow, Laws encountered human burials in 'stone coffins'. He commented that the burials were laid out east-west, without any grave goods, and that they were densely packed – indeed he described there being so many that they were 'like pigeons in a pie'! His notes and sketches have led later archaeologists to believe that the burials he had encountered were not Bronze Age, but belonged to the early Medieval period (400 -1000AD). This was a critical period for the development of Christianity and, in Wales, it is sometimes known as the Age of the Saints. Unfortunately, Laws had not left a location plan, so although we knew there was an early Medieval cemetery somewhere near the Barrow, we didn't know exactly where.

Moving forward over a century, a Master of Arts student of Archaeology obtained permission to visit the site and noticed bones amongst the spoil from a large badger sett. Closer examination revealed that the bones were human, and that there were rather a lot of them. In fact, over 100 pieces of bone were picked up! Radiocarbon dating showed that the bones dated from between 500 and 1000AD. Quite clearly the 'lost' cemetery had been found. A topographic and geophysical survey was carried out, the results of which were reported in previous editions of Sanctuary and confirmed that this was a significant archaeological site.

Unfortunately over the next couple of years it became clear that we had a big problem: the badgers. Their sett was continually throwing out human bone and it was obvious that the badgers were systematically destroying the cemetery and disturbing the burials. Badgers and their setts are legally protected, so if we wanted to do any work at this site we were going to have to find a way of relocating them without causing them distress. 'The Badger Consultancy' was commissioned to carry out a survey and provide advice on how best to do this. With their help, a new artificial sett was constructed not far away from the old one. A series of one-way gates then excluded the badgers from their old home and, after we were sure that the sett was empty, archaeologists from Cambria Archaeology could move in.

The prospect facing the archaeologists was pretty daunting. We had just under four weeks when the range was not live, and we didn't know how big the site actually was or how many burials we were going to encounter. There was also the potential danger from unexploded ordnance, which meant that we had to have a banksman on site with us throughout the excavation. From the very start of the dig it was clear that the archaeology was particularly important. Generally in Wales the soils are quite acidic which means that bone does not normally survive on archaeological sites. At Brownslade, however, the site is in sand overlying limestone geology. This means that the bone preservation is excellent. Over the course of the excavation we found the graves of men, women and children. Many of them were buried in stone-slab lined graves, known as cist graves; others were laid out in simple, dug graves. A large number of the burials were very badly damaged by the badgers.

Badger runs had caused damage in all sorts of ways. They had cut through some of the burials, 'bulldozing' the stone slabs out of the way and removing parts of the skeletons. They undermined other graves, causing the cists to collapse into the voids underneath. The sett had also created such a huge volume of spoil that there was a thick layer across the whole site. This spoil contained human and animal bone along with fragments of metal slag and other finds. However, it was so mixed and churned up that there was little archaeologically useful information.

One of the dug graves on the site. Badger disturbance has removed the skull *Cambria Archaeology*

The excavation retrieved a huge amount of information about the cemetery itself and about how badger setts affect archaeology. Since finishing the excavation in August 2006, specialists have been at work examining all the finds from the four weeks. Dr Ros Coard, at the University of Lampeter, is examining dozens of boxes of human skeletal material to try and discover as much as possible about the people who lived there a thousand years ago. Her initial findings are absolutely astonishing.

As well as looking at the age and sex of individuals, Dr Coard has also been looking for any evidence of disease or lifestyle that is visible on the bones. At Brownslade, around a third of the population display certain characteristics on their pelvises which are very unusual, in fact they have been described as unique. These features are likely to have resulted from people walking in a particular way, repeatedly, over a long period of time. It would have meant that the population walked with a very 'swinging', side-to-side gait. Dr Coard also noticed some unusual features in their arm bones, which led her to suggest that the Brownslade population may have been carrying something over their shoulders, or dragging something behind them whilst walking. It is possible that these traits relate to some form of coastal food collection – maybe dredging for shellfish, or netting fish. The skeletal remains also suggested that people started doing this activity when they were young – perhaps around the age of 10. It may be that this was when they stopped being regarded as children and were expected to work with the adults.

Work is continuing on the human remains, and there is much more to be done. It is difficult to overstate the importance of this material – there are no other comparable collections in west Wales, and very few in the UK. The work on the human bones is allowing us to start thinking about how people lived, as well as about their deaths and burials. If the badger sett had been allowed to stay where it was it is inevitable that most of this cemetery would have been lost, denying us this opportunity to learn about an early Medieval population.

Back at the site, badger-proof fencing has been erected around the barrow in order to stop the badger population from moving back in again. The undamaged areas were not excavated, so the fencing will ensure that this nationally important monument is preserved into the future.

The excavation has also allowed archaeologists to make an in-depth study of the impacts of burrowing mammals, and to explore means of exclusion. Monitoring the site over future years will mean that useful information is available to other landowners and land managers who care for important archaeological sites.

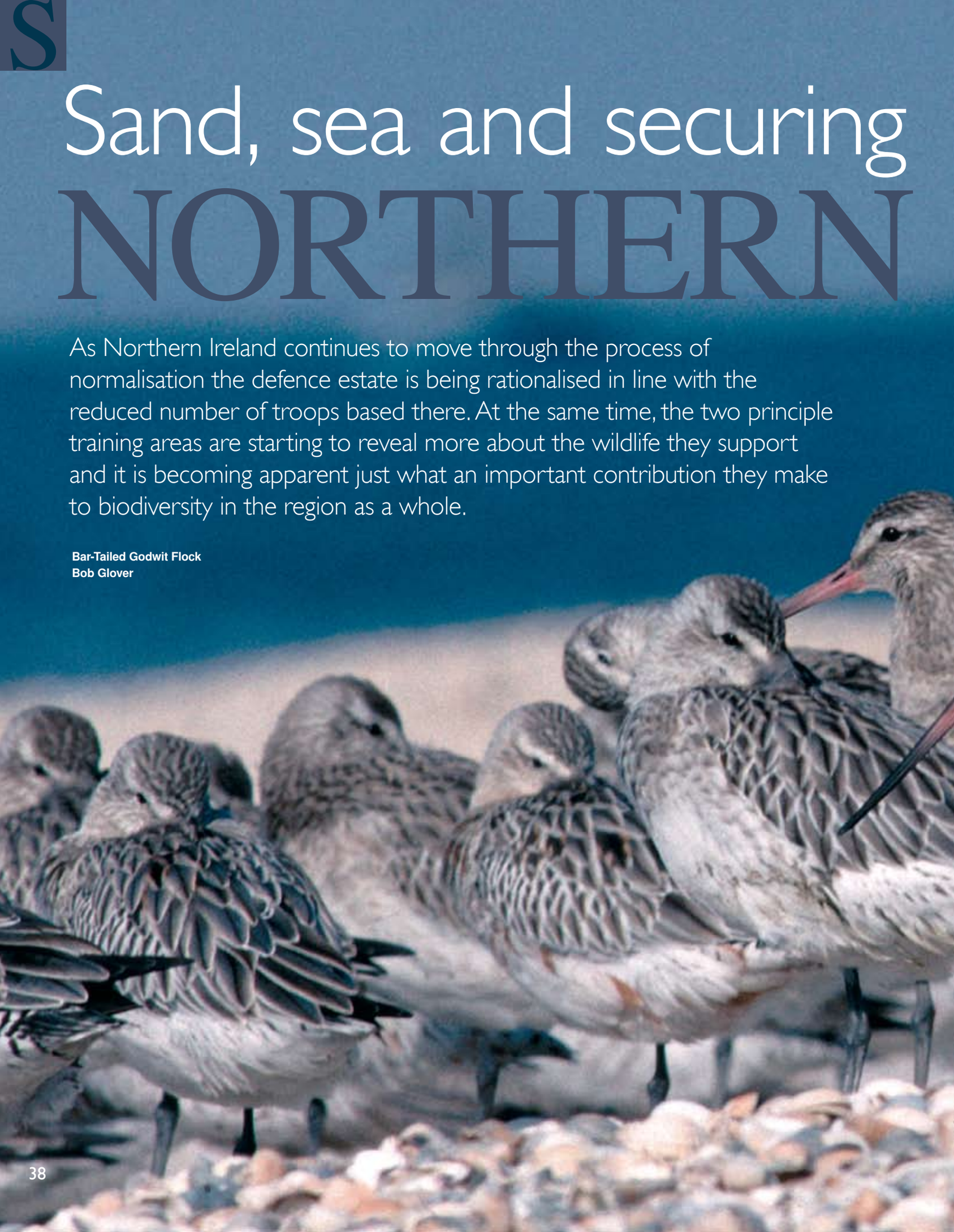
The excavation would not have been possible without funding from the Defence Training Estate. It involved the advice, assistance and co-operation of a huge number of individuals and agencies, and thanks are due to staff at all of the following: Cadw, Cambria Archaeology, Countryside Council for Wales, MOD, Pembrokeshire Coast National Park Authority, The Badger Consultancy, University of Cardiff and University of Lampeter.

Polly Groom is the archaeologist for the Pembrokeshire Coast National Park Authority and also works for Cambria Archaeology – the regional Archaeological Trust.

Further Resources:
On-line dig diaries are available at www.cambria.org.uk.

Sand, sea and securing NORTHERN

As Northern Ireland continues to move through the process of normalisation the defence estate is being rationalised in line with the reduced number of troops based there. At the same time, the two principle training areas are starting to reveal more about the wildlife they support and it is becoming apparent just what an important contribution they make to biodiversity in the region as a whole.



Bar-Tailed Godwit Flock
Bob Glover

biodiversity in IRELAND

Ballykinler Training Area
Defence Estates

Crimson and Gold Moth
Robert Thompson

The two principle training areas are Ballykinler Training Centre and Magilligan Training Centre. Between these two sites the MOD is responsible for managing sizeable portions of the two largest dune systems in the whole of Northern Ireland. Both have been designated as Areas of Special Scientific Interest (ASSI) and both provide similar challenges in terms of conservation management.

MOD Site	ASSI	Total ASSI Area (hectares)	MOD ASSI Area (hectares)
Magilligan Training Centre	Magilligan	1058	795
Ballykinler Training Centre	Murlough	1481	416

Ballykinler

Ballykinler Training Centre is situated on the mouth of Dundrum Inner Bay close to Newcastle and the foot of the Mourne Mountains. The defence estate covers 559 hectares (ha), of which 416 fall within the Murlough ASSI and Murlough Special Area of Conservation (SAC). The importance of this dune landscape for wildlife was recognised as long ago as 1967, when part of it was designated as Ireland's first National Nature Reserve. The reserve is now owned by the National Trust and the beaches attract large numbers of visitors who also come to see the grey and common seals that haul out on to the sand bars and beaches on the other side of the bay. With the Mourne Mountains as a backdrop there is little doubt that this is one of the most beautiful landscapes in the whole of Northern Ireland.

The Murlough dunes, including Ballykinler, are described as one of the oldest, most diverse and natural dune systems in Northern Ireland, with parts thought to be up to 5000 years old. This ancient and largely stable dune system has been created from wind blown, acidic sand. Further leaching of calcium over time means that the dominant vegetation type in many areas is dune heath dominated by heather *Calluna vulgaris* and bell heather *Erica cinerea*. Across other parts of the dunes the heath is replaced by dune grassland dominated by marram *Ammophila arenaria* or red fescue *Festuca rubra*. Herbs such as common restharrow *Ononis repens* and thyme *Thymus polytrichus* are locally abundant.

The higher plant assemblage is one of the features for which the ASSI was designated, thanks to the presence of Northern Ireland scarcities, such as vipers buglos *Echium vulgare* and blue fleabane *Erigeron acer*. One particular plant found at Ballykinler, devil's bit-scabious *Succisa pratensis*, is directly associated with one of the UK's rarest butterflies, the marsh fritillary *Eudryas aurinia*. The largest population of this butterfly in Northern Ireland is found on the National Trust land across the bay, but Ballykinler is thought to support an important sub-population. As a butterfly that relies on a network of sites, known as a metapopulation, for its survival, this sub-population could be very important. The marsh fritillary is prone to large fluctuations in abundance between years, partly because it can suffer heavy losses at individual sites due to parasitism. Having a network of sites that support suitable habitat means the species can more easily withstand these population crashes by moving between sites. Ballykinler is also important for supporting populations of other regionally scarce insects, including the grayling butterfly *Hipparchia semele* and the moths, archers dart *Agrostis vertigialis* and small elephant hawk moth *Delephila porcellus*.

Perhaps the most charismatic of all the species seen at Ballykinler is the common seal *Phoca vitulina*. This species is typical of sand flats and estuaries. Despite moving over large areas in search of prey they often return to favoured haul-out sites. They are particularly visible at

these sites in the late summer when they are moulting and the beach at Ballykinler appears to be one of their favoured spots. The large numbers of people visiting the beach on the opposite side of the bay means that the seals seek sanctuary on the MOD beach where there is no public access.

Magilligan

Magilligan Training Centre lies on the north coast in County Londonderry and to the west of the coastal towns of Portstewart and Portrush. The site extends over a total of 911 ha and 795 ha of this has been designated as Magilligan ASSI and Magilligan SAC. Like Ballykinler, the reason for the designation is the extensive and undisturbed nature of the dune habitats and associated species, such as petalwort *Petalophyllum ralfsii*. A smaller portion of the site is also designated as the Lough Foyle Special Protection Area and Ramsar site, which supports internationally important populations of waders and wildfowl including bar-tailed godwit *Limosa lapponica* and turnstone *Arenaria intepres*. Visitors can access part of the dunes at Magilligan Point where the impressive Martello Tower and the surrounding dunes are leased to the Environment and Heritage Service. This part of the dunes, at the very tip of Magilligan point, affords views northwards across Lough Foyle to Donegal in the Irish Republic.

In biological terms, Magilligan ASSI is described as one of the best examples of a sand dune system in Northern Ireland, with a wide range of plant and animal communities. Across the MOD portion of the ASSI the dunes show a strong pattern of zonation, with a series of dune ridges and valleys giving a range of plant communities from foreshore through yellow and grey dunes to wetland vegetation in the slacks and hollows. One of the specialist dune invertebrates found at Magilligan is the scarce crimson and gold *Pyrausta sanguinalis* a distinctive micro-moth, which is one of the UK's rarest moths and now thought to be extinct from the United Kingdom.

The status of the scarce crimson and gold in Northern Ireland was largely unknown until a survey in 2005 recorded the moth at a total of four sites, two of which are within the defence estate. The larvae of this sand dune specialist are thought to feed on wild thyme *Thymus polytrichus*. Their preferred habitat is large dunes, with patches of bare sand and an abundance of the foodplant. This narrow habitat niche restricts the distribution of the moth, which clearly requires some level of natural disturbance to create blow-outs but not so much that the foodplant is lost. Blow-outs are depressions of bare sand that are created by wind blown sand when the overlying vegetation is removed. The small eggar *Eriogaster lanestris* is another moth that is rare in Northern Ireland but has recently been recorded in reasonable numbers at Magilligan Training Centre.

Management

Historically, almost all dune systems throughout the UK would have been worked to provide a living for local people and would have provided grazing for domesticated livestock and very often rabbits. They would also have yielded thatch in the form of marram grass, wood for building fires and the shallow sandy soils could be easily cultivated. However, these dynamic environments could also prove difficult and demanding places to live with a single storm event causing large scale erosion and sand movement. A particularly unstable period between the 14th and 19th centuries led to the cessation of many of the traditional management practices.

One of these management practices is being reinstated today in an attempt to restore parts of the dunes, at both Ballykinler and Magilligan, back to the best possible condition for the wildlife. Cattle are ideal for managing the coarse grass growth that is found across the dunes at both sites and grazing will help maintain a more diverse and species-rich sward by creating areas of shorter turf. It is also hoped the cattle will help prevent the regeneration of at least some of the scrub and bracken, which is found across large parts of both sites.

A total of 22 Galloway cows and their calves were released at Ballykinler in February 2007 in a 48 ha paddock with plans to graze a further 56 ha soon. These are a hardy native breed, well suited to the harsh conditions of a coastal site with thick coats that make them impervious to even the wettest weather.

There are also plans to graze up to 310 ha of the dunes at Magilligan where the sward has become rank and in places is dominated by a combination of marram and low growing burnet rose *Rosa pimpinellifolia*. A large scale project leading to the construction of nearly 9km of fencing over the past winter posed a number of difficulties, including sourcing extra long fence posts for use in the sandy soil. Eventually these were sourced from Latvia. The successful completion of this project means grazing should be reintroduced to a significant portion of the defence estate in Northern Ireland by the end of this year. This will deliver biodiversity benefits that could not be replicated through mechanical management whilst proving the most cost-effective long term option.

Nature conservation management plans have recently been produced for both training areas by Defence Estates in partnership with the Environment and Heritage Service and members of the MOD Conservation Groups. The plans have identified the most appropriate management for both sites over the next five years. In summary these aim to deliver the following:

Restore grazing on parts of the fixed dunes
Remove stands of invasive sea buckthorn (*Hippophae rhamnoides)*
Reduce the extent of mature gorse/thorn
Reduce the extent of bracken across the dunes
Reduce the extent of ragwort across the dunes *Magilligan only*
Implement targeted management for species such as petalwort *Petalophyllum ralfsii* and scarce crimson and gold moth *Pyrausta sanguinalis.*

The importance of both of the Northern Ireland training areas for biodiversity in the region is increasingly apparent. In common with other parts of the Defence Training Estate it is essential that these sites are managed effectively and sympathetically for wildlife. As Northern Ireland enters a new era and the role of these training areas is open to change, it is anticipated that conservation management will remain high on the agenda for many years to come.

Oliver Howells, DE EST Natural Environment Adviser

Galloway Cattle
Defence Estates

COUNTING FOR CONSERVATION

How many species of birds do you think that you could find on your local MOD site or at other sites within the Defence Estate? In our local 'patch', the Stanford Training Area (STANTA) near Thetford, there may well be over sixty in each season. Are there more species than there were twenty years ago? Which birds are easier to find and which ones have become scarce? These are questions that are at the heart of a four-year, national project that will be launched on 1st November 2007.

Every twenty years, staff from the Thetford-based British Trust for Ornithology (BTO) organise a complete survey of the birds of Britain and Ireland, working with colleagues from BirdWatch Ireland and the Scottish Ornithologists' Club. These islands are divided into over 60,000 tetrads, each one measuring 2km by 2km. We will try to get birdwatchers to visit as many of them as possible and to record all of the species that they see or hear. This is a huge exercise that will put a major strain on BTO resources – both financial and tactical – until 2011.

This is not the first such atlas; there have been two previous breeding season surveys and one in the wintertime. The breeding survey that covered the period 1968-1972 was the first to be completed anywhere in the world and provided detailed maps of where to find breeding species in Britain and Ireland. The second Breeding Atlas (1988-91) afforded us invaluable insights into the fortunes of our birds. It highlighted massive declines for many common farmland species and pinpointed several, such as corn bunting and tree sparrow that were silently disappearing. These alarming changes taught us to focus on humble birds such as skylarks and song thrushes, and have helped to set farmland conservation priorities for the last sixteen years.

Most conservation targets in this country relate to breeding birds. Only the Wetland Bird Survey, which is organised by BTO staff on behalf of a partnership between the BTO, Wildfowl and Wetlands Trust (WWT), WWT Goose Monitoring Programme, Royal Society for the Protection of Birds (RSPB) and Joint Nature Conservation Committee (JNCC), provides annual information about winter bird populations and then only for specific estuarine and wetland sites. The British Isles provides vital winter habitats for birds such as finches, buntings, thrushes, starlings, plovers and woodcock, drawn here from across Europe and Scandinavia, from Iceland, Greenland and eastern Canada. Information

"It is estimated that the project will cost **£1,050,000** and require the help of **50,000** volunteer birdwatchers."

Curlew Nest on Moorland *Jill Pakenham/BTO*

November sees the launch of an atlas project to map all of the birds of Britain and Ireland for the first time in twenty years.

about how numbers and distributions have changed since the last winter atlas project in the period 1981-1984 will attract much international interest.

The Bird Atlas 2007-11 project will look for new patterns and set a new agenda for conservation priorities. How easy will it be to find yellowhammers? Are lapwings finding life tough? How widespread are starlings? Have conservationists helped to bolster barn owl populations? This time around, we expect to see the biggest changes for woodland species, with willow tit, lesser redpoll and spotted flycatcher at the top of the list of species that are starting to cause concern. On the other hand, we expect to see an expansion of species such as little egret and stonechat, which have enjoyed our milder winters.

The Atlas provides tremendous opportunities for people to work together, be they volunteer birdwatchers sending in casual records, dedicated BTO surveyors, people working in the field for conservation organisations or professional ornithologists. Often individual observers will fall into two or more of these categories. As the Bird Atlas project starts to unfold, new maps of bird distributions will become available on the Atlas website. Many of the three million or more British people who profess to be interested in birds will be fascinated to see how distributions have changed. We know that we will see shrinkage in snipe breeding areas but there will be a massive spread of buzzards to balance the picture. There will also be less obvious changes that we can only guess at.

Birdwatchers with access to MOD sites are uniquely placed to contribute to Bird Atlas 2007-11. The MOD estate includes some wonderful and remote landscapes and is home to some great birds. If the Atlas project is to be completed successfully, then we need not only to know about the stars, such as stone curlews and merlins, but also need information on commoner birds. Are there stonechats nesting in gorse patches? Are green woodpeckers found on winter walks? The timing of Bird Atlas 2007-11 could not be better; coinciding as it does with the development of the MOD Biodiversity Strategy proposals to improve current procedures for species data collection. Over the next four years, we need help from birdwatchers and conservationists who spend time on Defence Estates land, if there are not to be gaps in the BTO's maps.

Short-eared Owl

Short-eared owl - Winter Atlas

There can be few more enigmatic species than the short-eared owl; birds move about between years, searching for the best feeding areas. In the last Winter Atlas (1981-84) there were strongholds in Orkney, along the coast from Buchan to the Forth, through the Forth-Clyde valleys, in some western islands, in northwest England, on the coasts of East Anglia and through other areas of eastern and central southern England (see map). Where will we see short-eared owls in each of the next four summers and winters? Although some birds will be recorded by BTO volunteers undertaking systematic survey work, most will probably be seen when birdwatching in a favourite spot, whilst walking in the hills or from a car or train. Every record counts.

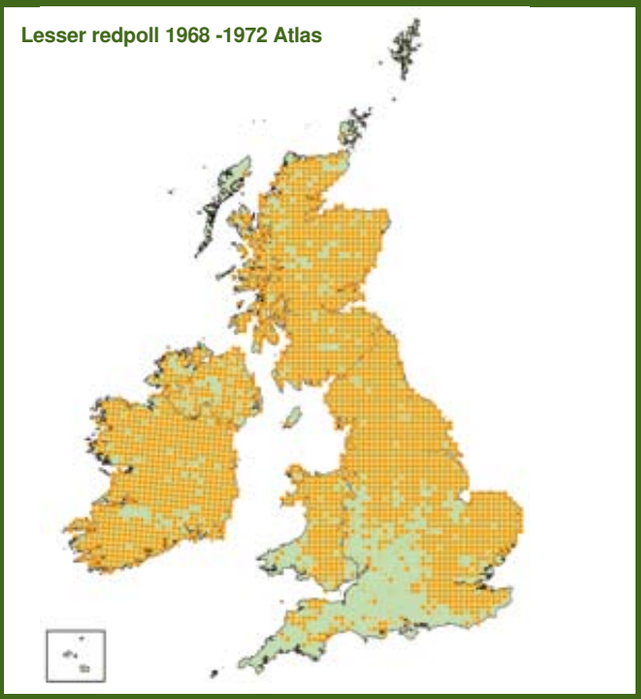
Short-eared owl in winter *Jill Pakenham/BTO*

Curlew

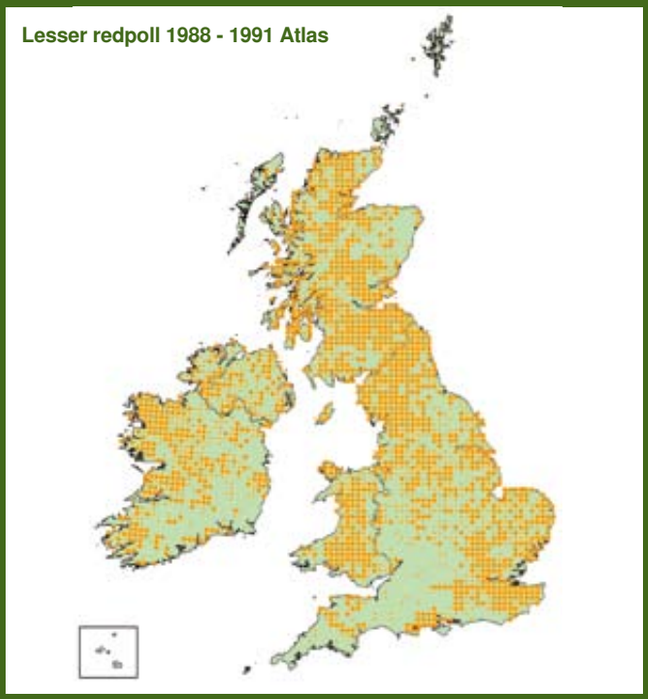
Curlew in Flight *Jill Pakenham/BTO*

Curlews are probably the most obvious of the breeding birds to be found in moorland Britain, their bubbling call filling the air as they proclaim their presence at the start of the breeding season. Results from the BTO/JNCC/RSPB Breeding Bird Survey, an annual survey of birds in a random selection of 1 km squares, indicate that there may have been a drop of over a third in the number of pairs of curlews in the United Kingdom since 1994. If the species is disappearing at this rate then it could be sobering to find out how many gaps have appeared in its distribution, and those of other less obvious species, since fieldwork for the last Breeding Atlas finished in 1991.

Lesser redpoll 1968 -1972 Atlas



Lesser redpoll 1988 - 1991 Atlas



Here's a species that has changed its name since the last Breeding Atlas but what has happened to its distribution? Between the two atlases of 1968-72 and 1988-91, redpolls (as they were then) were lost from 11.3% of tetrads. Writing in the last Breeding Atlas, David Jardine suggested that declines since the peak numbers of the 1960s and 1970s could have been linked both to a change in tree distributions, with birch being out-competed by other species, and to losses of hedgerow and farmland trees. Do these theories explain the loss of lesser redpolls from areas as diverse as western Dorset and Buchan in northeast Scotland? Recent figures for breeding numbers for Scotland indicate that numbers may be going up. By 2012, thanks to the new Bird Atlas, we should know what the status of the species really is.

Lesser Redpoll

Lesser redpoll feeding in alder *www.grayimages.co.uk/BTO*

Graham Appleton, on behalf of the British Trust for Ornithology's Bird Atlas team. To learn more about the Atlas visit www.birdatlas.net and to get in touch with the local volunteer Atlas Organiser click on 'taking part'.

Butterflies spread their wings at Dstl Porton Down

The boundary between an arable field and the SSSI at Porton Down *Crown Copyright*

Much has been written about the unique character and wildlife content of the Porton Down Site of Special Scientific Interest (SSSI). Porton Down, however, also contains another aspect of the English countryside - its farmland. Nestling alongside the ancient calcareous grasslands and woodlands of the SSSI lies the Dstl farm, over 430 hectares of intensively managed, mainly arable, modern agriculture. The boundary between the SSSI and the farm has been one which few species can, or would want to, cross. Amongst the invertebrates very few species of butterflies can find suitable feeding or breeding habitat here. The relative ease of monitoring was the reason it was decided that butterflies would provide an ideal indicator of the state of wildlife on the farm. An added attraction was the fact that two butterfly monitoring transects had been carried out on the SSSI for a number of years under the Environmental Change Network (ECN) project allowing comparisons to be made between the SSSI and the farmland.

2005 Survey

The 2005 farmland survey found a total of 14 species on 28 fields with 111 field boundaries. Analysis showed that the majority of boundaries contained no butterflies, except those recorded in boundaries adjacent to SSSI woodland or a railway embankment. Butterflies may be able to explore the farmland from these more highly populated areas but this exploration becomes limited in an inhospitable farmed environment. The land use adjacent to the surveyed fields was also shown to affect the number of butterflies seen, with fewer present near buildings or intensively managed grasslands. Cropping within the surveyed fields also has an effect on numbers with more seen on fields with set-aside, or oilseed rape, which attracts high numbers of large and small white butterflies.

In comparison with farmland, the SSSI transect results showed that Transect 1, (entirely on chalk grassland), recorded nine species of butterfly while Transect 2 (a mix of chalk grassland and

Margin types established at Porton Down in 2006 *Crown Copyright*

woodland) recorded eighteen species. The numbers of butterflies per 100 metres was 0.54 on farmland, 3.81 on Transect 1 and 16.15 on Transect 2. A total of 211 butterflies were recorded during the survey in June 2005.

The conclusions of the 2005 report identified that the more mobile butterfly species traversed the farmland and that others invaded set-aside from the SSSI. It suggested that a network of suitable habitat would allow dispersal into the farmland and from there into the wider countryside, and might indicate how aspects of Environmental Stewardship could be improved. Most monitoring currently has to take place within the 'normal' agricultural landscape where populations are very low and, therefore, the speed of any increase or spread is correspondingly slow. A site like Porton Down may provide a high density of butterflies which are able to spread into agricultural areas if suitable habitat is provided, and from there be able to repopulate other connecting landscapes.

Dstl Management

Although Dstl, as a MOD Agency is not eligible for Environmental Stewardship payments, the importance of such an initiative to improve the agricultural environment was considered to be one in which Dstl should be fully involved. Therefore, during autumn 2005 and spring 2006 over 100 margins (usually over 4 m wide) were introduced to all arable field boundaries on the farm. These margins mirrored Environmental Stewardship options and were designed to benefit a range of wildlife. Seed mixes used on individual margins, varied from those to attract wild and game birds, to tussocky grasses for small mammals, to grass and flower and pollen and nectar sources for a range of invertebrates, including butterflies. The pollen and nectar seed mix included red clover, sainfoin, common vetch and bird's foot trefoil.

2006 Survey

In June and July of 2006 the Dstl Conservation Group at Porton Down repeated the 2005 butterfly survey, walking over 7km of margins and, using the methodology of the national Butterfly Monitoring Scheme, recorded butterflies seen only in the margins.

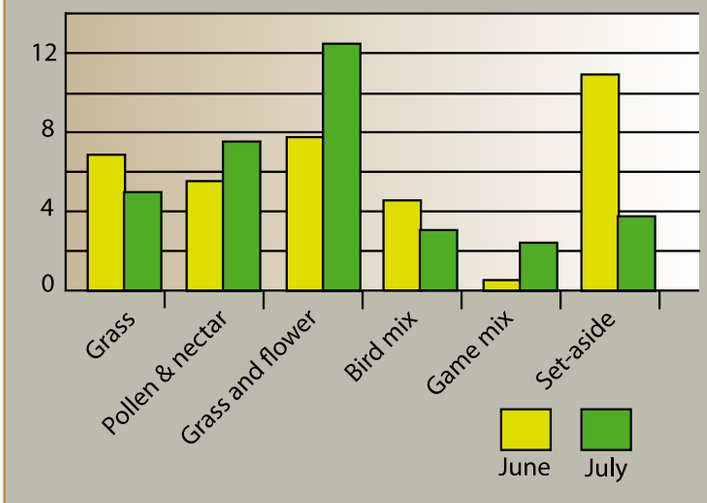
In June 2005 we recorded 211 butterflies, compared with a total of 3,015 butterflies during June 2006. By the end of the 2006 survey we had recorded a total of 6,980 butterflies of 26 species on the farm.

The number of butterflies recorded on different margin types indicated that, as expected, pollen and nectar, grass and flower and set-aside margins were most attractive to butterflies in June. Less expected was the large number of butterflies recorded on grass margins, possibly due to the number of annual weeds, as well as grass, which emerged in this establishing year.

It is expected that numbers of butterflies on grass margins will decline sharply in future years as grasses become dominant. Bird and game mix margins attracted far fewer butterflies than other types. The most common species recorded on all margin types was the dark green fritillary.

By July 2006, the situation had altered somewhat with the pure grass margins becoming less attractive, presumably as the grass had grown. Pollen and nectar, together with grass and flower margins increased in attractiveness as more flowering plants developed. Numbers on set-aside plummeted, partly as the result of mowing on some set-aside areas. On the bird mix margin butterflies remained at similar levels to those in June, those on game mix margins had increased by July. This was possibly due to the kale component of the game mix becoming more attractive to small and large white butterflies. In July, meadow brown was the most common butterfly on all margin types except grass and flower where it was the common blue.

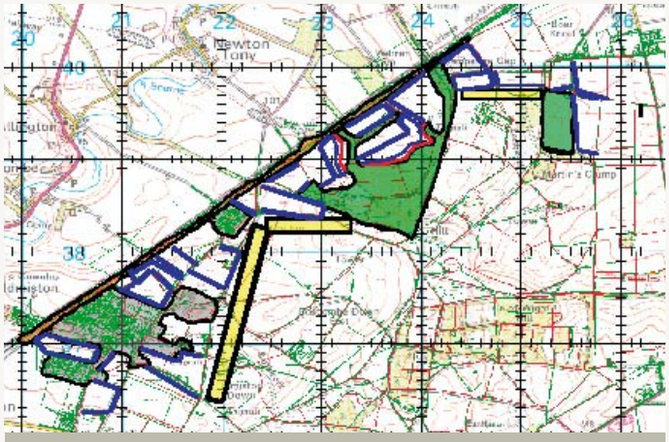
Number of butterflies per 100m on different margin types in 2006



Defra's vision for agriculture uses farmland butterfly populations in England as one of its indicators. Abundance has fallen by almost one fifth since 1990. The indicator includes 41 species, 23 of which are generalist that occur in a broad range of habitats in the wider countryside and 19 are specialists that are restricted to semi-natural habitats maintained by agricultural management.

During the 2005 survey at Porton Down only 14 species were recorded. In 2006 the situation had changed dramatically on the farmland with 26 species being recorded. So, not only had the total numbers of butterflies shown a dramatic increase but diversity had also improved significantly in both the generalist and specialist butterflies.

Marbled White *Dr David Chesmore*



Marbled white distribution in 2005 in red and in 2006 in blue

A example of a farmland generalist is the marbled white. Its numbers increased from six in June 2005 to 447 in June 2006. The difference in the number of field boundaries on which this species was recorded in 2005 compared with margins in 2006 is very clear from the map above and shows that butterfly movement through the farmed landscape can be very rapid. It is important, however, that suitable larval development habitat is available so that the species becomes a resident within this landscape.

Another indicator species (a specialist) is the dark green fritillary. Highly mobile, its ability to explore habitats outside of the SSSI is shown by comparing the numbers recorded on the farmland in June 2005 – 102, with the 1,247 individuals recorded the following year. The potential for this species to become resident on the farmland here is extremely high but further work is required to ensure that the violet larval food-plants become established in the field margins.

The aim to make the dark green fritillary a permanent inhabitant of the farm at Porton Down may be achievable in the near future. Dark green fritillaries would admirably fulfil the role of a flagship species, being visually attractive, mobile and easily monitored.

The next phase of development would include plans to link to suitable margins on farms in the near vicinity, meaning that this species could potentially occupy the wider landscape at great speed, and could show the positive effects of changing agricultural management practices.

Effect of land use

The effect of adjacent land use was examined and was found to be less pronounced in 2006 than 2005, suggesting that when suitable habitat is made available and butterfly populations increase, the adjacent land use, even if it is non-agricultural, is of less importance. In 2005, approximately 0.1 butterflies per 100 metres were recorded on boundaries adjacent to buildings, compared with nearly 0.7 per 100 metres on those adjacent to SSSI woodland. In 2006 the relative numbers were around 5 compared with almost 7 per 100 metres.

Field margin management at Porton Down during 2007 will involve further consideration of some of the specialist indicator species. Existing margins will be surveyed for dingy and grizzled skippers in May. Plans are already afoot to introduce a margin designed to attract, and retain, chalkhill blues onto farmland. If we ever see this species flying alongside a crop of winter wheat then we can consider that the MOD's tenure of the land is not only valuable in respect to its retention of valuable wildlife assets but is also helping to renew the wider countryside.

Defra state that the influence of agriculture on biodiversity exceeds the farmed land itself, as the majority of semi-natural habitats are linked to the agricultural landscape. Both parts of this statement have great significance at Porton Down. Here we have the best UK butterfly site and alongside it an area typical of today's agricultural landscape. The 2005 study showed us how different these two are in terms of butterfly diversity.

The success of these surveys leads one to wonder whether an extension of Environmental Stewardship to design landscape, rather than farm scale options, would be an objective for consideration in the near future by Defra and to monitor the progress of butterfly populations arising from SSSIs such as Porton Down.

Perhaps the portion of Porton Down designated a SSSI can help the farmed countryside in south Wiltshire to become designated BETTER (Butterflies Encouraged To Travel Edges Rapidly).

Stuart Corbett, Dstl Porton Down

A 'grass' margin *Crown Copyright*

A harsh brown scar on the landscape *Tim Helps*

Barden Fell Wetlands Project – 2006 Tim Helps

THE BARDEN FELL

WETLANDS PROJECT – THE STORY SO FAR

Creating havens for wildlife from development waste sounds a tough challenge, but not for one particular pocket of the Defence Training Estate

Barden Fell, located a shade under three miles from Catterick Camp centre, peaks at 1,034 feet. It is not the highest point on the training area but it is high enough on a clear day to give a fine view of industrial Middlesbrough some twenty five miles away on the north eastern skyline.

The Fell and the surrounding moor were bought by the War Department in 1924 following the decision to make Catterick Camp a permanent garrison designed to train soldiers to keep peace across the Empire. From the summit of the Fell, a half mile to the south east, the stop butts of the defunct Barden Rifle Ranges can be seen. Should you walk along their length, spent .303" rounds or shells will be encountered lying upon the surface as thick as gravel on the driveway of Scotton Hall, testament to the plethora of units who completed their annual musketry and machine gun courses on those ranges in the 1920s. Just beyond the stop butts lies Lavrock Gill and the old disused quarry, this was the forming-up point for cavalry regiments prior to making a charge towards Barden Fell with sabres drawn, the summit being the ultimate objective of every exercise however framed.

Later, as mechanisation displaced horses, the Fell was used as a tank training area throughout World War II. The rough grassland was churned and carved by the swerving and tearing tracks of tanks which created in their wake broken hillocks and muddy pools.

Although the Fell is no longer the centrepiece of a battalion exercise objective, in 2007 more than 40 years later, armoured vehicles still churn and carve as that same part of the training area is designated for tracked vehicle cross-country driving. This is where tank drivers can abandon their computerised simulators and really familiarise themselves with their Challengers. Muddy pools are still formed and, complementing patches of moorland marsh, these have become one of the sources of the Risedale Beck which, passing through the Local Nature Reserve of Foxglove Covert, flows on to the River Swale.

As the designated tracked driving area, the flat topped Fell became the routine depository for building rubble from the adjacent garrison. This could be put to useful purpose by being shaped into bunds of varying gradients to provide testing obstacles for armoured vehicles. In 1999, however, supply exceeded demand and rubble

"To give nature a helping hand the entrance crater has been fenced off" *Tim Helps*

from the garrison Tesco supermarket project began to be dumped faster than it could be shovelled into tank obstacles. Before long an impressive, but unsightly, mountain of building detritus disfigured the skyline.

It was from these unlikely ingredients of track-carved muddy pools and supermarket rubble that the idea of creating a conservation crater was born. The project began in 2000 when echelons of Royal Engineer plant operators created a circular bund, 731 metres in circumference enclosing an area of 3 hectares and, in effect, harnessed the source of the Risedale Beck. As a concurrent activity, William Metcalfe, a local pond specialist, developed a sequence of ponds within the crater culminating in a small lake some 73 metres in diameter and tapered to a depth of 3.7 metres. The soil excavated from the ponds was spread over the bund rubble. By mid November the project was finished and left a harsh brown scar on the landscape. Those involved in its construction took a step back and waited for nature to take a hand.

It was a slow process but nature responded to the challenge. In early 2000, as a result of major intrusion by man and machinery, the site looked desolate, with little vegetation and barely a living creature 'on site.' But, as with an abandoned gravel pit, the holes filled with water and with the water came the invertebrates. Before long soft rush and broad-leaved pondweed established themselves in the newly created ponds. Sticklebacks have now been recorded and the environment has been exploited by frogs, newts, and lizards. Water birds, probably responsible for the presence of the sticklebacks, arrived on the scene with alacrity. A visitor to the crater is likely to flush out mallard, teal, greylag geese, curlew, tufted duck and snipe. Grey partridge also seek refuge within the crater's sanctuary and share the protection offered with redshank, shelduck and wagtails. Brown hares startle skylarks and meadow pipits as the latter defend their territory in the lush central sward.

What was not expected was the colonisation of the main lake by black-headed gulls who have, for the past four years, taken over the islands on the lake for breeding purposes from mid-April There are several hundred birds in the colony and over 1,000 juveniles have been ringed, some of which have been recovered elsewhere in the UK. Each year during May and June members of the Conservation Group carefully circle the array of nests in canoes and brave the enduring attacks of the adults while the young are rounded up and processed. The fragile, terraced dwelling places of the recently hatched fledglings are precariously overcrowded.

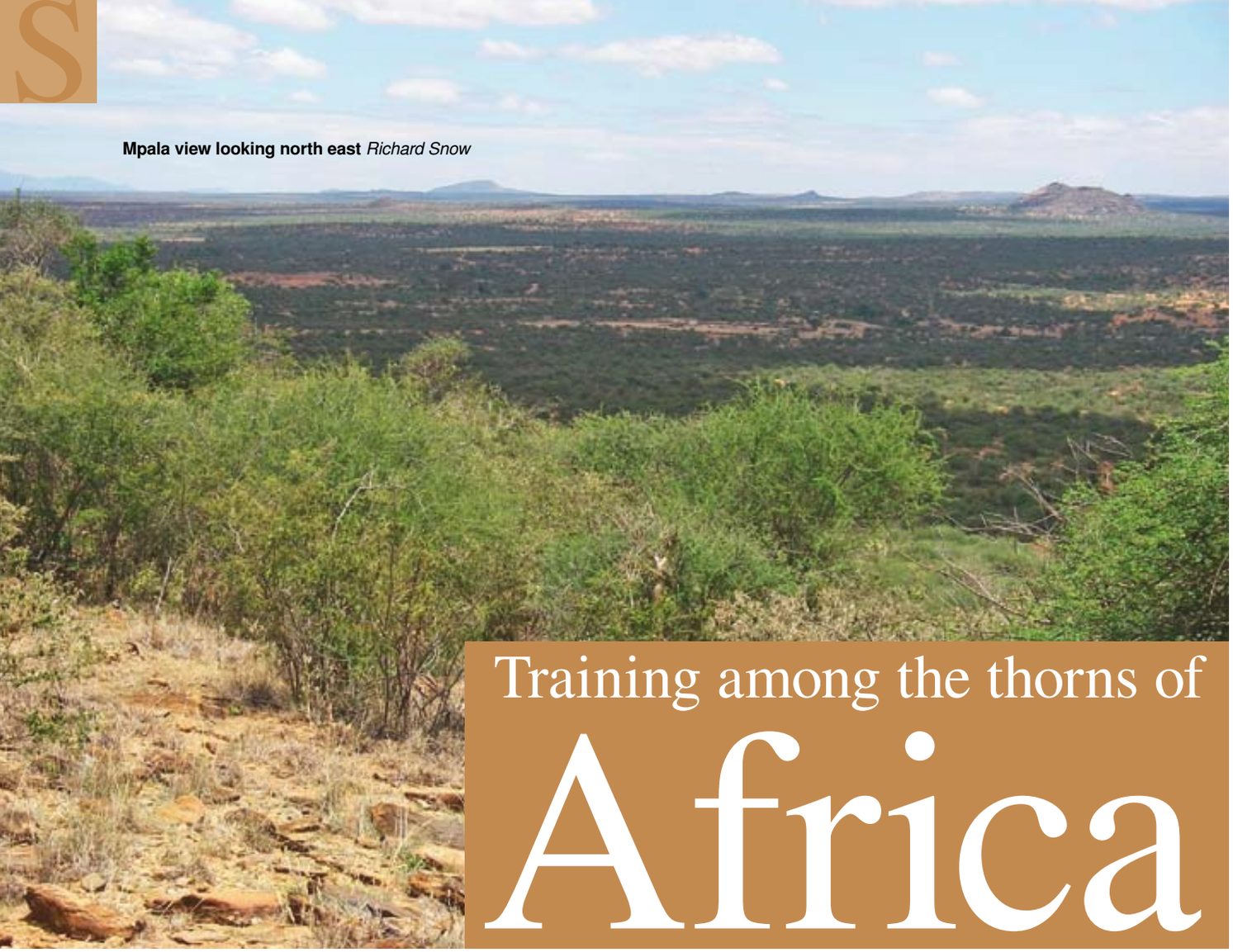
To give nature a helping hand the entire crater has been fenced off and the site is formally designated as a conservation area and out of bounds for military training.

Within the build experimental planting of willows has been carried out but there

The Gloucestershire ACF started work on building a hide *Tim Helps*

are no other plans for further development… nature is doing well by herself. Mosses and grasses are well established on the land which is now green and stabilised. The ponds within the crater are fast becoming thriving communities where the lives of all inhabitants are closely interlinked in the competition to survive, oblivious to the military training conducted on the periphery of this oasis of tranquillity.

Maj T P G Helps, Catterick Conservation Group



Mpala view looking north east *Richard Snow*

Training among the thorns of Africa

Bark tubes are placed into trees to harvest wild honey *Richard Snow*

Defence Estates and British Army Training Unit Kenya appraise the environmental impact of light forces training at Mpala Farm, Kenya.

The Grevy's Zebra. Further information on the research can be found on the Mpala website: www.mpala.org *Richard Snow*

African Lion Andrew Linnet

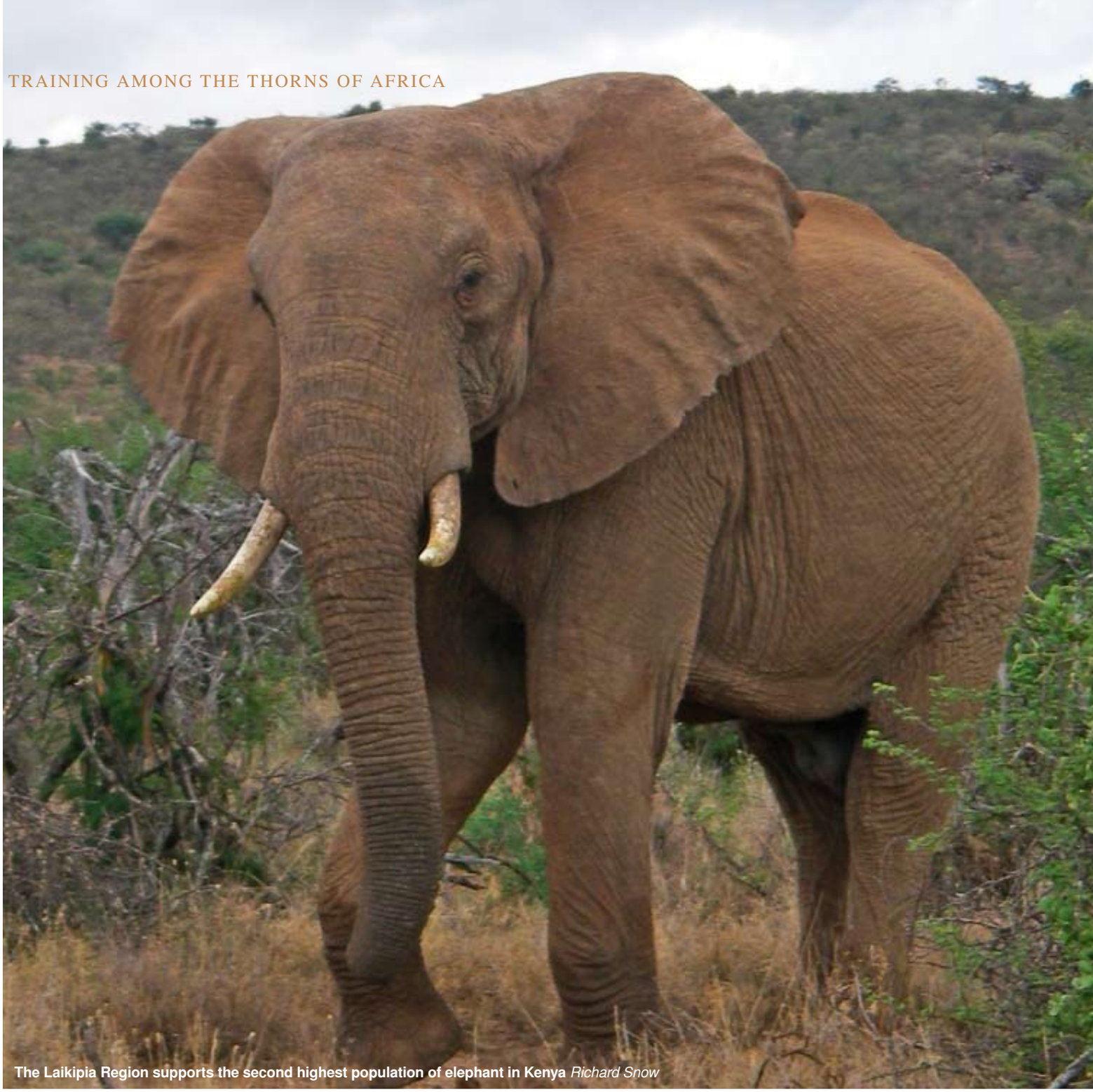
Welcoming people, spectacular wildlife, soaring daytime temperatures together with a raw, rugged, dusty and thorny terrain that tests every nerve and sinew of the modern soldier. Kenya and the British Army have enjoyed a longstanding relationship and its training areas continue to provide high quality training experiences for our light forces.

In 2003 Commander Field Army directed a fundamental change to overseas training exercises. Units training in Kenya and taking part in Exercise Grand Prix, a large light forces exercise, will be required to train at a Brigade level, employing a Brigade headquarters and exercising logistical re-supply of troops in the field. Troops use a combination of training areas across the Laikipia Region of Kenya, which is situated to the north east and north west of Mount Kenya. Training locations such as Archers Post, a large training area shared with the Kenyan Army, and private ranches such as Ole Naishu, Lolldaiga, Ol Doinyo Lemboro and Mpala Farm provide a suite of challenging missions for training units.

Mpala Farm is a 19,420 hectare Ranch situated 50km north of the Equator. It has supported military training for the last forty years and plays a key role in facilitating military training within Kenya. In 2006 Director General Training Support, Major-General Lamb, promised the Mpala Board that, due to the proposed changes in training at Mpala, MOD would undertake a Sustainability and Environmental Appraisal to assess the environmental impacts of current and proposed military training at Mpala, in accordance with the Secretary of State for Defence's Policy Statement on Safety and Environmental Protection.

Mpala is a unique ranch supporting a live firing military training area, a commercial livestock enterprise, a mobile health clinic that operates across the region and a research centre that attracts researchers and students from around the world. Mpala staff have successfully integrated these activities over many years and have been able to maintain an intact savanna community of plants and animals with recordings of more than 75 mammal species and 280 native bird species. Species such African wild dog *Lycaon pictus*, Grevy's zebra *Equus grevyi*, African elephant *Loxodonata africana* — the Laikipia Region supports the second highest population of elephant in Kenya, African lion *Panthea leo* and reticulated giraffe *Giraffa calelopardalis reticulate* can all be found in increasing numbers across the site.

The Research Centre was established in 1991 by Mpala Wildlife Foundation with the close support of the Smithsonian Tropical Research Institute, Princeton University, the Kenya Wildlife Service and the National Museums of Kenya. The Centre currently has more than 30 research projects underway. These range from the conservation of Wild dogs within the region through to research into the rare Grevy's zebra. Mpala Farm supports some 3,000 cattle, 1,000 sheep and 120 camels which are herded and brought into the safety of bomas at night, an agricultural practice that has changed little since c1400-1600AD when the Laikipiak Maasai pastoral nomadic people first commenced grazing the Laikipia plateau. The farm supports a total of 450 staff and families across two villages. In addition to working on the farm, research centre, mobile



The Laikipia Region supports the second highest population of elephant in Kenya *Richard Snow*

health clinic or supporting the military training, the community are encouraged to enhance their incomes through cottage industries such as honey and sisel mat production.

The UK Defence Training Estate provides many examples of how military training helps maintain extensive land management systems that are often more rich in plants and animals than their surrounding holdings. At Mpala, the military rental contributions including casual employment of the farm staff and their families to support military activity; the grading of the farm tracks; Engineer Regiment support for building projects and support to the mobile clinic all help retain the community and extensive land management systems, reducing the need to branch out into alternative and more intensive land uses.

The Environmental Appraisal has been able to show that military training, wildlife, farming and research carry out their business at Mpala, often at close quarters but seldom at odds with each other. We have been able to identify areas for improvement and through careful management, strict enforcement of the Range Standing Orders and close co-ordination between the military, the farm manager and his staff, the research community and the wider local community, military training can take place in wild Africa and can play a vital role in supporting rural communities and its wildlife.

Richard Snow, DE EST Environmental Adviser with assistance from Commander British Army Training Unit Kenya

Around the Regions

With the Conservation Groups

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

1 RAF Wittering, Cambridgeshire

2 RAF Spadeadam, Cumbria

3 Warcop, Cumbria

4 Dartmoor, Devon

5 RAF Leuchars, Fife

6 Sea Mounting Centre, Marchwood, Hampshire

7 Newtown Ranges and Jersey Camp, Isle of Wight

8 Canterbury, Old Park Training Area, Kent

9 Cinque Ports DTE SE Conservation Group, Kent

10 Yardley Chase, Northamptonshire

11 Castlemartin, Pembrokeshire

12 Swynnerton Training Area, Staffordshire

13 Pippingford Park, Sussex

14 Kingsbury Ranges, Warwickshire

15 Boscombe Down, Wiltshire

16 Bulford, Wiltshire

17 Imber, Wiltshire

18 Porton Down, Wiltshire

19 Leconfield Carrs, East Yorkshire

20 Catterick and Feldom, North Yorkshire

21 Ripon, Strensall and Driffield, North Yorkshire

Cambridgeshire

RAF Wittering

Conservation at RAF Wittering with 5131 (BD) Sqn

Whitewater Valley Site of Special Scientific Interest (SSSI) lies on the northern boundary of RAF Wittering. It comprises a stream running through the Lower Lincolnshire limestone outcrops, opening into a significant natural wetland habitat, rich in biodiversity and a rare occurrence in Cambridgeshire. Amongst other interesting flora and fauna found here, the wild bog bean plant is a significant thriving species which is not found in any other district of Peterborough and Huntingdonshire.

Regular Sanctuary readers may recall an article on the SSSI back in 2003 when the area was identified as being in a less than favourable state. Various willow species had invaded the area and the grasses had become somewhat dense and dominant. The land had no operational use to the base and lacked active conservation management. The Station Conservation Action Group was formed around this period. Affectionately known as the CAG, this consists of a small body of volunteer service and civilian personnel, supported by representatives from Defence Estates, Natural England and Defra. 5131 (BD) Sqn provided representation through the then Flight Commander, Mandy Castle and Sergeant Dennis Thorpe.

This was the start of an era. 5131 (BD) Sqn have continued to support conservation at RAF Wittering, mainly within the SSSI but also in tree felling activities in some of our woodland areas, and have made a consistent contribution to CAG meetings. Sgt Thorpe has been a valued and active member of the Conservation Group from the outset until leaving the RAF in January 2007 on redundancy. In a world abundant with Health and Safety legislation he and members of his team have provided essential licences and skilled labour, using strimmers, chain saws, brush cutters and the like, for tree felling, scrub clearance and scything during the early months of bringing the SSSI back to a 'favourable condition'. They have been the people to call on to tackle the annual scrub clearance and scything required to maintain the area in a favourable condition with essential guidance from Natural England's Peter Stroh.

To the unprofessional eye the SSSI may not appear particularly attractive, a distinct lack of pretty flowers is apparent during visits. However, an understanding of the value of such an area can be gained by even the most unenthused when hosting our Natural England Representative who continues to enter the area periodically in search of a flowering bog bean plant (May is the next planned visit for achieving this objective!) 5131 (BD) Sqn have been an invaluable resource in maintaining an area where rich habitats can continue to live and develop. In spite of Sgt Thorpe's departure from the Group we are confident that his 'second in command' Cpl Si Kaye, another stalwart from the early days, will continue to support the Station's conservation activities, where operational constraints allow, and hopefully the new SNCO will become a conservation convert.

Bat Roost in Rogue Sale at RAF Wittering

Regular readers may remember that we reported on the presence of bats in Rogue Sale at RAF Wittering in Sanctuary 33. A further survey of bat activity was carried out in summer 2006 by Rebecca Barrett and Cpl Geraint Roberts, a Wittering Conservation Group volunteer. This confirmed the findings of the 2003 survey and concluded that, despite flying through it, the bats were not already using a derelict building within the site as a roost. The recommendations made in 2003 to enhance this building as a prospective bat roost were regenerated and work undertaken to make it more favourable to our nocturnal friends.

The flat roofed, brick building, measuring some 30 feet by 12 feet had open doorways at both ends and a small opening towards the eaves area at the northeast end. One entrance was boarded up to make the interior both darker and less draughty, rubbish was removed from inside and wooden boarding mounted on the internal walls to create crevices for the bats to roost behind. Cpl Roberts sourced and fitted suitable signage to the building advising passers by of the bat 'accommodation' and not to interfere with the site or the local environment.

With the guidance and support of specialists from Natural England, the Conservation Group hopes to monitor the roost building and its immediate surroundings annually to measure the success of the enhancement project and to discover whether there has been an increase in bat activity in the area.

Sharon Rawnsley
Conservation Action Group Secretary

5131BD in action
Cpl Mac McIvor

Bat House
Sharon Rawnsley

Cumbria

RAF Spadeadam

Ragged Robin
Sarah Jupp

RAF Spadeadam Conservation Group continued to produce excellent and interesting studies on a wide range of flora and fauna throughout 2006.

Studies continue on developing greater understanding of the population dynamics of red squirrels within Kielder Forest, of which RAF Spadeadam forms part of the western area. Kielder Forest extends to about 60,000ha and holds more than 70% of the remaining red squirrel population in England. Researchers from the University of Newcastle upon Tyne and the University of London looked at the development of a squirrel pox virus (SPV) contingency plan for Kielder on behalf of the Forestry Commission, Kielder Forest District and Mammals Trust UK.

SPV is spread by grey squirrels and has the potential to devastate red squirrel populations. Thus, there was an important need to evaluate the risk of spread of the virus. This involved looking at how and when grey squirrels would enter the main forest block, to what extent the red squirrel population would be affected and ways of controlling grey squirrels entering the forest 'core'.

The study concluded that the best control strategy to reduce grey squirrel immigration is to target a 3-5km buffer zone around the forest, focusing on the main corridors in. One of the main routes is thought to be the wooded gorge along the River Irthing which borders part of the RAF Spadeadam estate. Collaboration on a joint control strategy between the many organisations and landowners in the forest will be crucial to its success. RAF Spadeadam's local pest controller, Mrs Ada Pollock, has been providing assistance regarding grey squirrel sightings and appropriate legal control.

Another fascinating study by researchers from the University of Newcastle upon Tyne has focused on water beetles. Analysis is still underway, but previous military activities, including the Intermediate Range Ballistic Missile 'Blue Streak' programme, as well as current activities such as forestry, have resulted in many concrete water tanks, dug pools and vehicle ruts along tracks. These seem to have increased the range of permanent and temporary aquatic habitats present in an otherwise acidic environment, leading to the diversity of beetle species almost doubling. The pools are also excellent for other fauna such as dragonflies and great crested newts.

Bird monitoring continues across the forest area including at RAF Spadeadam. The relative 'highs and lows' for different species depend on factors such as poor field vole numbers which affect fledgling success of some birds of prey. For example, barn owls seemed to have a very successful year in 2006 and it is lovely to see them hunting the road side verges at dusk. One deer stalker had the unforgettable experience of seeing a goshawk swoop in and take out a barn owl - wildlife in the raw!

Botanists working on behalf of the Cumbria Wildlife Trust continue to survey various parts of the RAF estate and report on findings of rare or unusual plants. As with the water beetles, the mosaic of man-made and 'natural' habitats has led to an increased diversity of species.

Studies continue as to the use of the estate by otters with occasional sightings by staff of two animals together, which supports recent findings of a possible breeding holt. Most, if not all, of the streams and wetlands show evidence of otter use in all seasons. One area has considerable evidence of activity suggesting this may be a core zone or breeding area.

Sarah Jupp MRICS CEnv
Environmental Advisor (Ecology)
Sarah is a rural Practice Chartered Surveyor and Chartered Environmentalist who as part of the DE Environmental Support Team provides ecological advice and support for MOD activities.

Priory Lancy Rigg Plantation
Sarah Jupp

Cumbria

Warcop

Following 2 years of floods along Hilton Beck, a stretch river within a Site of Special Scientific Interest, Special Area of Conservation, Special Protection Area and Scheduled Ancient Monument; the DE partnership project with Natural England, English Heritage (EH), the Environment Agency, Durham University and Eden Rivers Trust has made a great deal of progress on discovering how and why the river is reacting as it is. Durham University's Professor Lane has completed his 12 month study of Hilton Beck and presented his findings and recommendations for sustainable river management at a local evening meeting. The professor's comments were welcomed by the local community, who have embraced his recommendations now it is understood what the management team is trying to achieve. It is hoped that work will commence next year with bank stabilisation projects and the removal of 'foreign' block work from the water course and that this will facilitate the river achieving its natural line and managing sedimentation.

In addition, EH has made progress on recording and interpreting the Scordale Lead Mines, the 3km scheduled monument alongside Hilton Beck. They have undertaken a painstaking survey of the mining remains which have been threatened by the persistent flooding of the river using orthophotography. This work has also been supported by the wider community who have provided various photographs of the site before it was abandoned. It is hoped that a second evening meeting will be held by EH to present the findings.

Range Officer

Botany - Additional Pond Flowering Plants

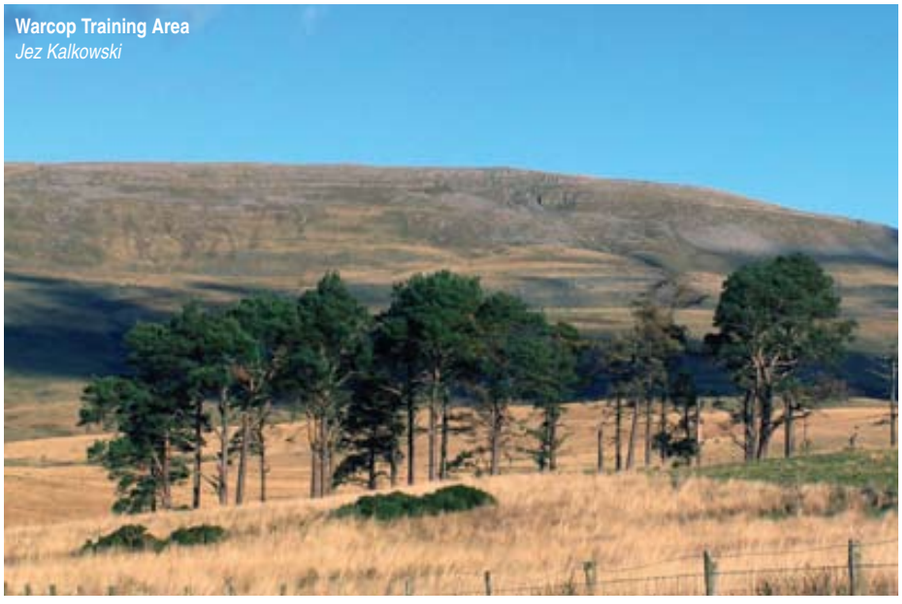
Dr Geoffrey Halliday, a member of the Warcop Conservation Group, visited the training area and discovered a number of new flowering plants on the site. *Potamogeton pusillus* is a fine leaved pondweed similar to the common *P. berchtoldii* but more demanding in its nutrient requirements and consequently appreciably rarer. Material collected at Rossmede by the Cumbria Wildlife Trust Pond Group last summer was thought to be this species. Positive identification of the collected material has now been made by the British expert. This is a particularly interesting find since it is one of the very few inland records. Incidentally, Rossmede is much clearer than when I previously visited it and has much better submerged flora.

Flowering Plants
Dr Geoff Haliday

Rorippa islandica, is a tiny, and nationally scarce, northern yellow cress which has only been recognised comparatively recently in this country. In 2005 we received an unsubstantiated report of this plant from Tarn Sike, near Sunbiggin Tarn. In 2006 we paid a site visit to the ephemeral pond on the south side of Brough Hill and found a quantity of small yellow cress, which we felt had to be this species. Samples were taken from this site and from Tarn Sike. These samples were submitted to the British expert who confirmed my identifications. The species is new to Cumbria.

Filago minima, a small cudweed, was discovered growing in abundance with the Rorippa both at Brough Hill and at Tarn Sike. It is not a common plant in Cumbria and is largely restricted to the west coast and the Eden valley.

Scordale
Clare Hetherington



Warcop Training Area
Jez Kalkowski

Shell Crater Pond
T H Campbell

Rubus plicatus, an attractive bramble favouring damp, peaty ground was found growing at the dam end of Rossmede.

Dr Geoffrey Halliday

The Warcop Shell Craters

In the early 1970s 18 shell crater ponds were created on Warcop Ranges as a result of EOD clearance work. These were colonised by nature relatively quickly after their creation. The ponds, which are in close proximity to each other, are home to all three species of newts and a wide range of other pond creatures such as toads, frogs and several of the twelve species of dragonflies which have been recorded on the ranges. The ponds, with their variation of sizes, depths and vegetation cover, provide the respective habitat niches for all of these creatures.

The presence of the great crested newt *Triturus cristatus*, which is listed in the UK Biodiversity Action Plan, means that before any management work can be carried out on the ponds we have to consult with English Nature (now Natural England). Following consultation with Natural England, and using their guidelines, a management plan for the ponds was drawn up. The aim of this plan is to keep the ponds at different successional stages in order to provide a diversity of habitats for the wide range of pond creatures using them.

During 2005 and 2006 several management plan tasks have been completed. MOD staff produced excellent, accurate large-scale maps of the ponds and erected numbered marker posts, which are essential for the positive identification of each pond to assist with survey, management and monitoring. As it was thought that there were very few natural terrestrial refuges which the newts could use after the breeding season and for over wintering, MOD staff built six hibernacula in the area of the ponds. Dr Geoffrey Halliday carried out a botanical survey of the ponds, as well as other range ponds and produced an impressive list of their plants.

Over time ponds can disappear through normal processes, for example, they can fill up with silt and vegetation as part of ecological succession. The smaller and shallower the pond, the more quickly this happens. Several of the shell crater ponds had reached this stage and required management. In particular three of the ponds were deemed to have lost their wildlife value, as they were dry for most of the year and filled by rampant rushes. When intrusive work is required on any pond it is imperative that it is done in winter to minimise disturbance to any stages of wildlife still there. Following Natural England guidelines these three ponds were cleaned out, enlarged and deepened. Shallow margins were left for ease of access and egress by pond creatures. The vegetation and silt was left uncompleted by the fringes of the ponds, so that any disturbed pond life was able to move back or move to adjacent ponds.

Two other ponds were of a reasonable size and depth of water, but had complete vegetation cover, mainly by plants on which newts and dragonflies could lay their eggs. It was thought desirable to reduce some of this cover and reveal some open areas of water. Raking off surface vegetation in winter was done without much success. In December 2006 more work was done to take out both emergent and submerged vegetation. Again, excavated debris was laid at the sides of the ponds. Future monitoring will show whether or not such minimal management to keep ponds at a variety of successional stages is good for their wildlife.

An emperor dragonfly *Anax imperator* was recorded at Dogber Tarn on the Fells above the Shell Crater Ponds in July 2006. This is a new species for the range making a total of thirteen which is good for this Northern upland area. Hopefully this species will spread across the ranges in future.

Ron Baines

Devon

Dartmoor Training Area

Buzzard - close view of head
Geoff Kaczanow

MOD is bound by a statutory obligation to have due regard for the National Park's aims on conservation and public access. To ensure that we meet this responsibility we need to understand Dartmoor. To achieve this we work closely with organisations and individuals who share our goals. We also need to ensure that we have considered all necessary measures to mitigate any negative effects from military activities. We actively support our landlords' efforts to maintain and, where possible, enhance the environment.

To help us manage our responsibilities, we have recently commissioned a survey of moorland birds from RSPB, a National Vegetation Classification from the Centre for Ecology and Hydrology and others, and cultural heritage condition assessments from English Heritage. Shortly, we will be conducting a landscape and tranquillity assessment, a noise survey, and a comparison of air photographs and fixed point photography. The results of this data collection and subsequent assessments are being made available to the public through local libraries and the dartmoor-ranges.co.uk web site.

Whilst these surveys provide the big picture, the Dartmoor Military Conservation Group continues to provide detailed local knowledge, advice and assistance. The impact of the Group is perhaps best illustrated by describing the work of some of its members.

Dr Tom Greeves works to identify previously unrecorded archaeological structures and provides a valuable insight into Dartmoor's usage over the millennia. This knowledge helps us to avoid accidentally damaging sensitive upstanding archaeological and more modern industrial sites.

Professor Nick Burgess, a renowned entomologist, who traces his work with MOD conservation back to the early 1970s, has provided advice on leeches and other blood sucking insects that await the unwary human! Sadly he has now decided to retire to engage energetically in travel and other pursuits.

John and Geoff Kaczanow, have devoted much of their spare time to the study of Dartmoor's wildlife and ensure that we are well informed about birds and bats. This enables us to divert training around wader, raven, ring ouzel and other sensitive breeding areas. Woe betide anyone who upsets the breeding ravens, buzzards, dunlin and golden plover. Mark Blacksell, a British Trust for Ornithology organiser and expert on survey and assessment methodology, provides detailed local knowledge and expertise.

Roger Swinfen epitomises the Conservation Group's service and contribution to Dartmoor and the military. For more than 25 years, working as a volunteer, he has provided us with specific knowledge of Dartmoor's birds and everything below them in the food chain. He also provides close links with the Devon Bird Watching and Preservation Society, Devon Wildlife Trust and other volunteer groups.

Nick Bentham-Green exchanges his uniform lovats for overalls, when deployments to sandier countries permit, to skip up trees to tend bird and bat boxes and keep predators away. Landmarc's Training Area Supervisor, Paul Fetcher coordinates the MOD Bird Survey, collates information on dormice and keeps a watching brief on otters.

John Lamerton has a vast breadth of knowledge and experience of Dartmoor.

Ring Ousel resting on rocks
Geoff Kaczanow

Aerial view of Dartmoor
Crown Copyright

Although entomology is his principle interest, he maintains a broad understanding of nature conservation and the means by which we can enhance the environment holistically.

Simon Bates is an expert on all things nature conservation, as well as giving us an insight into Natural England's strategy. He provides useful reminders of how we can support the Dartmoor Biodiversity Action Plan and practical support on the ground.

Members of the Conservation Group attend as subject matter experts and not as representatives of particular organisations. We are, however, very grateful for the contribution made by Dartmoor National Park Officers. They have a wealth of knowledge and we work closely with them on joint projects to benefit Dartmoor. We value the assistance of Defence Estates' staff in advising on the bigger picture of MOD's contribution to defending the countryside as well as the defence of the nation.

All of this knowledge is brought together into the Dartmoor Environmental Management System (EMS), which measures the significance of the positive and negative impacts of military activities. Having identified the significant impacts, mitigation measures can be planned. This work has been greatly aided by an external audit of the EMS, which included consultation with the principle stakeholders. The Conservation Group has been involved in work on the EMS and in drawing up the Integrated Land Management Plan (ILMP). This provides the detail of how we manage our responsibilities on Dartmoor and support the National Park's aims on conservation and public access. The Dartmoor ILMP builds on the success of the Willsworthy ILMP written in 1999. Without the support of the Conservation Group, we wouldn't be able to care for our responsibilities on Dartmoor to the extent that we do.

Tony Clark

Fife

RAF Leuchars

Butterfly (Lepidoptera)

2006 was what could be aptly termed as an excellent butterfly year for the East Nuek of Fife, and the region in general. The mild, warmer weather which lasted well into October and beyond certainly contributed greatly towards this.

Sixteen species were observed from the airfield on 34 days between 23 April (small tortoiseshell and peacock) and 18 October (4 red admirals), covering almost six months of the year.

The peak period for butterflies fell between 27 July and 5 August with 11 species seen on both these days. 13 varieties were seen on the wing on 28 July namely - large white, small white, green-veined white, small copper, common blue, painted lady, small tortoiseshell, peacock, dark green fritillary, grayling, meadow brown, ringlet and small heath. The only other type one might have expected to see, but did not was the small pearl-bordered fritillary. Orange tips were sighted early on in the season on 10 May. Two migrant clouded yellows turned up right on the east coast of the airfield later in the season on 8 September — the day before the Annual Air Show. Curiously enough this reflected an identical occasion 14 years ago when two clouded yellows appeared in almost exactly the same airfield location and at around the same time of year (24 August 1992). It would be interesting to know if any other clouded yellows were recorded from any other east coast areas around late August/early September.

Continued Expansion

As with peacock butterflies expanding into Fife a few years ago, 2006 saw an increase in orange tip distribution. As well as an individual airfield first time record, I observed these in at least five other Fife localities, four of which I believe were completely new sites for the species.

Commas too were now being detected more regularly, with at least four known observations this year - one from across the Tay Estuary in Angus and three from Fife. The most recent observation was from an in bloom hebe bush just down the road in Guardbridge. It is looking very much like the comma butterfly could be the one to look out for in 2007.

Other butterfly varieties reported to be moving north and or expanding into the border regions, are the small skipper and the speckled wood (also moving south from the north of Scotland). This movement is probably linked to climate change and global warming. Other possible contenders on the move are the wall and holly blue. Some exciting prospects indeed lay ahead on the butterfly scene in the future.

Butterflies and moths are relatively good indicators of climate change. For this reason alone it is important for observers to pass on their sighting records to their respective local butterfly and moth recorders and county councils so they can be incorporated onto the national data base.

George Adam, Bird Control Unit, RAF Leuchars.

Clouded Yellow on knapweed
Geoff Kaczanow

Orange tip butterfly nectaring on red campion flower
Geoff Kaczanow

Hampshire

Sea Mounting Centre, Marchwood

This is the first time that the Sea Mounting Centre (SMC) Conservation Working Group has provided an entry for Sanctuary Magazine and we are very pleased to be able to do so. We are a new group formed in March 2006. The following paragraphs give a brief flavour of the history of our site and of the conservation work we have undertaken so far, along with an outline of some of our future plans.

Location

The SMC is located at Marchwood on Southampton Water and is about 2km from the city of Southampton. It is adjacent to the New Forest and is close to the Eling to Bury Marshes Site of Special Scientific Interest (SSSI), the Hythe - Calshot Bay SSSI, Dibden Bay SSSI and the Solent and Southampton Water Special Protection Area and Ramsar site.

The SMC itself occupies 222 acres. The working area consists of three jetties, a gun wharf, hard standing, convoy marshalling areas and an internal rail system in addition to offices, warehouses and recreation facilities. Defence Equipment and Support currently own the site and the port is the home of 17 Port & Maritime Regiment RLC.

History

Royal Naval Armaments Depot Marchwood opened in 1815. It was a three magazine depot, capable of storing 21,000 barrels of gunpowder. The site was home to one of the largest magazines in the country; however this was extensively damaged in a World War II air raid.

In 1943 the building of the current military port began on land that had been acquired for the assembly and launching of the famous Mulberry Harbours used to support the D-Day landings in Normandy. In 1982, 1990 and 2002 the port was used to ship troops and equipment out to the Falklands and to the Gulf.

Biodiversity and Conservation at SMC

Given its proximity to a number of nationally and internationally designated areas, conservation on the site is extremely important. The volunteer members of the SMC Conservation Working Group work to manage and, where possible, enhance wildlife habitats. Regular meetings, chaired by Director SMC, provide a forum for discussion and a means of monitoring

Site Photograph
Crown Copyright

progress. An action plan is in place to deal with habitat renovation and species survey work and the biodiversity dossier is gradually increasing in size as more species are identified and recorded. We will soon commence a new project to renovate the large pond on site which has become silted and overgrown. We also intend to undertake a bat survey and to participate in the annual MOD bird count.

Landscape

The majority of the site comprises regularly mown sports pitches interspersed with ditch systems and ponds. There are also rough areas and hedges, which contain a diverse range of wildflowers and fungi. Some of the hedgerows, particularly those at the western end of the site, contain mature pedunculate oak standards. There is also a grey willow woodland around the reed-swamp at the eastern end of the site.

A sward near the small pond supports common plants including jointed rush, Yorkshire-fog and marsh foxtail. The disturbed ground on the southwest and north sides of the tidal creek is home to ephemeral and short perennial vegetation. A similar area on the southwest side supports a large number of species including rosebay willowherb, large evening primrose and buddleja.

Ponds

The small round pond located in the central part of the site and surrounding grassland supports local notable plants including the slender spike-rush *Eleocharis uniglumis*. The linear pond situated in the southern part of the site boasts an extensive stand of fringed water-lily. This pond and surrounding habitat also provides a home for reptiles and amphibians. Common frog *Rana temporaria*, common toad *Bufo bufo*, and grass snake *Natrix natrix* have been recorded so far.

During our 2006 'Spring Watch', the area came alive with calling frogs and toads, which culminated in the deposition of 40 plus clumps of spawn and several metres of egg strings. Several species of dragon and damselflies were present during the summer months and they could be observed depositing eggs on aquatic plant stems.

Recently, the surrounding area was cleared of scrub and the increased amounts of sunlight reaching the ground has led to an increase in the diversity of plants and animals. Grass snakes now bask in the clearings in order to bring their body temperature up to optimum, before moving into the water margins where they prey upon amphibians and small fish.

Peregrine Falcon
Geoff Kaczanow

Birds

A large number of bird species have been observed over the past few years and these include many of the more interesting species such as peregrine falcon, osprey, black redstart and barn owl.

Moths

During summer 2006 SMC firefighter Nick Hull carried out a moth survey. He used a Robinson's trap incorporating a 125-watt light bulb, which emits ultra violet light for the survey. The trap contains egg cartons providing compartments in which the moths can rest. Over a period of 15 evenings 338 moths were trapped representing a total of 90 species. Amongst those trapped was a brown veneer moth, a migratory species from Africa.

Tony Smith, SMC SHEQ Manager & Conservation Officer

Small pond water maintenance
Lee James

Isle of Wight

Newtown Ranges and Jersey Camp

South East Reserve Forces & Cadet Association

Another interesting and surprising year for us on the island! Highlights included a record number of units passing through the Range and Training area, the discovery of a rare species of bat and the re-emergence of a butterfly not seen for some years.

A quiet winter preceded the annual public open days. We held the first in May to allow the green winged orchids, *Orchis morio*, to be viewed in the meadow and the other in July to allow the area to be seen in a different light, with butterflies and flowers the main attraction. There was a huge increase in the orchid count this year with 132,400 counted for 2006 against 52,800 for 2005. Donations from the open days boosted our conservation fund by about £150. This money has financed a rain gauge to monitor the monthly rainfall. We hope to see if there is a pattern in the rainfall against the orchid growth in the meadow.

During the winter, bird nesting boxes were repaired and several more were manufactured. We now have a total of 34 in Locks Copse, 8 around the Range House and 3 in Jersey Camp. The box survey in September, carried out by John Willmott our ornithologist, gave good results with most nesting boxes used by great tits and blue tits. The normal eviction and count of the dormice in the boxes yielded rather low results this year. We think they have an early warning system in place or have gone up market in the housing world. A record number of 2,003 brent geese were recorded by John. He also sighted a pair of grey partridge *Perdix perdix* at Lambleaze Farm, the first since 1988.

Robin Wood had a face lift through the opening up the old glade. Led by Bob Lord from Natural England, the Range Staff Stuart Hersey and Trevor Clark cleared the scrub, allowing light to enter and bringing a habitat change to the area. Now we just have to monitor and keep the area clear.

Our Group and Island renowned botanists, Bill Shepard and Sue Blackwell, conducted surveys of the ancient meadow on the range and of Robin and Hummet Woods. The meadow produced a record of over 110 species of flora. Robin and Hummet woods produced 81 and 61 respectively.

A request from Ian Davidson-Watts from the DE Environmental Support Team, assisted by student Trianna Angele, to carry out a bat survey in our woods was accepted with enthusiasm and is reported in full on pages 16 and 17 of this edition. Having provided accommodation, I spent 3 late nights with Ian, Trianna and 2 members of the local Bat Society netting and recording. We struck lucky and netted a female Bechstein's bat, *Myotis bechsteinii*. After fitting a transmitter to the bat it was released and was tracked the following day by Trianna to a roost in an ash tree on the estate. This

Green Winged orchid on meadow
David Maidment

Grass Snake
David Maidment

Cream Spot Tiger Moth
David Maidment

roost was found to be holding over 50 bats. The find attracted local TV and national press. Other species found were natterers, whiskered, pipistrelle and brown long eared.

Another claim to fame is our inclusion in a book, written by a local man, about Locks Green and Porchfield. As the range and training area are part of the villages, a whole chapter is dedicated to us. The Conservation Group receives a good write up.

The Range Staffs' qualifications in First Aid have paid off! A little TLC, involving the tucking in of a small amount of muscle, on a grass snake injured by a cat allowed the snake to go about his business. With help from the RSPCA, a Canada goose with a deformed leg was caught, inspected by a vet and returned to us to carry on living on the range, for a while anyway.

A quiet summer's day and the silence is shattered by yells coming from Locks Copse. Investigation found our Lepidoptera group member and local farmer Barry Angell excited about a rare species of butterfly, the valezina variation of the silver washed fritillary, *Argynnis paphia*, which is a rare aberration only found in the south of England. Barry's last sighting of this species was in 2003.

During the summer, whilst carrying out the monthly boundary check with the quad bike, Stuart Hersey and I were bombarded by swallows. It took a while to realise that, as we drove through the long grass, butterflies were being disturbed giving the swallows a free meal on the wing. Watching their feeding frenzy was awesome, something we have never witnessed. Something that we have seen before are buzzards in flight. Seeing a group of 12 soaring over the western end of the training area together endorses the fact that the buzzard population is healthy on the Island.

AGM Group Members
David Maidment

Our AGM is held in September. The Group consists of the Range Staff, (we do most of the conservation work against the action plan), local experts (Archaeology, Biodiversity, Botany, Lepidoptera, Ornithology and Mammals), who complete surveys and reports, the local council Ecology Officer, Defence Estates (Environmental Support Team), Natural England, National Trust and tenant farmers. After the obligatory photograph, it was down to work in a relaxed atmosphere, receiving reports and discussing the plans for next year. With such a diverse membership a lot is achieved at our meetings, which are chaired by Col (Rtd) Amedee Mieville, Deputy Chief Executive SE RFCA. The group is looking forward to 2007 when we celebrate our 30th birthday. We think we are the oldest MOD Conservation Group and still have 4 founder members in the group.

Maj (Rtd) Dave Maidment
Range Officer & Estate Manager

Kent

Canterbury Conservation Group
Old Park Training Area

Southern marsh common spotted orchids
Kentish Stour Countryside Project

"INVADING ALIEN FOUND IN POND" read the headline of a regional newspaper. In February 2007, a rogue channel catfish was caught by Environment Agency Fisheries Officers during a fisheries survey at the Reed Pond. This is an expanse of water situated on the edge of the training area and to the rear of a housing estate. It is likely that the fish was introduced by an angler who fishes here.

Although becoming increasingly popular with recreational fisheries, catfish are not native to the United Kingdom. They can pose a threat to the environment by competing with native fish for habitat and food and spreading disease or parasites. The keeping of non-native fish is restricted under the Import of Live Fish Act (ILFA) through a licensing scheme. As MOD staff were unaware that this species was living in the pond, no ILFA licence was in place. The fish was removed by the Environment Agency and taken to their National Fisheries Laboratory in Cambridge.

Returning to the survey, roach was the predominant fish netted. Other species found included bream, common and mirror carp, perch and pike. At the time of writing we await the Environment Agency's report on its findings.

Fish Survey
John Port

An angling group is now being established to assist with the sustainable management of the Reed Pond and to improve its facilities.

Regrettably, the main bird ringing area was turned into a building site as work was undertaken to construct a new golf driving range. Mist netting was severely restricted by the scale of the works, although it was still possible to monitor nest boxes.

Jan Pritchard reports that nearly 9,500 birds of 64 species have been ringed at the Old Park over the past 23 years. Some 1,396 birds have been re-trapped, many of which are migrants returning from Africa to breed on the same site year after year. The most numerous of these are the blackcap and whitethroat. As well as nesting here, both species use the Old Park in autumn, fattening up on the abundance of elderberries and blackberries prior to their migration to Africa where they spend the winter. Also of particular note are nightingales since their territories form part of the Blean Complex which seems to be the major focus of the British breeding population.

Over the past year lepidopterist David Gardner has found twenty one species of moths and butterflies. The most notable are probably the *Bryotropha terrella* and yellow belle, since so few have been recorded.

The proposed survey of great crested newts on MOD land in the Fordwich area was not undertaken as the three bodies of water identified were deemed unsuitable.

Kentish Stour Countryside Project (KSCP) and Canterbury City Council continue to work with MOD to improve the training area, not only as a vital haven for flora and fauna, but also as an excellent community resource. Sadly, misuse by vandals, motorcyclists and fly tippers remains a problem. The KSCP and its volunteers have cleared scrub in those areas which are favourable to orchids. Orchids found in the area are a hybrid of the Southern marsh orchid which is quite rare in Kent due to a lack of suitable habitat.

Finally, Jo Haskett and Jason Mitchell of the KSCP have now moved to other conservation projects and Staff Sergeant David Handforth has left the military. They have made significant contributions towards improving the area and I take this opportunity to express my thanks.

By John Port, Estate Surveyor, Land Management Services, Defence Estates Operations South

Kent

Cinque Ports DTE SE Conservation Group

In June 2006 the Cinque Ports DTE SE Conservation Group, along with members of the Kent Downs Area of Outstanding Natural Beauty Unit and the grazier Rod Vincent, enjoyed a site visit to Arpinge Range. This, now disused, range is part of the Folkestone to Etchinghill Escarpment Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC) (a site of species-rich calcareous grassland). Prior to entering the area the group was given a lively Health and Safety briefing by Sgt Ford of 33 Engineer Regt EOD who is leading the team currently clearing the area of ordnance. Sgt Ford vividly explained the dangers of the various types of ordnance present on the site and stated that over 71,000 expended items had been recovered, 300 of which were live.

Once on the range, Peter Gay (local naturalist) led the visit, and rarities such as the Adonis butterfly, *Lysandra bellargus*, and the late spider orchid, *Ophrys fuciflora*, were seen. The visit demonstrated the value of the Conservation Group, as most stakeholders were represented on the day which enabled useful discussions on the management and way forward for this important site.

Kent Downs Sub Group

The summer meeting was held at Sunny Hill Banks, at the specific request of members who were concerned with scrub encroachment on an area that has been identified as a good site for lepidoptera and flora. Agreement was reached on a first stage of clearance work programmed for early 2007, which will benefit biodiversity and enhance the area for troop training.

An area of particular interest to the group is the woodland and grassland within the Alkham, Lydden and Swingfield SSSI. Natural England, Kent Wildlife Trust, the tenant farmers and Defence Estates continue to work closely regarding this area. Kent Wildlife Trust volunteers working under the direction of Natural England's Dan Tuson, have undertaken a project to spread cuttings and seed heads from a 'flower rich' roadside nature reserve onto former arable land. Already there are signs that some of the seeds have been able to colonise.

Another initiative has brought a novel approach to the management of a roadside nature reserve. With the support of the tenant farmer, John Seath, and DTE SE, livestock have been introduced to graze both on the verge and the neighbouring 6 metre field margin as one grazing unit. Over time it is hoped that herbs and grasses from the roadside verge will colonise the new field margin and create a new corridor to other areas of downland.

Shingle Sub Group

The meetings held in 2006 often became a forum for sea defence discussions with particular interest in the strategy for Lydd currently being finalised by the Environment Agency.

Brian Banks, from Natural England, is continuing to lead on the shingle vegetation re-colonisation programme at West Ripe. Unfortunately the programme in 2007 will be limited due to poor seed germination of

Coppicing at Reinden Wood
Richard Goslett

EOD Brief
Richard Goslett

Sea Front at Hythe Ranges
Richard Goslett

prostrate broom, *Cytisus scoparius spp*.

The results of a water vole survey at Lydd showed that populations were present in West Ripe and South Brooks. It is hoped that the sub group can assist with management proposals to extend the range of this listed species.

Access Issues

Access issues are, as always, on-going with a programme of stile improvements, including the installation of dog gates on Public Rights of Way that are heavily used. This has proved effective in reducing fence cutting. Unfortunately car dumping and joy riding is on the increase across the estate and has resulted in livestock losses and damage to fences. Padlocked gates have been installed at problem areas.

The White Cliffs Countryside Project are currently upgrading the interpretation signage at the Reinden Wood circular walk (as detailed in www.access.mod.uk) and have held regular events for local children as part of "Green Gang Activities".

Monitoring

Roger Norman and Mark Varley continue to conduct bird surveys at DTE SE. In 2006 Roger was pleased to report that avocet, *Recurvirostra avosetta*, with young were present at Lydd Ranges after a two year absence and that hen harriers, *Circus cyaneus*, and marsh harriers, *Circus aeruginosus*, roosted sporadically at the Midrips.

Eric Philp has been recording for a new Atlas of the Kent Flora, which it is hoped, will be published in 2007. Eric was able to visit Lydd in between the busy firing programme. The flora recorded included shrubby sea-blight *Suaeda vera* and a fine colony of corn parsley *Petroselinum segetum*.

Conservation Group members, including David Gardner, Peter Gay, Martin Newcombe and Phil Green, have continued to carry out extensive flora and fauna monitoring which has been of great benefit to the group.

Sea Defences

DE, DTE and Landmarc completed the winter programme of maintenance work on the sea defences at Hythe Ranges during the Christmas shutdown period. This involved replacing 1,000 linear metres of greenheart planks in the timber groyne field, so it can hold and retain a greater volume of shingle. The sea defences at Hythe are now at a standard of 1:20[1], but to the west and east the Environment Agency and the Local Authority have increased the standard to 1:200 respectively. A long term plan expected from the Environment Agency should bring the Hythe frontage to a similar standard of 1:200 within the next few years.

The sea defences at Lydd Ranges are now at a standard of between 1:5 and 1:20. A serious breach here could flood the Ranges and parts of Romney Marsh and the heavy storms in December 2006 nearly washed away one of the Look Outs.

DE, DTE, the Environment Agency, Natural England and the local community are in discussion to agree the strategy for the next 100 years, which has to take into account a predicted sea level rise of nearly 1m as a result of climate change. Until this long term strategy has been agreed, the current programme of shingle recycling and beach profiling by the Environment Agency will continue.

Richard Goslett, LMS, HQ CPTA

1 The standard of defence describes the magnitude of event that the sea defences provide protection against. For example, a standard of 1:20 would be expected to be breached or suffer significant wave overtopping under a storm event that had a probability of occurrence of 1 in 20 or greater.

Northampton

Yardley Chase

Horse chestnut moth
Ian Kimber

Overall this was another very warm year. Our annual snowfall was not measurable, with just a light dusting on 7th January. Rainfall was up 20% on last year. May had the highest fall (100mm) and June the lowest (10mm). Pond levels started to drop in June reaching an average low of 23.6cm in August. July was our hottest month. September and October temperatures were also much higher than normal. Despite the warmer temperatures overall, spring was cold, with March being the coldest recorded for many years. This delayed the emergence of insect species which had some spin-off for nesting small birds.

Flowering times were again 'out of season'; with some plants flowering early and staying in flower late. Some of the early blooming plants dropped seeds early and these produced flowering plants later in the year (poppy). Seedlings appeared in June and flowered in September. They continued to flower until the first frosts of December. Wild strawberry flowered early in April and were still flowering and producing ripe fruit at the end of October. Other late recorded flowers in October were creeping Jenny and purple toadflax. In November we saw ragwort, hardhead, groundsel, red campion and bramble. White deadnettle was still flowering in December.

2006 has been an exceptionally good year for fungi, with probably the best autumn conditions since we started recording in 1980. Fungi were plentiful right up to December, enabling much recording to be carried out. Among the many species recorded were three new county records for Northamptonshire - *Amanita vaginata* — grisette; *Gymnopilus dilepsis* — woodchip fungus and *Leccinum aurantiacum* — red-capped aspen bolete.

The interesting one is *Gymnopilus dilepsis*, which gave us some problems with identification as it did not appear in any text books to hand. It was sent to a referee who confirmed its identity which, at the time, was only the eleventh national record. It was spotted growing on a large, undisturbed, wood chip pile which had been created in 2004. These particular chips were from the cleared scrub and under-storey growing under mature oaks in a corner of the deer park (no conifer). The fungus was first seen on 27th July in its early stages reaching maturity on the 9th August. Wood chips have been used extensively by councils and private gardens since the 1980s as paths or weed cover. Most of the wood chip commercially available at that time was made up of imported conifer material. Over the past years this material has promoted the growth of many unknown and colourful fungi, most of which are non native species.

The cold spring made for some late lepidoptera sightings, as the first broods did not do well. From June onwards, when the weather changed, there was a large increase in sightings of both native and migrant species, some of which stayed very late in the year. For example, red admirals were still flying on the 7th December. Wood white and white admiral butterflies were down in numbers but the mass flowering in the central meadow in July/August gave a marvellous showing of many species of butterfly including the migrant clouded yellow.

As mentioned in Issue 35, last year we recorded a micro moth as a new county species. This micro moth, *Cameraria ohridella*, makes easily noticed mines in the leaves of the horse chestnut. It has spread so rapidly that it is safe to say that, in Northamptonshire, if you have a white flowering horse chestnut then you have the moth. The moth measures just 4mm long and is unlikely to be seen flying.

For the first time since we started recording in 1980 a lizard was spotted as it ran across a tarmac road. It is hoped to find more next year.

There have been more bird recording sessions this year due to the extended bird count period from two weeks to two months. During that period eight visits were made at different times of the day and evening. A total of 60 species were recorded including a rarely seen sandpiper. In all 73 species have been recorded across the year.

Tony Richardson
Compton Estate Conservation Officer

Woodchip Fungus (mature stage)
J A Richardson

Pembrokeshire

Castlemartin Ranges

Undoubtedly the most extraordinary event of last year was the Badgers and Bones of Brownslade archaeological excavation. A full account of this work appears on pages 35-37 of this edition of Sanctuary. Suffice to say here that the site was situated right in the middle of one of the UK's busiest tank firing ranges, which severely limited access. It was also surrounded by unexploded ordnance and was riddled with badgers. The project needed funding. The badgers had to be excluded and rehomed in a new sett, which required licences from the Countryside Council for Wales (CCW), before the archaeologists could set to work. The archaeologists had 28 days down range and, apart from uncovering an unexploded tank shell, everything went like clockwork. The results speak for themselves and undoubtedly made the preparation and planning most worthwhile.

There has been better news on the management of water this year. Leaks on the estate amounted to 500,000 gallons per day and had been on-going at this level for over 2 years. The sources of these leaks have been identified and largely repaired. The on-going saga (a good few decades) of Range 5 toilets running out when the cattle emptied the water troughs was properly addressed and fixed. The Trenorgan Farm 'stone tent' now has its own water supply and loos – saving on portaloo hire. The repair of the tidal flap at Penally provided the answer to preventing the frequent flooding of the gallery range.

A great deal of work carrying a high risk of detonating unexploded ordnance (UXO) has been undertaken out on the depths of Range West over the last 18 months. There have been six projects, amounting to some seven weeks work, involving fencing, scrub clearance and excavation. This work required support from 33 Engineer Regiment Explosive Ordnance Disposal. On a separate project, the specialist civilian company ARMTRAK, set off a UXO while clearing scrub - luckily neither the equipment or the operator (first explosion in his 5 years with ARMTRAK) were damaged!

Finally, it is sad to have to record the deaths of two well known and long serving members of the Range Staff. David Honeysett had been the Range Manager at Castlemartin from 1969 until his retirement in 2002. Much of his tenure was spread over the extremely busy period when the Federal German Army fired at Castlemartin. Brian Goodman was the Estate Foreman for 34 years until he retired in 2003. He knew every animal, be it wild or otherwise, and its whereabouts on the Range. Their efforts for the Ministry of Defence will long be remembered here.

Lt Col J J Rogers, Commandant DTE Pembroke

Tank round in burnt heather
Lynne Ferrand

Linney Head from the Air
CCW

Staffordshire

Swynnerton Training Area

Painted Lady Butterfly
John Sibson

Young Buzzard at about 8 - 10 weeks
John Sibson

As I write these notes, the Stern Report has recently been published, indicating the planet is heading for climatic disaster unless we change our ways! Here in a corner of north west Staffordshire local observations clearly indicate that the climate is warmer. In the last few days of October signs of willow coming into bud and flowers still in bloom are apparent to any who care to notice. But then nature snaps back and the first days of November brought sub-zero temperatures and severe frosts, the willow must surely suffer from this as will other flora and fauna.

Looking back over the first ten months of 2006, the winter months were drier than normal followed by an exceptionally wet, late spring. For the sun worshippers June, July and August were hotter than past years (July was the hottest since 1914). Autumn followed the trend with unusually warm days and bright sunshine. Whatever happened to the seasons of yesteryear? Snow in the winter, damp springtime, warm summers and cool, foggy autumn days. Was it really like that or am I just remembering what I want to remember!

During the year we have been involved in several activities:

MOD Bird Count

Once again we were assisted by Graham Ludgate and Bill Edwards from Walford College in gathering information. 38 species were sighted and 14 species were breeding. 46 nest boxes were checked, with more than 70% being used. This year we tried a "new" type made of plastic pipe (discarded by contractors). These were 200mm long and 100mm in diameter with the ends made out of locally produced waste timber. Of ten located all had been occupied, eight showing signs of egg fragments and recent use. Of particular interest this year we located the nest site of a pair of breeding buzzards, which we followed with great interest until the two young birds eventually left the nest. This is the first time in several years that we have been able to locate the nest during their breeding season, extremely satisfying.

In late summer Basil Fielding (a Landmarc estate worker) saw owl activity near a building in which nest boxes had been built some time ago. Careful inspection, from a distance, showed two young owls, who we carefully monitored over the next few weeks until they were sufficiently mature to leave their nest for good. Both owls and buzzards have been present on the area for many years, but it was reassuring to see them producing healthy young. This is evidence that the area

Nest Box erected in 2005
John Sibson

Young Owl (*Tyto alba*) shortly before it left the nest for the final time
John Sibson

is providing an adequate food supply and that military activities are not detrimental to their breeding.

Mammals

In August members of the Staffordshire Bat Group came to the area on a daytime visit. The area has two recorded sites for bats, a series of underground chambers and a standing building. Both have been secured to prevent unauthorised access. Investigation of these sites proved that the bats are very much in evidence in each location. A random check of a further building also indicated activity. On that day over 20 brown long eared bats were counted in a building that is in frequent use for training, yet another instance of training and wildlife coexisting.

Badgers continue to thrive on the area, with at least four active setts and frequent sightings of animals scurrying about their business, especially in the summer evenings. Whilst visiting what is believed to be the oldest sett, unusually high insect activity was noted near an ancient hollow tree. The insects proved to be wild honey bees. A very brief inspection showed that they had colonised this tree, and there was a distinct sweet odour coming from it. The badgers I'm sure would have given this tree very close inspection. Unfortunately, it is situated on a steep bank, which makes it very difficult to carry out a closer inspection. Also the bees became quite hostile after a prolonged look.

Off Site Activities

In July, as a joint activity with Walford College, we manned a display stand at Shrewsbury as part of their "Green Festival Week". We presented the work of MOD Conservation Groups, in particular Shropshire and Staffordshire who are part of Defence Training Estates (Wales & West Midlands). In August we manned a similar stand in north Shropshire as part of their "Meres and Mosses" display. This was held at a wildlife reserve near Ellesmere. On each occasion members of the public showed great interest and curiosity about MOD Conservation activities.

Captain (Retd) John Sibson

Sussex

Pippingford Park Training Area DTA

Dragonflies and Damselflies

Recent studies of the dragonflies at Pippingford Park Dry Training Area (DTA), which forms part of the Ashdown Forest Site of Special Scientific Interest (SSSI) in East Sussex, have been followed by practical action to help their populations develop. Two projects have been carried out, to enhance a stream and to make a new pond.

Between Centre Bridge and North Bridge, the Mill Brook was very shaded, making it unattractive to dragonflies. In late 2004, several groups of tall alder trees were felled by Landmarc Support Services to create sunny glades at intervals along the stream. The main target of this work was the beautiful demoiselle damselfly *Calopteryx virgo*. It is not an uncommon species along streams, but is sensitive to pollution, so the clean waters of Ashdown Forest are an ideal location to encourage it. At present, some of these demoiselles live further upstream, where there is the possibility of future habitat creation that would benefit most other species, but which may be detrimental to this one.

The following May showed a positive response, as good numbers of beautiful demoiselles with shiny bodies and large coloured wings were flitting over the stream in the new sunny glades. 2006 was even better, with an excellent 58 demoiselles here one June day. More glade creation was carried out along the stream last winter, so it will be interesting to watch the damselfly population develop over the next few years.

The work also rejuvenated the alders, which sprout again from the base. Many had been coppiced long ago and some were balanced on the edge of the brook. These could have easily become top heavy, fallen over and died. Many other insects will also have benefited from the increased light and warmth. Grey wagtails *Motacilla cinerea* have been attracted to feed on these insects. Several pairs breed in the nest boxes installed near the weirs which are monitored by David King. Mike Scott-Ham has carried out bird counts at Pippingford for many years.

As reported in Sanctuary 33 (2004), Pippingford has more than 20 ponds across the site, but good reasons existed for creating another. The new pond is located on the main area of heathland where there are few ponds, just below a spring which should ensure a good supply of water. It provides a “stepping stone” between the Pippingford ponds and the ponds on the adjacent Old Lodge Nature Reserve for the wide range of dragonflies in the area.

Conservation Group member Richard Morriss used his skill with an excavator to create the new pond, being careful to ensure that the excavated soil on the lower side of the pond was well consolidated to prevent leaks. The ground here contains a significant proportion of impervious clay, so there is no need for any artificial liner.

Several damsel and dragonflies have used the new pond in its first two summers. As natural vegetation establishes over the next few years, this pond will certainly develop into an excellent habitat for them.

New Pond with fields
Nick Steer

Volunteers ready to start
Nick Steer

Removing a rhododendron
Nick Steer

Birch and rhododendron removal

In early 2006, work at Pippingford focused on removing birch and rhododendron from the heathland, mainly in those areas close to neighbouring properties. Landmarc worked on a larger scale, continuing to restore heathland near Troop Shelter Charlie. Their efforts have been rewarded by the appearance of woodlark *Lullula arborea* in the area, until recently a very rare bird. They have also felled birch scrub nearby to create a heathland link to the northern part of Ashdown Forest. The Conservation Group worked on a smaller scale to the west of Hill 170. Volunteers can effectively clear scattered plants as the work is not too heavy, but it requires a slow, careful approach to find isolated saplings amongst the tall grass and heather in a fairly large landscape.

The Conservators of Ashdown Forest, who manage the bulk of the SSSI, are currently undertaking a major assault on extensive stands of rhododendron. To ensure long-term success, other landowners also need to control this invasive plant. At Pippingford, work to remove rhododendron has been in progress for some years. On the heathland, we have been successful in reducing the invader to scattered plants. However, these can produce vast numbers of seeds which means that they can quickly re-establish themselves and spread. Fortunately, rhododendron on heathland is easy to see in winter, as it remains green when almost nothing else is. For successful removal it is essential to remove the roots and to return for the next few years to check for re-growth from odd pieces of root, or any new seedlings.

Birch is more difficult to see in winter without leaves. The aim is to dig, or pull, the plants up by the roots, as the stems have a large cluster of buds tucked away at ground level, which are ready to burst into life. For example, one sapling measuring less than an inch across and a mere three feet tall, was found to have no fewer than 57 buds at the base. If birch and rhododendron are just cut down, the established roots quickly grow larger than the subsequent leafy re-growth suggests, making a lot more work for future clearance.

During the summer of 2005 it became obvious that scattered birch and rhododendron plants were developing quickly. In early 2006, the MOD Conservation Group worked with volunteers from the adjoining Old Lodge Nature Reserve to remove these plants from the fringe of the DTA. Our chairman, Lt Col Guy Bettesworth, and Defence Estates Conservation Adviser Richard Goslett wielded mattock and spade, while Group secretary Maj (Ret'd) Stephen Thorpe used his chainsaw on a handful of larger trees. Although the day turned wet, the team successfully completed the planned work. The following summer, when the few remaining trees produced green leaves, it was clear that we had succeeded in saving the heathland.

Alan Gillham, Crowborough MOD Conservation Group

Warwickshire

Kingsbury Ranges

KINGSBURY WOOD - SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

There were 30 species noted on the annual Spring bird count carried out in the 56 hectares of deciduous woodland on 2nd June 2006. Robins were the most numerous with 30 encountered, followed by blackbird and wren, with 28 of each counted. Also present were buzzard, cuckoo, whitethroat, nuthatch, goldcrest and tree creeper. On 23rd May a total of 20 species of birds were noted in the adjoining 8 hectare Edge Hill Wood, the main species being robin and blackbird, with 7 and 6 being sighted respectively.

On 14th July, 2 white admiral butterflies were seen on bramble blossom in The Dumbles area of the wood and 2 in the former pony fields. Another was seen in the wood on 21st of the month. During August and September higher than usual numbers of hornets *Vespa crabro* were present in the wood.

RANGES

Two or more Essex skippers *Thymelicus lineola* were seen on the flower heads of creeping thistle on 21st July, this is a new butterfly to this Defence Estate area. A few dingy skippers *Erynnis tages* were flying in late May around bird's-foot trefoil and spiny restharrow. Ox eye daisy flowered abundantly during the summer.

SPOIL HEAPS

Butterflies included two Essex skippers seen in July. Two clouded yellow *Colias croceus* were seen in August on the restored mounds. More than 25 dingy skippers were sighted around the many patches of bird's-foot trefoil at the end of May along with over 30 common blues *Polyommatus icarus*. Small scabious *Scabiosa columbaria* was in flower along the main track and in a wildflower area during August. A clump of bush grass *Calamagrostis epigejos* and clusters of slender centaury *Centaurium pulchellum* were interesting finds as was great lettuce *Lactuca virosa* by the side of the main track.

Maurice A. Arnold

Blackbird
Steve Sadler

Essex Skipper
AW Jolland

Dingy Skipper
AW Jolland

Wiltshire

Boscombe Down

Sheep on the disused Railway Embankment Nature Conservation Site

The idea of grazing stock on the disused railway embankment came to fruition following health and safety concerns which meant that the grounds crews were unable to cut the bank. A local farmer, who farms with a view to wildlife conservation, was approached about the idea and was happy to assist. He provided a small group of rams to put to graze on the bank. We chose to use rams as they are less inclined to wander should they escape from the electric fence (not what you want on an active airfield!) However, they are also less likely to tackle the steep slope than ewes. The bank was divided into three roughly equal sections for grazing with two sections (one at each end) left to be cut by hand or machine. The sheep grazed the bank between August and October. They were removed from the reserve prior to the breeding season to get them into peak condition. As grazing began in the autumn, a quantity of older grass and scrub remains in place which will be dealt with by hand over the winter period.

New Spider Record

Just before the sheep arrived, an unusual spider was seen in some rank grass in an adjacent field. It was photographed and the county recorder notified. The spider was identified as Bruennichi's Argiope (wasp spider) *Argiope bruennichi*. This is a very vivid black and yellow striped species, which inhabits areas of long grass and feeds on grasshoppers and other insects. It builds a distinctive web with a very obvious 'zig zag' vertical section. Just a few days after the initial discovery, Tony Horner, the butterfly transect counter, found four at the base of the railway embankment. On further investigation, 20 more were recorded on the embankment, within an area of about 30-40 metres at the base of the bank, (10 individuals in a 1km square is notifiable). Their location was easily identifiable as these spiders form a 'nest' in the grass, pushing and webbing back some stalks to form a hole, then build their web vertically within it.

Sheep
Mike Stone

Bird Count

Once again the annual MOD Bird Count produced nothing unexpected. 81 species were identified, with 33 of these recorded as breeding. Grey Partridge is just holding on at Boscombe Down with 9 recorded as breeding. The most prolific species were wood pigeons and rooks.

Helen Cox's father donated a number

Grey Partridge
Dr Chris Lewis

Wasp Spider in Web
Jeff Williams, Qinetiq Photo

Chalkhill Blue basking
Cliff Rogers

of very well made nest boxes to the site. These are suitable for a variety of birds including tits, flycatchers and robins. Most were sited on receipt in May-June. A great tit family occupied at least one tit box even that late.

ISO 14001 - Environmental Management System

The Group is currently bringing together ideas for IS0 14001 by drawing up an action plan for the next ten years. This will establish the direction of tasks to be carried out, in addition to the routine conservation tasks, at the various conservation and archaeological sites and will consider action for future archaeological sites. The plan will be added to the latest edition of the site's Conservation Management Plan.

Archaeology

During the installation of a new fire water main, a body was unearthed! Located only a few inches under the topsoil, it was found when a digger cut through the skull and the flints covering the body. It would appear that the body dates from between 2000BC to 400AD, and that it is female. Photographs show that the body was, at some time in recent history (probably during the 1940-50s), covered by a layer of tarmac.

Mike Stone, Secretary

The Chalkhill blue butterfly on the Boscombe Down railway line reserve

As reported in Sanctuary 34, numbers of the chalkhill blue have been in steady decline since 1999. Since this report remedial management action has been taken to reverse this worrying trend. For example, before the start of the 2004 butterfly season, some of the extensive shrub growth running along the part of the railway embankment inside the wire was cut back or removed. This work increased the area of chalk downland available for colonisation by various indigenous species of flora and fauna and encouraged the formation of windbreaks running up and down the embankment. The introduction of sheep to graze the embankment also appears to have been a success. However, 2006 was a very good year for butterflies overall, and it will be some time before we can judge whether the management has been successful.

The 2006 records show that Boscombe Down is still a very suitable site for many of the specialist chalk downland butterflies. Chalkhill blue numbers recorded on the 2006 transect inside the MOD site increased to 28 from 5 in 2005. As regular transects have not been conducted outside the MOD site, it is difficult to draw many conclusions from numbers recorded here. However, 15 chalkhill blue specimens were actually recorded in the area outside the wire during the 2006 transects (estimated numbers 28 after factoring in missed transects during the chalkhill blue flight period). This indicates that the species seems to be holding its own outside and will provide a good 'pool' for reinforcing the numbers inside, once the habitat is returned to a more suitable state.

Jon Millo.

Wiltshire

Bulford Conservation Group
SPTA (E)

Ornithology

It has been a relatively quiet six months, and other than our Scandinavian visitors there have been only a few sightings of our rarer visitors. However, large flocks of fieldfare and a few redwing were seen on the hawthorn thickets. Hen harriers have been seen regularly over our area and we have had reports of a small roost near Upavon Airfield. Only two short-eared owl sightings were reported in November when single birds were seen low over Everleigh Dropping Zone (DZ), this was probably the same bird on separate days. The mild weather has clearly been a factor in this.

One welcome improvement has been a slow but noticeable increase in the grey partridge population. In October a covey of 16 were seen at Everleigh DZ and further coveys of 6-7 have been seen at other locations – a welcome sign.

It would appear that our little egrets stayed in the Avon Valley venturing as far north as the meadows above Upavon. The hard weather brought in golden plover, with the largest sighting being of a flock of about 200 near Netheravon Airfield. A number of flocks of buntings have been sighted feeding on stone curlew plots, including one of about 20 reed buntings near Upavon Airfield in March. Our first wheatear was seen at a regular spot just south of Upavon Airfield on 19 March.

We await the arrival of the migrants as the weather warms up.

Leslie Bond

Badger Sub-Group

There is little to report on for this edition. Thankfully, the mild and, at times, very wet winter would have meant that pregnant sows were well nourished and that their cubs which were born about 6 weeks ago have had a good start to life. If a high percentage of them survive to adulthood I think we shall be over-run.

Most of the setts on the East seem to be occupied, with plenty of digging and bedding collection taking place. The few that are not apparently occupied show recent signs of usage. I have also found a new sett located in the Devil's Ditch in Brigmerston Plantation.

Alan Telfer

Archaeology Sub-Group

Unfortunately our work plans have had to be put on hold for a while this year following the departure of Giles Woodhouse, who so enthusiastically took over the active side of the Group, to Iraq for five weeks in the summer and a further six month detachment later in the year. However, we hope to be able to undertake some non-technical work during the winter.

This year each conservation sub-group was asked by the Commandant to name its areas of key concern. Whilst many of the archaeological sites in our area are designated as Scheduled Ancient Monuments and are protected by law, others are not and can be very vulnerable

Reed Bunting standing on stem
Dr Chris Lewis

Reed Bunting with insects on beak
Dr Chris Lewis

Salisbury Plain: Aerial image of Sidbury Hill Iron Age Hillfort
Richard Osgood

to military training. Measures have been put in place by the DE archaeologist to ensure that any proposed ground disturbance or heavy vehicle movement is cleared through him. However, the more awareness that there is of fragile sites and the more safeguards there are in place the better. We named Sidbury Hil, the unprotected Figheldean Field Systems, the massive linears in the Perham Down Woods, a banked and ditched enclosure on Coombe Down about which nothing is known, and the possible Romano-British settlement near Chisenbury Barn, as mentioned in Sanctuary 35, as our key areas.

Sadly, Roy Canham, the Wiltshire County Archaeologist, retired at the end of October. Roy's backing, enthusiasm and professional guidance were vital in the early days of this group and we have been grateful for his continued support and assistance. His deep knowledge and affection for this prehistoric landscape has done more to preserve it than can ever be measured. From my personal point of view, our monitoring trips have been some of the happiest and fulfilling days I've ever enjoyed - always something new to learn and always a fresh way of looking at the landscape. We owe Roy more thanks than it is possible to put into words and wish him well for the future.

Nell Duffie

Botany Sub-Group

There is still no firm evidence of dormice occupancy in the boxes at Everleigh Woods. We continue to watch, but are rather discouraged as it is so long since we have seen anything significant.

We have continued the habitat improvement works at Figheldean Bridge throughout the winter and have now cleared a considerable area and let the light in to a long stretch of the ditches. We hope that this will encourage the growth of the tall wetland plants such as the reed sweet-grass which the Desmoulins' whorl snail favours, but there is some competition with nettles creeping in.

This year's winter walkers did not enjoy the fine crisp weather we have had in recent years. A very small band set out in pretty dismal conditions. However, the rain eased and every one of the walkers said they had enjoyed it. The brown hairstreak egg hunt was held, in much more favourable conditions, in the Sheep Bridge area. This meeting was well attended and we found 29 eggs. We are having another meeting in August to look for the butterflies.

Jenny Amor

Wiltshire

Imber Conservation Group, Salisbury Plain West

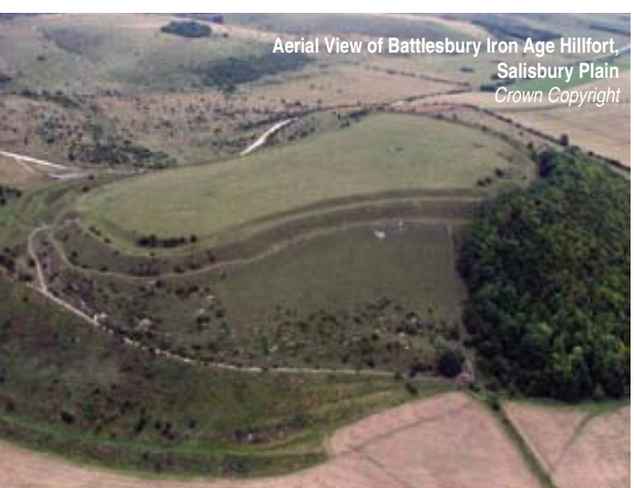
Over the last 18 months the Imber Conservation Group (ICG) has seen a number of changes in Sub-Group Leaders as some of our long running experts have decided the time was right to retire.

Archaeology

The Archaeology Sub Group has formed and developed over the last couple of years and we have a strong nucleus of enthusiasts. We are delighted to say that Roy Canham, formerly the County Archaeologist for Wiltshire, is now the sub-group leader. He has intimate knowledge of archaeology on the Plain and much experience of working with the military and DE. We are very fortunate to gain such expertise. Certainly there is no shortage of opportunity to develop our knowledge of this historic landscape and to assist DE with the monitoring and maintenance of archaeological features. Work has been undertaken to repair scars on Knook Castle and a great deal of scrub has been cleared from the earthworks on Battlesbury Hill Fort and the Oxendean Neolithic Longbarrow.

Badgers

Louise Adams has taken responsibility for the Badger Group. There is no shortage of opportunity to help DE with the surveying and monitoring of badger activity. Badger watch evenings have been organised very successfully.



Aerial View of Battlesbury Iron Age Hillfort, Salisbury Plain
Crown Copyright

Botany

Sharon Pilkington is the new sub-group leader and she hopes that 2006 marked a new beginning for the group. She will be exploring ways that we can all put our expertise and interest to good use in safeguarding and enhancing the wonderful vegetation communities that are present on the western part of SPTA. She will be talking to DE about possible ways of integrating their objectives with the activities of the botanical sub-group. Sharon is a full time botanist and acknowledged expert, so we count ourselves very fortunate here that we are able to benefit from her experience. The future looks good.

Entomology

Tony Davis has very recently taken over the reins of the Entomology Group. He is a national recorder for certain species of moth and works for Butterfly Conservation, so we can expect him to be a more than adequate replacement for Godfrey Smith. Godfrey retired at the end of 2006 after over 35 years of service to Salisbury Plain and the ICG. His extraordinary records and detailed knowledge can only be seen to be believed and he really deserves far more than the thanks we can give in these pages. Nevertheless, as one of the founding fathers of the ICG and a legendary expert in his field, we will miss his guidance and boundless enthusiasm. So Godfrey, please accept the thanks of the military, DE and members of the ICG for all your efforts over many years.

Ornithology

As if the resignation of Godfrey Smith was not enough, his brother Michael decided that the time was right for him to retire too! It just had to be something the Chairman said! Like his brother, Michael Smith has been involved for more years than he cares to remember out in the wilds of SPTA. His expertise and measured, yet authoritative, advice to the group and to DE has always been invaluable. Michael and Godfrey will no doubt be out there somewhere for many years to come, but we are unlikely to see the likes of the Smith brothers in terms of commitment and dedication to the ICG for many years, if ever. So to you too Michael, please accept the thanks of the military, DE and members of the ICG for all your efforts over many years.

To lose both Smith brothers posed a major problem for the Chairman, but to the rescue came yet another expert in Major Andrew Bray, currently the Secretary of the Army Ornithological Society. The Chairman could not believe his luck. Andrew has set about reviving interest amongst the many ornithologists in the ICG and they will be out in 2007 conducting the MOD Bird Count on the West for what I believe is the first time.

Owls and Raptors

I am relieved to report that Major Nigel Lewis and his team soldier on, having been the Runners-Up in the Sanctuary Awards 2005 for their many years of outstanding work with the Raptor & Owl Nestbox Group. What an outstanding contribution they make to the records, our understanding and to the breeding successes of the barn owl, in particular, on SPTA and in the surrounding valleys.

The last 3 years have been somewhat up and down reflecting the effects of weather and food supply. In 2004, breeding pairs were down, brood sizes averaged fewer than two and the future looked bleak. We wondered if Salisbury Plain was overstocked with birds and animals chasing voles, their common prey. Thankfully, 2005 put things right again. It was an exceptional season, especially for barn owls. The outstanding result was the average of 3.36 owlets per

nest site (the best average since 1999), which resulted in 252 owlets being ringed. This was the highest number ever ringed in one season. It made us re-think our previous comments on habitat management. In the past we have concentrated on the condition of the grass sward, as this provides the habitat for the much sought after food source, the short-tailed vole. Grazing has a major effect on this small ground mammal but the food chain is very complex. It now seems clear that the key lies in the weather pattern in the preceding year, particularly when pollination of the flowers is affected by late spring frosts.

So to 2006, and from the very peak of success to the worst year since Nigel Lewis started the nestbox project! The main reason was the crash of the short-tailed vole population. This happens every 3-4 years but, combined as it was with several weeks of freezing weather in late winter, the effect was catastrophic. Barn owls suffered the worst effects, but kestrels and tawny owls also suffered. Little owls were the least troubled showing that they are much less dependent on small ground mammals. With the frozen ground delaying the early spring grass, the voles that had survived were not able to breed, making the crash even deeper. Barn owls had to go into survival mode and became prey to buzzards as they were forced to hunt in daylight. One statistic clearly illustrates the situation we faced. In 2005, the team ringed 671 owlets (252 on SPTA) whereas in 2006 they ringed just 60, of which 36 were on SPTA.

Notwithstanding all the grim news, we can report that there were a minimum of 109 pairs (50 on SPTA) and these will form the bedrock population for 2007. Nigel Lewis hopes to provide more encouraging news next year.

Small Nest Boxes

Geordie Ward and his team have continued making, monitoring and maintaining hundreds of nest boxes in the Land Warfare Centre, Warminster and in the immediate area of SPTA(W) with the support of Aspire Defence. Over 40 boxes have been deployed around Tidworth Garrison and more are on the way. Larkhill Garrison will be similarly targeted with their conservation group taking on the monitoring and maintenance.

Small Ground Mammals Survey

In 2006, Terry Light had problems with trapping at Zealand Cross using the standard grid of 50 Longmeadow traps. The site did not have the height and density of ground cover usually associated with late May. Twelve of the traps had been disturbed and the pre-bait consumed. On the second inspection the majority of the 50 traps had been moved and pre-bait consumed. The trapping session had to be abandoned. Terry concluded that due to the late spring, low rainfall and firm soil surface, badgers were unable to meet their food intake of earth worms. Consequently they had to look elsewhere for food. He is liaising with the Botany Group to find an area where the badgers are less likely to interfere with his trapping survey in 2007.

Historical Study - The Evolving Landscape on SPTA.

Christopher Beese, a member of the ICG, is carrying out a project to record the history of farms, settlements and historical artifacts on Salisbury Plain. He has been carrying out this work for some time in the central and eastern areas and is now working on SPTA (W) with assistance from a number of members. He would be delighted to hear from anyone with suitable information.

Finally

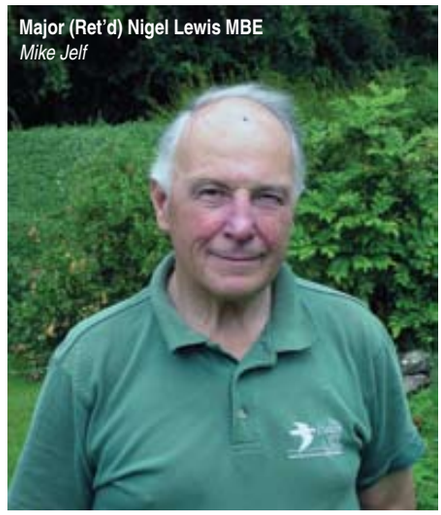
In 2007 we hope to establish a Bat Group on the West. We will also be moving our AGM to the Autumn, which we feel, will be a more suitable time. We will be conducting a major Field Day and BBQ for members and guests in June 2007.

Lieutenant Colonel (Retd) Mike Jelf and the Sub-Group Leaders

MAJOR (Retd) NIGEL LEWIS APPOINTED MBE

We would like to pass our congratulations to Major (Ret'd) Nigel Lewis, who received the MBE in Her Majesty's Birthday Honours List announced in June 2007. Regular readers of Sanctuary will, I am sure be delighted at this recognition for years of painstaking work on behalf of barn owls and raptors on and around Salisbury Plain Training Area (SPTA).

Although SPTA's herb-rich chalk grassland offers ideal habitat for raptors and abundant rodents, during the 1980s there were very few nest sites. With the countrywide conversion of barns to dwellings and the ravages of Dutch Elm disease, the barn owl in particular was seriously threatened. Nigel recognised that something had to be done and started a project, which



Major (Ret'd) Nigel Lewis MBE
Mike Jelf

is now in its 24th year, to provide suitable nest boxes on trees and in barns throughout the training area. After only a few years his project also encompassed sites in the Pewsey Vale and Wylye Valley bordering SPTA.

He has established, and continues to maintain, 300 nest sites on the Plain and 500 more across Wiltshire and neighbouring counties. His in-depth understanding of his subject has enabled him to design and perfect nest boxes that incorporate a system of deep passages providing maximum seclusion and safety. Working without any funding, these boxes have been made from tea chests, old ammunition boxes and anything suitable that he and his team can lay their hands on. Nigel has subsequently adapted the design to encourage tawny and little owls and kestrels. However, it is with the barn owl that he has achieved his greatest successes.

Nigel Lewis is now over 70 and has invaluable helpers in Alan Bush and Len Spackman without whom he would have been unable to achieve quite so much. The team works in all weathers visiting isolated locations to put up new boxes. They inspect and repair existing boxes and clean them out, which can be a rather unpleasant job. Every one of the 800 nest boxes must be re-inspected later to see whether they have been occupied. If so, the egg count is diligently recorded. They then make a timely return to ring and weigh the young.

The statistics speak for themselves. In 1987 Nigel identified just one barn owl pair raising 3 young. By 2003 he had ringed his 1,000th barn owl chick. In 2005 the number of nesting pairs had risen to 69, with 141 off the Plain.

Lieutenant Colonel (Retd) Mike Jelf

Wiltshire

Porton Down

The year at Porton Down has been a particularly successful one in terms of the Conservation Group's activities. I have outlined a few of the exploits below but, on a personal note, you will have to excuse me if my typing has made this article unreadable as I am currently suffering from arachnid-eye. For those of you that have not had the excitement of identifying spiders, this is the pay-off. Of course, spiders themselves, being furnished with six or eight eyes, do not consider identifying other spiders a problem. However, us poor humans, especially ones whose age is beginning to mean that tying shoelaces is a major physical, tactical and mental test, find that identifying the position of a particular, very fine, hair on the front leg of a spider that is only 1.5mm long a challenge. The real problem is, though, that it is so interesting you want the torture to continue. And it has.

One of the best things about Porton Down is the fact that a lot of it is shrouded in secrecy and there are strange things going on with even stranger people involved. But the Conservation Group isn't all bad! As a matter of fact we have had a very good year in which we can say that, due to the Group's endeavours, we are learning that some of the secrets and strange happenings are not so strange at all.

Take those spiders (please). During the past couple of months we have identified over 4,000 spiders from pitfall traps sited on the calcareous grassland of the SSSI. Sixty-nine different species have been found, some of them rarities. However, it was two of the most common species that seemed to be hiding something. Both are wolf spiders, known as *Pardosa monticola* and *Pardosa pullata*. They are always found in different pitfall traps, never together in the same ones. I conjectured about a reason for this. Maybe the Mafia clan 'Pardosa' had been involved in a major bug running deal that went wrong and the two sides of the family had fallen out. Then I thought that the fumes from the alcohol preserving them were becoming a little too effective and that I might be hallucinating. Either way, something strange was happening up on the range. Time for Inspector Corbett (or Sweeper of the Yard as he is known to his partner in crime) to investigate.

A female of the wolf spider genus carrying an egg sac
Iain Perkins

The positioning of the pitfall traps meant that some were situated in extremely short grazed grassland while others were in positions where dogwood had invaded the downland. Looking through the results it became clear that I should steer clear of alcohol. These clearly showed that *Pardosa monticola* inhabits short grazed grassland whereas *Pardosa pullata* prefers some scrub cover. The very definite boundaries of both vegetation and spider occurrence was surprising and led to further investigations.

Scrub is a very important component of the downland at Porton Down and we have spent six years doggedly bashing it towards extinction. We think we know the effects that this brings about regarding some wildlife. Species such as stone curlew and some butterflies benefit from its removal. On the other hand, some bird species lose nesting sites and other butterflies lose feeding or breeding habitat. We do not, however, have much of a clue about the effects on the smaller, ground dwelling invertebrates but now, thanks to the Pardosa family, we realise that we need to know more about what we are removing rather than continuing with scrub removal on an uninformed basis.

As a starting point, all the scrub on the site has been surveyed and my powers of deduction have, once again, been called upon. We have discovered that we have 22 hawthorn-dominant, 17 dogwood-dominant, 7 buckthorn-dominant and 3 blackthorn-dominant scrub types. When mapped using GIS there seemed to be a pattern in the way these scrub types were distributed. My keen mind knew that there would be a hidden secret to explain this mystery and the answer would lie in the writings of someone who had

Snout Moth *hypena proboscidalis*
Robert Thompson

Scrub Clearance
Crown Copyright

actually spent some time working as well as writing. In order to get to the bottom of the conundrum I spent many hours blowing the dust off old books.

Having eventually discovered that it was more useful to open the books, hey presto, there was the answer. It appears that the distribution of scrub types is closely related to the age of the grassland on which it grows. Blackthorn and buckthorn grow in the oldest grassland whereas hawthorn and dogwood grow in the youngest. Most of the soils at Porton Down are around 20-25 cms deep. However, there are small patches where it is 40-50 cms deep and it is here that stands of blackthorn grow. These deductions are beginning to provide us with a profile of what scrub looks like, and where it lives. We are now in a better position to begin to look more closely at its associates. This will take some time but when we have completed this work we will be able to pass sentence on areas of scrub with more certainty.

Looking through my notebook I see that Conservation Group members have been involved in a number of assaults during the year.

Firstly, a major assault took place on the farmland at Porton Down where, during a particularly heated period, a number of Group members were seen to be stalking. When enquiries were made they stated that they were following butterflies. A likely story, m'lud!!! One of them even had the audacity to say that a report was to be written about it in some magazine or other. The things some people read!!!

Another particularly strange lot seemed to carry out their practices in the dead of night. When questioned the leader of the gang said that they were trapping. My ears pricked up at this. Poachers on the estate, huh? "No", he squealed, "We was trapping mofs". I've never heard the like. As if anyone would be catching 120 different species of moth, including a BAP species. I have since heard from a snout called *Hypena proboscidalis* (strange names some of them) that they are planning to repeat their activities this coming year and are planning to visit the whole of Porton Down over time to get a better idea of the BAP species present. Why anyone would have a fetish about bread rolls I have yet to fathom but in this job nothing surprises you.

The final assault took place in broad daylight. We had received reports that Group members had been spotted, would you believe, dressed so that they could not easily be seen and donning pairs of binoculars. On being apprehended skulking along a field margin, obviously not wanting to be seen, one miscreant admitted that he was looking for birds. Not only that but he was interested in finding out what they were eating this winter. I thought I had heard it all but what titillation is there in knowing what they eat at particular times of the year? He said that they hoped to be able to improve their food supply on farmland during the winter period. I told him to move along, sonny boy, I've met your type before. I know for a fact that birds don't have picnics in field margins in the winter and Tesco does home deliveries now anyway. The plan to deliver food to them is a non-starter as a business proposition. Your sort is not required these days.

Well, I hope my report has increased your certainty that the conservation of Porton Down is in safe hands for another year and that the work of the Conservation Group is being fully scrutinised by someone who cares. It's just as well I'm here otherwise things could really suffer.

Evenin' all

Stuart Corbett, Dstl

East Yorkshire

Leconfield Carrs Conservation Group

On the night of 11th May Jon Traill, our Committee member from Yorkshire Wildlife Trust, and I surveyed several of the ponds on the site for great crested newts. Suitably armed with Dragon searchlights, loaned to us from the Technical Stores, we confirmed their presence in two new areas. Jon also identified Daubenton's bats, which were seen skimming the surface of the lakes, and were picked out very clearly by the powerful spotlights. We also confirmed our suspicions that there were still huge numbers of rudd in Little Carr. Although we didn't see any great crested newts here, we did spot a number of smooth newts.

On 14th June we had a pond clearing day. Mick Bassett, Allan Maskell, Pete Crowhurst and myself, ably assisted by willing volunteer Jenny Long (then TA, but has since joined the regulars as an officer), removed large quantities of reed mace by hand from two badly overgrown ponds. The ponds were surrounded by a blaze of colour, from a large expanse of bird's-foot trefoil and vetch, along with small groups of early purple orchids.

Later in June Howard Frost, the butterfly recorder for East Yorkshire, visited this same site with me and confirmed the presence of both small and large skipper, and common blues in some numbers. He also added speckled wood to our list, whilst examining the oak woodland for purple hairsteak.

On 13th July, Dr David Chesmore visited, to check both the orchards and the bird's-foot trefoil area, for clearwing moths. The clearwings are notoriously difficult to spot, so he came armed with synthetic pheromones for two species that he hoped to find. Whilst we were unsuccessful around the orchards, we were delighted when several 6-belted clearwing moths homed in on the pheromones. This made us jointly the furthest north that this species has ever been recorded, along with a quarry at Kiplingcotes.

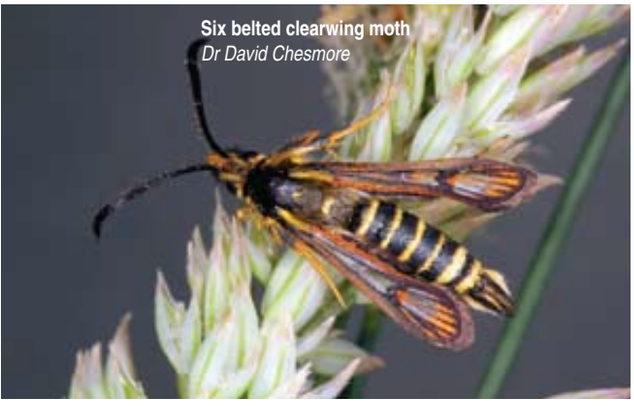
In early September we were visited by Pete Turner and Dave Smallwood from the Environment Agency (EA), who carried out the electrofishing of all the lakes on site to test the condition of the fish. They successfully caught lots of rudd from two of the lakes, including a golden rudd. Whilst swapping over the DVD disc on my Camcorder, I was amazed when a 6-belted clearwing moth crawled onto my hand. Dr David Chesmore confirmed that this was not only very late in the season, but that it was also rare to see this species without pheromone use. On 20th September our EA colleagues came back to electrofish Little Carr, and confirmed the huge numbers of rudd seen earlier in the year.

23rd September was National Moth Night, but with our expert Dr David Chesmore double booked at York Cemetery, we had to resort to a high tech solution to solve our identification problem. As reported in Conservation Update we sent photos of moths taken at Leconfield, to David in York, via our MMS camera phones. He then identified them, and sent a text back with the details. This proved highly successful. We recorded 16 species including large wainscot, which was new to the site.

5th November was the date for the Fungal Foray on site. This was headed by Mervyn Nethercoat, from the East Riding Fungal Group. Waxcaps featured amongst the species discovered.

In late November Allan Maskell, and Peter Crowhurst worked solidly over a week to pump out most of the water from Little Carr. On 27th and 28th November, Pete Turner (EA) returned with several colleagues, to remove as many of the rudd as possible to help sustain the great-crested newt population. This exercise featured in both national and local press. Whilst emptying the lake, Mick Bassett discovered a water stick insect. This is the furthest north that this species has been recorded.

Alan Bakewell, Leconfield Conservation Officer



Six belted clearwing moth
Dr David Chesmore

Early Purple Orchid
Alan Bakewell

North Yorkshire

Catterick and Feldom

Catterick has seen more changes in personalities in the past year than it has seen in the past decade. Lt Col Julian Crowe is now firmly in command, but two of the conservation stalwarts who have contributed to these pages over many years have recently retired. Majors Tim Helps (Range Officer) and David Oldham (Commandant) have handed over the reins to Majors Martyn Fox and Mark Flecchia respectively. Although the pair will remain members of the Conservation Group, their collective day-to-day knowledge of lepidoptera and ornithology et al will be sorely missed. Tim had been at Catterick for almost 12 years and his forays in search of green hairstreaks and emperor moths have been well documented. David, who completed around 14 years at Wathgill, has been instrumental in keeping the area firmly on the ornithological map and has spent many hours recording individual species and monitoring nest boxes. Between them they planned and executed several conservation projects, and, as a team, have formed the backbone of much of the environmental activity which has kept Catterick in the premier conservation league for a generation. Few will appreciate the personal contribution and commitment they have made to the Catterick Training Area over such a long period. We very much look forward to their continued support and involvement and thank them for their dedication.

Maj Mark Flecchia, the new Commandant, has a wide interest in rural pursuits. He has been a member of the Catterick Conservation Group for six years and as a Defence Deer Manager has a comprehensive knowledge of the training area, its species and habitats. Martyn Fox joins us from Otterburn and is, therefore, entirely au fait with the Black Grouse Recovery Programme and other familiar cries.

Notwithstanding the changes in personalities the programme of conservation activity has continued apace. Further progress has been made on developing the habitat corridor for black grouse between the Barningham stronghold and our own fragmented population. Badger Plantation at Feldom has been felled and replanted in the hope of extending the preferred woodland compartments. To the north of Bellerby Moor another 150 juniper trees were planted in what has become known as Juniper Gill. This area has the potential to look spectacular in the future as this locally scarce shrub forms a stronghold on the edge of the range area.

Several pine marten boxes have been distributed in the local woodlands where our Estate Surveyors swear to have seen these scarce mustelids. Most members of the

Artificial Pine Marten Nest Box
Jez Kalkowski

Roe Doe
Jez Kalkowski

Black Grouse
Jez Kalkowski

Historic hedgerow restoration on Feldom Ranges
Jez Kalkowski

Conservation Group feel the sightings have been the product of a free lunch in the Bolton Arms, but wait with excitement to be proven wrong.

The training area continues to benefit from the reconstruction of the dry stone walls and replanting of previously lost hedge lines which are once again becoming features of the moorland landscape. Another 600m were planted in year, and double-fenced to withstand the attentions of our resident Swaledales. The programme of hedging has also proved popular as a training feature.

Archaeological excavations have taken place at Sturdy Springs and Castle Steads providing positive proof of bronze age habitation and adding to the already colourful pattern of artefacts and remains dotted around Feldom Moor.

Considerable restoration work has taken place at Fishponds Lake where a succession of gales had uplifted trees and thrown them into the water. The Headquarters is currently negotiating an agreement with Richmond School and Askham Bryan College (part of the University of York) whereby students from their Land Management Course might adopt the area as a project and develop it for conservation and wildlife generally in the future.

Finally, as a leading partner in the local Biodiversity Action Plan, staff are currently working with the council and several other agencies to create an extravaganza in June at Foxglove Covert. This will involve all the local countryside agencies and cover practices from horse logging to owl pellet dissection. It promises to be a major milestone in the local calendar, which we hope to report on in the next edition.

Graham Newcombe, Senior Estate Surveyor DTE North

Tony Crease, Deputy Commander ATE North and Secretary of the Catterick Training Area Conservation Group

North Yorkshire

Ripon/Strensall/Driffield

Much has been achieved during the year and the conservationists have been busy with a number of projects. The increased otter sightings on the River Ure encouraged the Ripon group to build an otter holt. With assistance from DE and the Landmarc Rural Team, a highly desirable residence was constructed. Sylvia Jay, our local Yorkshire Wildlife Trust expert, has been asked to visit and advise on the usage. The holt has become host to something - but exactly what has yet to be confirmed!

Colin Slator, a member of the group and ranger for Harrogate Borough Council, conducted a survey of ancient trees on Ripon Parks training area, with accomplices from the High Batts Nature Reserve next door. The results were extremely encouraging and all trees were numbered and their positions noted. This has proved to be a very worthwhile exercise which will inform much of the future habitat work on the training area.

Messrs Fletcher, Worwood and Jill Warwick of the moth group have continued their activities with further visits to Ellington and Laver Banks. During July/August, 351 species were processed, 45 of which were new to the area. Highlights were scallop shell *Rheumaptera undulata* and *Dioryctria sylvestrella*, both of which are particularly scarce in North Yorkshire. At Laver Banks, where no trapping had taken place previously, 202 species were recorded in a single night. The European corn borer *Ostrinia nubilalis* was recorded and impressive numbers of dusky thorn *Ennomos fuscantaria*, the latter in major decline throughout the UK.

Bird ringing continued both as part of the Catterick Ringing Course and independently. Four green woodpeckers caught in a single day in July was especially rewarding.

Control of the succession on the precious magnesian limestone at Ellington Banks continued throughout the year. Hebridian sheep were introduced to browse the encroaching scrub and maintain the sward for bee orchids *Ophrys apifera* and dingy skipper butterflies, both of which are flourishing but only as a direct result of conservation group intervention.

At Strensall, the barn owls failed to raise young despite now having their own purpose - built compartment in one of the troop shelters. The birds were present throughout the year, but the shortage of voles reflected the situation in other parts of the country. A report on the dissection of owl pellets, compiled by Derek Capes, confirmed that the field vole population had declined and that there were no harvest mice, house mice or water shrew remains in the pellets at all. This is a very different story from the analysis carried out in previous years.

Adder reports on the Common were more routine than ever and indicate a healthy abundance of these attractive reptiles on the training area.

The debate on the most appropriate management for Kidney Pond continued. Differing schools of thought advocate leaving nature to her own devices or re-introducing the limited clearance works that were carried out a couple of decades ago. After long discussions with the experts it appears that a way forward has been found whereby some clearance work will be permitted. This will allow a balance between the invertebrate and botanical communities to be maintained.

Sticking with wetlands the recently flooded water meadow near the range control buildings has been very successful with both garganey *Anas querquedula* and grebes *Podicipedidae* being observed in the first summer.

Finally, at Driffield ground breaking conservation work has begun with the warden, Daz Rasen, acting as the catalyst. With the support of the Commandant, Major Paddy Ennis, a wetland gravel area has been fenced off in the centre of the site, which will compliment the wealth of sky larks, stonechats and meadow pipits already breeding. We are all eagerly awaiting our first little ringed plovers! A barn owl nest box has already successfully attracted a pair and we will be closely monitoring the outcome of the approaching breeding season.

Conservation is alive and well on all these sites. We look forward to having exciting news to divulge in the next edition! Thanks go to all members of the Conservation Group, Defence Estate staff and the Natural England team in York.

Maj (Retd) P Ennis, Commandant Ripon Training Area/Strensall Training Area/ Driffield Training Area

Tony Crease, Deputy Commander ATE North and Secretary of the Catterick Training Area Conservation Group

Habitat improvements complimenting military training at Driffield

Wetland Creation as part of the 'Restoring the Heaths of STA Ranges'

DEFENCE ESTATES CONTACTS

DEFENCE ESTATES
Delivering Estate Solutions to Defence Needs

ESTATE STRATEGY & POLICY DIRECTORATE
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.

Estate Strategy & Policy Directorate
Kingston Road
Sutton Coldfield B75 7RL
West Midlands
Tel: 0121 311 2090

Land & Property Policy (land management, including agriculture and forestry, public access, byelaws, and Town & Country Planning)
Sutton Coldfield
Tel: 0121 311 2127

Environmental Policy (energy policy & land quality)
Sutton Coldfield
Tel: 0121 311 2018

Sustainability Policy
(nature conservation, historic environment, environmental assessment processes)
Room 14
K Block
MOD Foxhill
Bath BA1 5AB
Tel: 01225 883523
Email: espsustainability@de.mod.uk

ENVIRONMENTAL SUPPORT TEAM
The Defence Estates Environmental Support Team provides advice to the Services and Ministry of Defence Agencies on the delivery of a wide range of land-based environmental issues.

DE Environmental Support Team
Building 21, Westdown Camp
Tilshead, Salisbury SP3 4RS
01980 674704
Email (Head of EST):
bob.morris@de.mod.uk

EST Conservation Group & Environmental PR Office
Building 21, Westdown Camp
Tilshead, Salisbury SP3 4RS
Tel: 01980 674778
Email: guy.hagg@de.mod.uk

EST Natural Environment Team
Westdown Camp
Tel: 01980 674768

EST Historic Environment Team
Westdown Camp
Tel: 01980 674778

EST Estate Information Team
Westdown Camp
Tel: 01980 674769

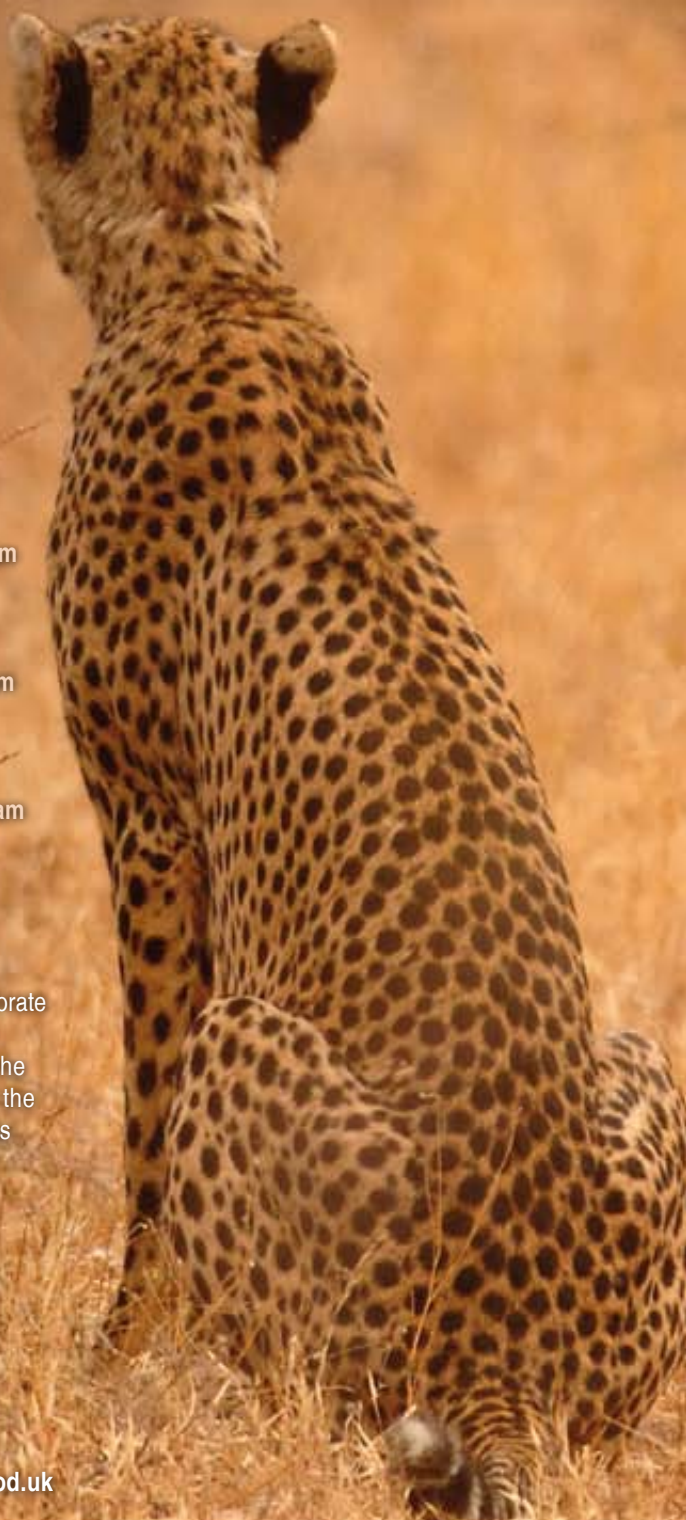
EST Sustainability Advisory Team
Westdown Camp
Tel: 01980 674675

EST Access and Recreation Team
Warminster
Tel: 01985 222913

EST Environmental Planning Team
Warminster
Tel: 01985 222909

DEFENCE TRAINING ESTATE DIRECTORATE
The Defence Training Estate Directorate is responsible for the provision of safe and sustainable facilities for the delivery of military training across the United Kingdom. This now includes most of the ranges and training areas formerly managed by the Royal Air Force and Royal Navy.

Headquarters Defence Training Estate
Defence Estates,
Land Warfare Centre
Warminster BA12 0DJ
Tel: 01985 222839
Email: mike.gardner367@land.mod.uk



Male cheetah, Buffalo Springs Game Reserve near Archers Post, Kenya *Andrew Linnett*

MINISTRY OF DEFENCE