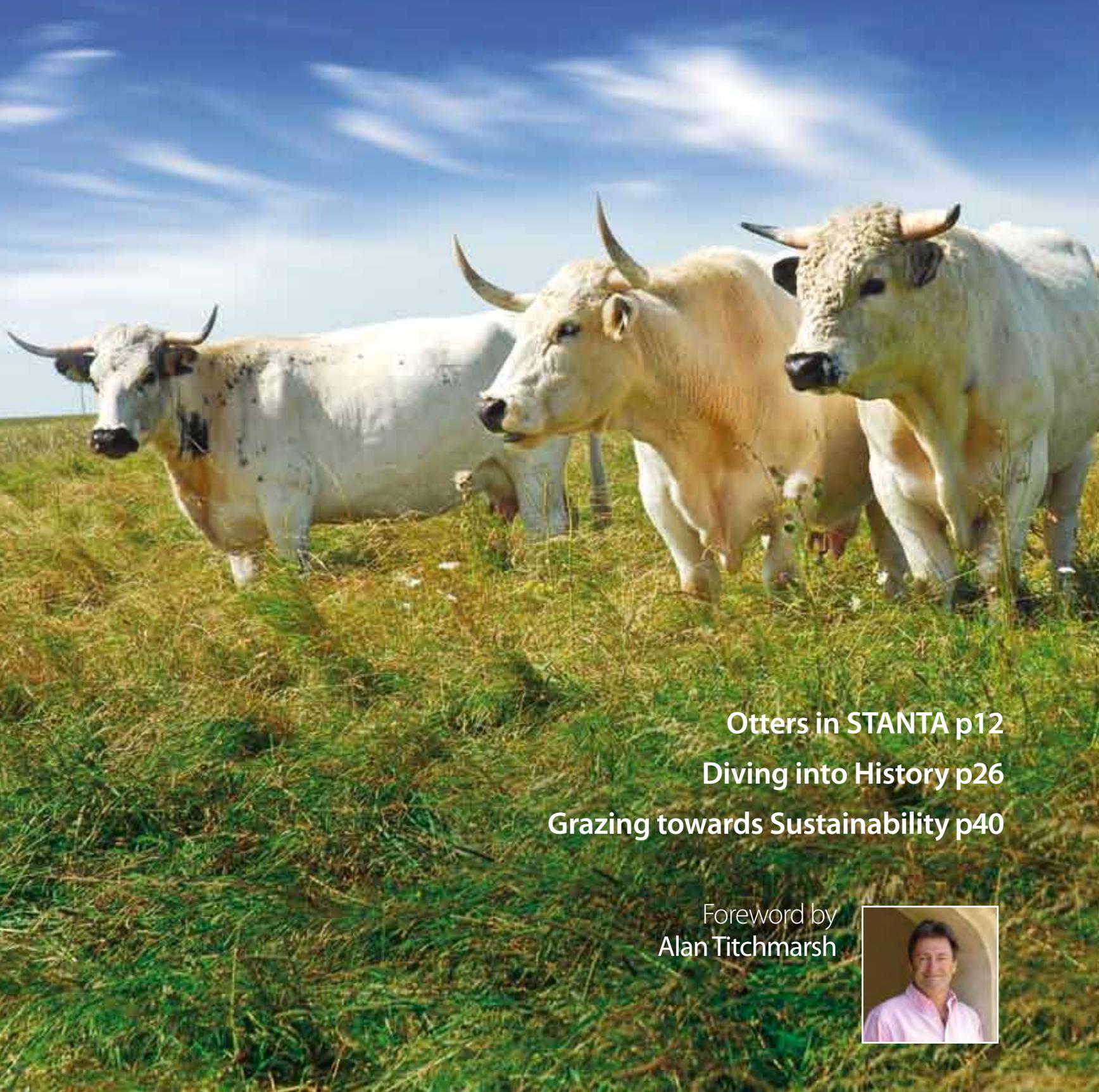


SANCTUARY

THE MINISTRY OF DEFENCE CONSERVATION MAGAZINE

Number 38 • 2009



Otters in STANTA p12

Diving into History p26

Grazing towards Sustainability p40

Foreword by
Alan Titchmarsh



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THE MINISTRY OF DEFENCE CONSERVATION MAGAZINE
Number 38 • 2009

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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.



Silver-studded blue butterfly © Iain Perkins

Submissions: If you would like to contribute to Sanctuary Magazine or enter future Sanctuary Awards please contact **Rebekah Jones, Editor at: DE-Sanctuary@de.mod.uk.**

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For all our worries about their welfare, plants and animals are great opportunists – give them half a chance to survive and they will cling to life tenaciously. But it still seems strangely perverse that land which is set aside to allow a country to train its Armed Forces, regarded by some as an inherently destructive exercise, should prove to be a sanctuary for all forms of wildlife.

I have seen at first hand the qualities of professionalism and dedication that this country has come to rely on from its Armed Forces. I have also seen at first hand, while making *The Nature of Britain* series for the BBC, the caterpillars of the rare marsh fritillary butterfly feeding on devil's bit scabious on the MOD ranges on Salisbury Plain. It is a plant that can only grow there thanks to the tank tracks ripping up the greensward and allowing the plant to seed itself on the clean soil – a perfect example of nature taking advantage of human, in this case Army activity.

Sanctuary magazine shows how seriously the MOD takes its responsibility for managing land and supporting wildlife as well as supporting our Armed Forces – the two need not be mutually exclusive. What's more, wherever possible public access is allowed so that these wildlife-rich areas can be enjoyed by us all. And where they are closed? Well, just think of the benefits to butterflies and birds, insects and mammals!

This is not just a case of the MOD paying lip service to conservation aims. It has an impressive record when it comes to managing Sites of Special Scientific Interest, and has become a partner in the Million Ponds project – a cause close to my heart in which we are endeavouring to increase the numbers of clean ponds in this country (sadly depleted in recent years) to offer greater opportunities for wildlife and spiritual benefit to us all. Something sadly overlooked in today's material world.

The MOD estate shows just how effective land management can result in the right balance between supporting our Armed Forces and creating a valuable habitat for wildlife. Their thoughtful stewardship makes our country a safer place to live. And I speak for the wildlife, as well as the human population.



ALAN TITCHMARSH



CONTENTS

Foreword	1	INTERNATIONAL	
The Sanctuary Awards	3	Right Kit, Right Place, Right Time – Shark Tagging in the Eastern Pacific	58
UPDATE		Operation Heritage	61
Access and recreation on the defence estate	8	Akrotiri Environmental Education and Information Centre – Sovereign Base Areas of Cyprus	62
Down to the Wire – Porton Down	10	Cyprus – Conservation Group Update	64
FEATURES		AROUND THE REGIONS	
Otters secure a stronghold in STANTA	12	Spotlight on... Sandhurst Conservation Group	67
A Range of Habitats, a Wealth of Invertebrates – Castlemartin Range	16	Angus and Dundee – Barry Buddon Training Centre	69
Ringling in the Century	20	Cambridgeshire – RAF Wittering	70
The Best of Both Worlds – A Sustainable Approach to Military Training	24	Cornwall – Penhale Camp	71
Diving Into History	26	Dumfries and Galloway – West Freugh Conservation Group	73
Echoes of D-Day – Traces of the Normandy Campaign on Salisbury Plain	29	Hampshire – Defence Storage Distribution Agency Gosport	74
Bovington – The Spiritual Home of the Tank	32	Isle of Wight – Newton Ranges and Jersey Camp	75
‘Streamlining away in the vagaries of the wind’ – Braunton Burrows	34	Kent – Canterbury Old Park Training Area	77
“I’m not eating that, it’s disgusting” – Community Outreach on Salisbury Plain	37	Kent and East Sussex – Cinque Ports Training Area	79
The Flourishing Management Group and Wildlife of Penhale Sands	38	Kent – Defence Fire Training & Development Centre, Manston	81
Grazing towards Sustainability	40	Norfolk – Stanford Training Area	82
Water – a valuable commodity	43	Northamptonshire – Yardley Chase	84
Shining a light underground – Investigating the military use of the quarry tunnels at Corsham	44	Surrey – Royal Military Academy Sandhurst	85
A range of military fungi	47	Wiltshire – Boscombe Down	86
Operational Capability and Conservation – The Scottish Highlands	48	Wiltshire – Imber Conservation Group	87
Archaeology on the Edge – Cape Wrath	50	Wiltshire – Porton Down	89
The Last Wilderness – Pirbright Range Danger Area	52	East Yorkshire – Defence School of Transport Leconfield Carrs	91
Recycling Champions – Army London District	55	North Yorkshire – Catterick	92
Terrier Training – Bovington	56	Contacts	Inside back cover

THE SANCTUARY AWARDS

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.

The 2009 Awards were divided into four categories: Environmental, Heritage and Sustainability Projects and Individual Achievement. The winners of each category are considered for the overall winner and receive the coveted Silver Otter for one year.

THE SANCTUARY AWARD BOARD

The Sanctuary Award Board for 2009 were:

for Defence Estates: Martin Coulson, Property Directorate; Ennid Canniford, Environmental Advisory Service; Ted Cundall, Property Directorate and Pippa Morrison, Property Directorate. We would like to pass on our thanks to Marcus Yeo, Managing Director, Joint Nature Conservation Committee, for acting as an external judge.

SILVER OTTER AND ENVIRONMENTAL PROJECT WINNER



The first day of construction with the MOD Police, local community and the British Trust for Conservation Volunteers © John Simpson

The Peaton Hill Community Nature Reserve Project are winners of the Silver Otter and the Environmental Project Award.

This project, based on land at the margin of the military estate, between HM Naval Base Clyde and the Royal Naval Armament Depot, Coulport, was initiated in 2004 when MOD hosted a Biodiversity Day at the site. The Garelochhead and Clyde Conservation Group, local MOD staff and external agencies aimed to deliver a sustainable benefit for local people and the environment across

a wide spectrum including biodiversity, community use, natural history, access and recreation, education and wildlife crime prevention training.

Their aspirations have been realised through careful assessment, judicious use of resources, donated items and the time given by numerous volunteers. The reserve now has a car park, a picnic site, an educational zone, boardwalks for pond dipping, nest boxes designed for owls and kestrels and new access paths that encourage the

public to come to the site from the nearby Peninsula Path (part of the Scottish Core Paths network). There are aspirations to do even more with the continued help of Scottish Natural Heritage in particular.

The Board considered that the project was an outstanding example of collaboration between MOD, the conservation group and external bodies and it was very worthy of the Environmental Project Award and the Silver Otter for 2009.

ENVIRONMENTAL PROJECT

RUNNER UP

The project undertaken by the QinetiQ Hebrides Engineering and Transport Team to remove a redundant water storage tank, an eyesore and potential source of contamination, from the Site of Special Scientific Interest (SSSI) on the MOD Hebrides Range was well thought through and carefully executed. Work involved consultation with Scottish Natural Heritage and the local graziers, and then extreme care to minimise impacts of the removal operation and the infill of the resulting void. The outcome is a significant improvement to the protected site and the landscape of the SSSI. It also demonstrated that with local support and professional guidance, a small team in a remote site can have a vision and deliver improvements with minimum additional resources.



Tank removal before



Tank removal during



Tank removal after. All photographs © Qinetiq Ltd

HIGHLY COMMENDED

Carillion Enterprise Ltd for the environmental monitoring of an extensive area of mature heath at Cawdor Barracks. The project is an example of how environmental enthusiasts can make a difference at a site that at first appears to have little to commend it. With the help of Cpl Adam Gwennap, Rhodri Kemp of Carillion Enterprise Ltd enticed a group of external advisers to give their advice on the condition of the natural environment, including the Pembrokeshire Coast National Park Authority who provided a small grant that enabled detailed monitoring of birds and bats to take place. The all-essential baseline is now in place for Defence Estates to work with the Commanding Officer and Carillion Enterprise Ltd and prepare a conservation management plan.



Cawdor Barracks Heathland © Rhodri Kemp

HERITAGE PROJECT AWARD



WINNER

A worthy winner of the Heritage Project Award is RAF Scampton and Babcock DynCorp Ltd who carried out the restoration of Hangar No. 1 at RAF Scampton.

Four identical C Type hangars were constructed in the 1930s as part of the RAF's inter-war expansion programme. The airfield was home of 617 Squadron (the 'Dambusters') in World War Two, played a key role during the Cold War as the base for the V Bomber force and is currently the home of the Red Arrows display team. This historic significance was recognised by English Heritage and the hangars were listed Grade II in 2005. However, the hangars were in poor condition. In particular the doors had corroded, the roofs required attention, the walls needed re-painting and the windows needed refurbishment. The work to bring back Hangar No.1 to virtually its original state was undertaken by Babcock DynCorp Ltd with English Heritage advice. The results are excellent. The hangar has been given a new lease of life and now provides the RAF with a great working environment with a link to the ethos of the RAF of the past. All those involved with this work are to be congratulated. The lessons learned will be invaluable as restoration work proceeds on the other three hangars.

The team in front of the restored Hangar. (From L-R): Phil Hill, Andy Goodhew, Michelle Townsend, Keith Beedie, Stuart Nixon, Keith Robinson, Colin Taylor © Gordy Elias

RUNNER UP

HM Naval Base Portsmouth Estates Team for conservation work to the Block Mills, a Grade I Listed Building and a Scheduled Ancient Monument built to house the world's first steam-powered mass production factory. In 2006, MOD and English Heritage drew up a plan to renovate the building to ensure that it was preserved and fit for future use. The conservation works included the removal and replacement of a modern metal framed roof and walling constructed to replace World War Two bomb damage. The project team have done a magnificent job and have gone beyond their remit, including preparing a long-term Conservation Management Plan adopted by the Naval Base. The building has been removed from English Heritage's Buildings at Risk Register and will initially be used to store rigging and items from HMS Victory. It will be open to view on guided visits.



Block Mills © MOD Crown

HIGHLY COMMENDED

HMS Victory for their Educational and Access Programme in 2008. The Commanding Officer and other partners worked with the crew of HMS Victory to deliver changes in the physical structure of the ship and enhance the educational outcomes for visitors. A difficult decision was taken to move away from the focus on the death of Vice Admiral Lord Nelson during the battle of Trafalgar to the wider context of life (and death) in the Royal Navy of the period. This has been achieved sympathetically, with a new memorial and roll of honour to both Lord Nelson and to all those who died in battle on board HMS Victory. The Board also recognises the excellent work done to improve disabled access and provide electronic educational support including new web-based material and a 'virtual tour' DVD.



HMS Victory Memorial © MOD Crown

SUSTAINABILITY PROJECT

WINNER

The Sustainability Project Award is awarded to the Defence Training Estate South East and Landmarc Support Services. The Board was impressed at the way the team had researched and delivered a replacement heating system for some 32 small accommodation blocks at Crowborough Training Camp. The new heating system will deliver 60% carbon emissions reductions and significant cost savings over time. The team investigated a number of approaches and trialled the use of a ground source heat pump that used a vertical bore hole as the underground heat source. This is relatively new technology in the UK and innovative as far as defence use is concerned. The trial proved the principle and the team made a successful case for funding based on the life-cycle costs. The outcome has exceeded expectations and the system has now been taken up at other similar sites where heating a cluster of small buildings has proven to be problematic. The team are congratulated on an excellent and innovative project that has delivered real benefits.



Drilling rig for ground coil, Crowborough Camp © Kevin Hoare



Misty Morning at Crowborough Camp © Bob Kennedy

HIGHLY COMMENDED

Bath and Bristol Total Facilities Management (BBTFM) team for waste management and recycling. The BBTFM contract partners made considerable efforts to reduce waste and promote recycling and the results have been impressive, equating to a reduction of 554 tonnes of CO₂ in the first year. The dedication of the team and individuals is also impressive. They trialled new technical approaches and introduced a strong initiative in education and awareness making it much easier for site occupants to understand why and how to participate in recycling, which should help to sustain this initiative for the future.



The team (from L-R): Peter Cousins, Andy Rowe, Mike Beavis, Roger Parfitt, Keith Gosling, Amie Coppin, David Stephens, Peter Fletcher, David Shearer © Debut

HIGHLY COMMENDED

Debut Services (Regional Prime Contract South West) for the establishment of Debut and Defence Estates community days. This initiative was a commendable contribution to the wider MOD sustainable development social agenda. A total of 1,368 people-days of effort were recorded by staff across the South West and the projects designed to produce community benefit, ranged from refurbishing the garden area of a hospice to making bird boxes with the help of school children. Impressively, each project was self sufficient and each team committed themselves to completing their work, including team members raising additional funds through efforts such as raffles and even a sponsored head shave.



Installing bird boxes © Debut

INDIVIDUAL ACHIEVEMENT AWARD

WINNER

The Board are extremely pleased to grant the Individual Achievement Award to John and Mary Breeds for an outstanding 30 years of involvement with conservation and public access on the Defence Training Estate at Braunton Burrows, part of one of only nine UNESCO Biosphere Reserves in the UK.

John was originally employed by the Nature Conservancy Council in 1979 and after working for them for 19 years transferred to become the MOD Training Area Warden in 1998 for a further eight years. Before retirement in March 2009, John was also the Education Warden for three years, a post jointly funded by MOD and Natural England. John has been a tireless worker for the magnificent natural environment of the Burrows. As warden he

developed and helped to deliver a land management regime that has ensured effective defence training has continued, despite the constraints of operating in a protected site. The challenges of habitat change, myxomatosis (which removed the rabbits that grazed the vegetation) and water table changes (which threatened vegetation in the dune slacks) have been tackled with energy, innovation and to great effect. This work has enabled 477 species of flowering plant to thrive, the recording of 34 butterfly and 17 dragonfly species, and 5 of the 6 English reptile species live here. Mary, a trained teacher and a pioneer of green tourism, has delivered environmental education through the Braunton Countryside Centre and a programme of guided wildlife walks. Mary with John led some 100 groups each year on both day and night walks. They involved visitors of all ages in activities ranging from moth trapping to newt counts. We hope that the couple will remain involved with Braunton and the Biosphere. On behalf of the MOD and all those who have benefited from their energy and enthusiasm, we wish to thank them for 30 years of dedication.

RUNNER UP

Jeff Davies is the Regional Operations Director for OCS Horticulture, the MOD's grounds maintenance partner for the northern area of the Regional Prime Contract East. Jeff is responsible for nine major sites, including RAF Cranwell and RAF Waddington, and his work has gone well beyond the formal contractual obligations. He has spent his own time, and directed his team's time, to enhance the natural environment in a number of innovative ways.

Amongst many initiatives, Jeff took 'ownership' of the parcel of SSSI land at RAF Wittering, liaising with the Station Authorities and Natural England, to create a management plan that has taken the SSSI to 'favourable status'. He started a wildflower meadow regime at the former St George's Airfield which should enhance biodiversity and he is now engaged in improving hedgerow management at Chetwynd Barracks, Nottingham. Jeff's passion for wildlife, his determination and his enthusiasm for passing on his knowledge and skills so that others can partake in and enjoy the environment fully deserves MOD's recognition and thanks.



John and Mary Breeds © John Breeds



Jeff Davies at Wittering Heath © Louise Davies, OCS Horticulture

Access and recreation on the defence estate

Our policy states that we maintain a presumption in favour of public access to the defence estate when this is compatible with military use. The challenge is to achieve the right balance between defence requirements, public safety and recreational interests, yet at the same time take fair account of other land management issues such as agriculture, forestry, nature conservation and heritage protection. No mean feat! In this update Richard Brooks, Head of Access and Recreation for Defence Estates, looks at some of the aspects of our work over the past year.

Emerging Legislation – Coastal Access (England and Wales)

2008 was an important year for bodies engaged with public access in England and Wales because the draft legislation that will improve public access to the coast was finally released. The Marine and Coastal Access Bill is still being debated in the House of Lords, but we have a good idea about how the proposals are designed to work in England. We have been engaged with colleagues in Defra and Natural England from the outset as they investigated options for new legislation for England. The draft Bill reflected the access arrangements for military land established in the Countryside and Rights of Way Act 2000. As this approach worked well and seems to be the best (and relatively low risk) solution it was incorporated in the Bill.

The Welsh Assembly Government (WAG) and Countryside Council for Wales (CCW) have a Coastal Access Stakeholders Group that we also attend. This group is a key forum for dealing with the practicalities of improving access to the Welsh coast. The Marine and Coastal Access Bill includes 'framework powers' through which the WAG Ministers will have legislative competence for coastal access if they decide to proceed with legislation.



Public access at Lulworth © Andrew Linnett

Coastal Access Project (CAP)

In light of the above discussions and to ensure that we are fully aware of the implications and opportunities for improving access to the coast on the estate, Defence Estates is undertaking a Coastal Access Project to review access provision at all of our coastal sites. Working closely with the MOD Byelaw Review Team, whose study is still under way, we will consider both existing access and new opportunities for improving access. Details of the Byelaw Review can be found at: www.mod.uk/defenceestates

The access legislation will define a route and a 'coastal access corridor' along the English coast. Stage one of the CAP was a desk top mapping exercise to identify all of our properties on or near the coast. This process identified 150 properties within 1km of the coast. A further more detailed review was undertaken to see if the defence use would form a block or break in a possible coastal access route, or if the introduction of new legislation would have an impact on the defence use of these sites.

Some sites were 'no problem' – there were Army Careers Offices and Cadet Huts within the 1km zone and it was obvious that the proposed legislation would not affect them. However, some 50 sites were identified that could be potentially influenced by changes to coastal access. These sites are now the focus of the major part of the study to identify how the sites are likely to be affected and identify if there are opportunities to improve access that deliver the spirit of the emerging legislation or public demand. It is estimated that these properties represent approximately 2% of the English and Welsh coastlines.

We are aware that many of the sites already have existing access arrangements that are considered effective. Coastal sites such as Lulworth Ranges in Dorset and Tregantle Fort in Cornwall have access arrangements that are hailed as good examples of coastal access management. It is hoped that these success stories can be replicated as the study develops and deliver improvements to coastal access across England and Wales, whilst ensuring that the defence requirement at each of these 50 establishments is maintained.

Stakeholder Engagement

We have continued to improve links with the major countryside bodies and user groups that have an interest in public access and recreation on the defence estate. These groups are important to us because they have experience of access issues and represent the interests of many of our visitors.

We have a formal liaison group called the Defence Estates Access and Recreation Focus Group (ARFG). This group meets annually to discuss issues and progress in access and recreation policy and operations. The ARFG includes the principal government advisers such as Scottish Natural Heritage, CCW and Natural England, along with a wide range of interest groups including the Ramblers, British Horse Society (BHS), British Mountaineering Council, Youth Hostel Association and the Campaign for the Protection of Rural England. The National Parks interest is provided by both the Park Authorities and the Campaign for National

Parks. The Tenant Farmers and National Farmers union are also invited to represent the interest of our agricultural tenants.

We continue to liaise with user groups over many other issues. Many of the key organisations have nominated a member of staff as the 'MOD focal point' and the understanding between us continues to grow. We believe that working relationships are better than they have been at any time in the past – a view backed up by the great majority of the representatives. For example, for the past two years we have been invited to address the BHS Annual Access Conference and were introduced as a friend of the Society by the Chairman. This is a strong indication of how far liaison between our two organisations has come.

Work on the MOD's access website has meant engaging not only with the BHS but also the British Mountaineering Council to draw up advice pages on horse riding and climbing on the estate. The guides will be regularly updated with links to information on firing times and access advice.

Disabled Access

Salisbury Plain Training Area hosted the Disabled Ramblers Group (DRG) in August 2008. They undertook a three day Imber Path Challenge completing the 31 mile Imber Range Path in all-terrain mobility scooters and spent three nights under canvas in extremely wild summer conditions. Following on from this successful event the DRG are now acting as advisors for disability access issues across the estate.



Disabled Ramblers take on the Imber Path Challenge
© Tim Chinnick



Exeter University Officer Training Corp giving a helping hand to youngsters walking on Dartmoor
© Lt Col Tony Clark

The Dartmoor Interpretation Project

We are currently renegotiating the licence for military training on the Dartmoor Training Area (DTA). A study group was set up to discuss the issue of public access to the training area and it became apparent that there was a general feeling that we did not really explain why the military were present in the area, what they were doing and exactly where and when the public could gain safe access.

As a result a new booklet has been produced which covers subjects such as the historic military use of Dartmoor, current training, public safety and access. The booklet also highlights points of interest across the training area and includes messages about caring for the wider National Park environment. Information boards originally erected at the main access points to the training area some 10 years ago have been refreshed with up to date information and clearer safety messages. Additionally, the military display in Dartmoor National Park Authority's High Moorland Visitor Centre will be updated to ensure that the messages are current and that the public have the opportunity to gain a better understanding of the key issues relating to the military presence on Dartmoor.

Better communication is the key to gaining a greater understanding of the views and wishes expressed by all parties with a stake in public access. We will continue to reach out to manage access and recreation in a positive manner and build on the relationships that have developed so far.

Richard Brooks, Head of Access and Recreation, Defence Estates

For details on public access to the defence estate go to www.access.mod.uk

Down to the Wire - Porton Down

In Sanctuary 36 Stuart Corbett from the Defence Science and Technology Laboratory (Dstl) Porton Down, wrote about surveying butterflies on the unique local landscape. Following on from this earlier work, Stuart has extended the surveys to include Ground beetles and spiders to assess the relationship between very different, but adjacent habitats.

Background

The wealth of wildlife at Dstl Porton Down has been reported upon over many years and we are in the very fortunate position of having an extremely valuable Site of Special Scientific Interest (SSSI). We are also fortunate in having intensive farmland managed by Dstl immediately adjacent to it. I say fortunate as this provides opportunities to compare and contrast two extremely different habitats in close proximity to each other. Results from such a comparison might inform any future development plans for the site. When considering such a comparison three questions spring to mind:

- Does the close proximity of the SSSI and the farmland result in a 'bleed' of species across the boundary and as a result is the farmland richer in biodiversity than 'normal' farmland?
- Or are there two very separate communities of biodiversity, and if so is one of more 'value' than the other?
- Finally, if two totally different communities exist what are the implications of converting one habitat type into the other?

The answers to these questions provide Dstl with an idea of the difference between two large habitat types present on its estate, an assessment of the biodiversity value for each and may inform how easy or difficult it will be to change the status of one habitat to become more like the other.



The SSSI and Farmland Border © Stuart Corbett

Methodology

The habitats to be surveyed included the calcareous, non-agricultural, grassland of the SSSI and farmland developed for the intensive grazing of sheep and an area of arable land. In order to provide answers to the questions a measurement of the wildlife that rely on one habitat rather than mobile species that may use several areas in a transient way was required. Ideally such a species would need to be ground-dwelling and sedentary, and in this case the two ideal species groups were ground beetles and spiders.

Sampling was carried out using pitfall traps sited in the habitats during September and October 2008. The beetles and spiders trapped were identified to species and recorded according to where they were found and their normal habitat preference.

Results

The results showed that a much greater number of species was present on the SSSI than on the farmland. A few carabid beetle species like the ubiquitous *Calathus fuscipes* were found in both habitats but the majority are limited to one particular habitat type. For example, three species commonly found on cultivated soils were found only on the arable farmland. Very few species found on the arable farmland were present on the SSSI. Only one of the six species found on farm grassland, the *Carabus problematicus*, was also found on the SSSI and none were found on the arable land.

The differences in the spider results were even more pronounced. There were a number of ubiquitous species found in both habitats but the SSSI had a much more diverse range of species. However, there was

no 'bleed' of typical species between habitats and, in the case of the farmland, very few 'typical' species could be found compared to more than half of the species trapped on the SSSI being associated with calcareous grasslands.

Conclusions

It is fair to assume that Dstl's farmland is no richer in ground-dwelling invertebrates than farmland elsewhere. The survey results have shown that despite the close proximity to the SSSI and sharing similar geology, topography and climate, there is very little 'bleed' across the boundary. There is a strict division between the habitat types for ground-dwelling invertebrates. A few species can survive in both habitats and those that can survive the modern agricultural environment are, to some extent, the widespread and common species of rural England.

One such species is *Nebria brevicollis*, a beetle which favours damper habitats with plenty of humus. Although present on the SSSI it was found in much larger numbers on the farmland. The soil on the SSSI is shallow,

undisturbed and relatively dry. It is likely that the soil-inhabiting larvae of this species struggle to survive in these conditions, resulting in a small adult population. The soils of the farm have, in contrast, been ploughed for many years and are consequently much deeper. The adding of more organic matter has resulted in a deep, friable, damp soil containing lots of humus which is much more advantageous to this species than the SSSI soils.

The separated communities of beetles and spiders can be explained by the introduction of modern agriculture more than 30 years ago on the farmland. The majority of species that are still found on the SSSI are likely to have occurred on farmland before agricultural intensification. However, regular and deep cultivation, agrochemicals, the monoculture of grass together with intensive grazing has resulted in a paucity of species on the farmland compared with the SSSI.

Is there anyone brave enough to state that one set of invertebrates is more valuable than another? To answer this without being brave one would have to say that in the case of this study the beetles and spiders found

on the farmland are hugely more common than those found on the SSSI. Therefore, it can be assumed that it would be better to lose the farmland because, in the case of ground-dwelling invertebrates, it is of less value. However, the farmland does have other species closely associated with it and, obviously, these would also have to be considered if a conversion of habitat was to take place.

The implications of trying to convert one habitat type into the other (and we are usually considering converting farmland into calcareous grassland) are profound. We conservationists can sow a previously arable field with a chalk grassland seed mixture, watch the plants grow and rejoice when a skylark and a butterfly appear. Very praiseworthy but the story 'down below' may be somewhat different. The biodiversity of the field will change as agriculture ceases resulting in a different suite of ground-dwelling invertebrates taking up residence. However, it will be a very long time before these resemble the biodiversity of the SSSI. The Nationally notable carabid beetles, *Panagaeus bipustulatus* and *Amara equestris* and spiders, *Ozyptila nigrita*, and *Zelotes (Drassyllus) praeficus* found in the study will take some time before they decide that the field is suitable for them.

These conclusions highlight that, at least for ground-dwelling invertebrates, the immediate proximity of a high quality habitat does not confer any great benefit to agricultural land. The conversion of agricultural land to chalk grassland may be beneficial to a range of plants and animals in the relatively short term but the conversion will only be skin deep until creatures which rely totally on the desired habitat can live in it. Taking a parochial stance the rare beetles and spiders at Porton Down are extremely lucky in that they may only have to travel the width of the wire in the fence if our farmland is reverted to chalk grassland.

**Stuart Corbett, Conservation Officer,
Dstl Porton Down.**



Amara equestris © Trevor and Dilys Pendleton

Otters secure a stronghold in STANTA



The Stanford Training Area (STANTA) in Norfolk is primarily used for infantry training and includes a newly opened Operational Training Advisory Group (OPTAG) Middle Eastern facility. The Area covers some 9,840 hectares, 70% of which is designated as a Site of Special Scientific Interest. The terrain is very varied, some of which forms part of the typical Norfolk Breckland and is the haunt of a variety of wildlife, including the elusive otter *Lutra lutra*.

Despite being hunted for sport, its fur, and to protect fish stocks, the otter was widespread in Britain and many parts of Europe and Asia prior to the 1950s. Within 20 years, however, it had disappeared from much of its former range. One factor believed responsible for this population decline was water pollution and contamination of the food chain from organochlorines such as Dieldrin, Dichloro-Diphenyl-Trichloroethane (DDT) and Polychlorinated Biphenyls (PCBs). Fortunately, since the use of these chemicals has been drastically curtailed, otters have slowly but steadily increased in numbers, helped by re-introductions of animals born in captivity, and improvement of habitat.

Stronghold in STANTA

It is undoubtedly mainly due to the initiative of the former Otter Trust at Earsham, Norfolk and the efforts of a previous Range Control Officer, Major Peter Matthews, that otters have a thriving population in STANTA. They were prevalent in the area prior to the 1970s and still being legally hunted with hounds until the 1960s. They were occasionally detected in the 1980s. However, their numbers were reinforced in 1991 by the introduction of two females (bitches)

and a male (dog) from the Otter Trust. Peter Matthews fed and cared for the animals initially in a pen near Stanford Water whilst they were being acclimatised. After two weeks the pen was removed, but food continued to be left until the otters showed no signs of returning. Subsequently it was found necessary to introduce more otters to make sure they were established and by the end of 1995 a total of nine had been re-introduced.

Over recent years otter numbers have increased markedly. Peter Matthews (until his retirement), my wife and I have regularly monitored the movements of the animals. Throughout the area we have recorded several daylight sightings, spraint sites, footprints and numerous tracks from the river Wissey onto the river bank footpath in the western part of STANTA. Further observations have been provided by Neil and Peter Knight (Range Control Staff), and by members of the Stanford Conservation Group.

Monitoring the otters has become more difficult since the start of OPTAG exercises, when the whole area is normally closed. Searching for this shy animal is difficult due to its nocturnal habits. There are also many places where they can hide. However, in areas with minimal, military disturbance and ideal habitat they may sometimes be observed during daylight.

Otters secure a stronghold in STANTA continued

Habitat

An optimum habitat for otters includes an extensive stretch of river with minor streams and preferably lakes with plenty of good quality water ensuring an ample supply of fish that form their staple diet. Otters need several holts (dens) for lying up and breeding, with plenty of riparian vegetation and bank side trees, especially mature ash and sycamore. When trunks decay and become hollow they also provide shelter. Particularly favoured for lying up, especially during the day, are hollow trees and those overhanging water, with roots partly exposed producing cavities below and above water level. Thickets and reed beds also provide protection.

STANTA fulfils all these requirements and little direct management is required apart from maintaining good water quality, populations of a variety of fish species, protection of riverside trees and maintenance of relatively inaccessible, dense riparian vegetation.

Diet

Otters spend most of their time in water, expending energy finding food and maintaining body temperature in a cold environment. An adult therefore requires at least 1Kg of food a day, especially females during pregnancy and when suckling young.

Otters are omnivorous and will eat small mammals (unfortunately including the protected water vole), birds such as the young of ducks, moorhens and coots, amphibians, fish and crustaceans. The introduced American mink has a similar diet and has been blamed for the disappearance of water voles in some part of the country. However, where otters are established the mink appear to avoid them and hunt elsewhere. Most of the time this also seems to apply in STANTA.

Otters are especially partial to eels, but since 2002, the otters in STANTA appear to have been feeding predominantly on the



Photo © Fred Holmes

protected and threatened, native freshwater white-clawed crayfish that occurs in the river Wissey. It was around that time a change in the appearance of spraints was noticed. The typically black and greyish spraints, with the usual mixture of small fish bones and scales, were being mainly replaced by pale-coloured ones containing crushed fragments of the hard carapace (shell) of the crayfish. The predation of crayfish appeared to coincide with the decline of eels in the area. Colonel Paul Long of the STANTA Fishing Club was consulted when the diet change was noticed. He stated that in the 1990s there were still plenty of eels in STANTA. However, since then they have declined locally and also nationally.

Electro-fishing was carried out annually from the early 1980s, but was not carried out at all between 2002 and 2008. It has since been recommenced, primarily to remove predatory fish such as pike and perch and to ascertain which other species are present. A variety of species has been found, including lamprey, indicating that the river is in good

condition and a good habitat for the prey species of the otter.

In recent years Paul Long has noticed a marked increase in white-clawed crayfish and freshwater shrimps, which are also predated by both otters and eels. The question is, have these crustaceans increased because of the absence of eels, or is there another reason? It will be interesting to see the future effect of this predation on local crayfish populations, because the native white-clawed species is declining nationally due to the presence of undesirable species such as the signal, narrow-clawed and spiny-cheek crayfish. Future monitoring of crayfish populations in the river Wissey will be necessary in order to look for these non-native species. Another consideration worth investigating would be the nutritional value of an otter's diet consisting of mainly crayfish and shrimps, compared with one predominantly of eels and other fish. If this new diet proved to be inadequate would the otters be encouraged to prey more on vertebrates such as small mammals, birds and amphibians?

Sprainting

It is mostly the male otters that mark their large territories of up to 20 kilometres by sprainting (defecating and urinating) in prominent places, usually near water, on stones, raised tussocks of vegetation, mole hills, tree stumps and artefacts such as old bricks, planks of wood etc. In STANTA there is no shortage of natural sprainting sites. Fallen, deciduous trees, especially large ones near water, act as good sites. Surveying otters can be made easier by providing large stones or pieces of concrete for sprainting. This has been done recently at previous sites that had been damaged and were no longer used.

Where fish form the predominant diet, spraints are usually black when fresh, becoming greyish with time. Size and shape vary from small blobs and blackish smears to cylindrical, bolus-shaped faeces. The spraints, especially when fresh, have a distinctive pleasant smell, reminiscent of jasmine tea. When the spraints contain predominantly the remains of crayfish their appearance is quite different. The faecal boluses are often less well formed and consist of heaps of brownish-coloured material superficially resembling crushed flaked maize.

Breeding

There appears to be no clearly defined breeding season for otters. They are essentially solitary animals except when breeding. Courtship includes much chasing and play, both in the water and on land. A group usually consists of an adult female plus the offspring of the year. The gestation period is usually around 61-63 days. Litter size varies from one to five, but is usually two or three cubs. The young at birth are covered with velvety fur, which is grey in colour and not brown as in adults. The eyes open at around four weeks. Otter cubs suckle until about 14 weeks of age and become increasingly active under the watchful eye of their mother when they emerge from the holt. The cubs stay with her for about a year and she teaches them to fish for themselves catching fish and releasing them for the offspring to catch. She communicates with them using a high-pitched whistle. During play otters make twittering noises and when fishing cat-like sounds.



Sprainting site on fallen tree, river Wissey at Langford © Janet Keymer

Sexual maturity of females is reached within three years, but for males it can be less than two years. The males grow to approximately 115cm from nose to tip of tail, with females about 100cm. Life expectancy in the wild is usually short, being on average three years, although some can live up to 15 years of age. With the relatively short life expectancy and small litter size the otter has a low rate of population growth making breeding success critical.

Legislation and Mortality

The otters in STANTA, like elsewhere on the defence estate, are strictly protected under Schedule 5 of the Wildlife and Countryside Act 1981. They are a European Protected Species under the Habitats Regulations 1994 (as amended) and a UK Priority Biodiversity Action Plan species. Under these designations it is an offence to deliberately kill, injure, capture or keep otters; destroy, damage or obstruct their den or disturb them while in the den; sell or advertise for sale, otters and anything derived from them and import or export otters, alive or dead.

Until the 1981 Act, apart from humans, adult otters had no other predators. However, in some coastal areas they are occasionally preyed upon by grey seals. In the Shetlands, orcas are also apparently preying on them. Factors that put them at risk in some areas are insufficient prey associated with poor water quality, impoverished bankside

habitats, drowning in fyke nets set for eels and more commonly road accidents. These situations do not apply in STANTA where the habitat is ideal, fyke nets are no longer used and no accidental road deaths have been recorded, although some have occurred on the edge of the Area.

To minimise the risk of accidental road deaths near bridges, dry tunnels can be provided beneath the road on at least one side of the bridge along with 'steering fences' to encourage the animal towards the tunnel. Otters can also be discouraged from crossing the road near bridges by providing ledges above typical spate level beneath the bridge on one or both sides.

It is hoped that the information in this article will be of benefit to Defence Estate managers responsible for other MOD sites that have a habitat potentially suitable for otters.

Dr Ian F. Keymer.

Dr Keymer is a retired veterinary pathologist with a PhD in zoology and a founder member of the STANTA Conservation Group.

*Specialist advice on managing otters on the defence estate can be obtained from the Defence Estates Environmental Advisory Service.
(Telephone: Dominic Ash – 01980 674624.)*

A Range of Habitats, a Wealth of Invertebrates

CASTLEMARTIN RANGE

The extensive Castlemartin Range in south west Pembrokeshire supports a wealth of wildlife. Part of the Pembrokeshire Coast National Park and containing some of the most spectacular coastal scenery in Wales, its importance for wildlife is recognised in the designation of a significant portion of the Range as a Site of Special Scientific Interest (SSSI), a Special Area of Conservation and a Special Protection Area for birds.

The Range occupies around 2,400 hectares, extending up to 3.5km inland along 14km of coastal cliff. It was first used as a military tank training area in

1939 and later purchased by the MOD in 1948, safeguarding the site from subsequent development and agricultural improvement.

The site is most commonly recognised for its importance for birds, plants and butterflies. Perhaps unsurprisingly, the staggering number of other insects, spiders and invertebrates it also supports is celebrated less widely. Indeed, the full extent of its value for these is just beginning to become clear through the results of a series of targeted surveys.

Working with Defence Training Estates (DTE), Landmarc Support Services (LSS) and Countryside Council for Wales (CCW)

our entomological survey team at National Museums Liverpool has had the pleasure of undertaking four separate invertebrate surveys at Castlemartin Range since 2003. The variety of habitats found on the Range, from coastal limestone grassland to sand dunes and soft cliffs is key to its invertebrate interest, with a suite of specialised species making their home in each habitat the site has to offer. Even seemingly insignificant features, such as accumulated driftwood or bare, disturbed ground resulting from the way the Range is managed for training activities and manoeuvres encourage and support populations of special and uncommon insects.



A Malaise trap set to intercept flying insects
© National Museums Liverpool

The Surveys

Our surveys have targeted insects associated with coastal soft cliff, sand dune and grassland areas and in the first two cases were part of wider assessments of the value of these habitats in Wales for invertebrates. The most recent survey of grassland invertebrates was identified by CCW and Defence Estates (DE) as an invaluable project to inform the programme of SSSI improvement work being implemented at the site, which includes scrub management and bracken control. During these surveys a total of 1,196 species of land invertebrate were recorded from the

Range which, when combined with records held in CCW's database, gives an impressive grand total of 1,412 species. Besides the large total number, more telling is the proportion of these which are rare or uncommon and of particular conservation value. Twelve are Red Data Book (RDB) species (some of our rarest species) and a further 91 are Nationally Scarce with a very restricted distribution in Great Britain.

In order to make a thorough assessment of the assemblage of insects in each area, it was necessary to use a variety of different sampling and trapping techniques and to take samples back to the museum for

identification. As well as using nets, searching for insects on the ground and operating a modified garden vacuum to suck up small insects from short turf, we set a number of different types of trap. The most conspicuous of these were the Malaise traps, tent-like structures which intercept insects in flight and channel them to the top corner of the net. Pitfall traps - small plastic beakers sunk into the ground - were used to intercept beetles, spiders and other invertebrates on the ground and yellow pan traps were attractive to flower-visiting insects.

A Range of Habitats, a Wealth of Invertebrates CASTLEMARTIN RANGE continued

Soft cliffs

Whilst hard limestone cliffs provide dramatic scenery on the Castlemartin's coastline, the soft cliffs at Great and Little Furzenip support a much greater variety of invertebrates. Several features of the eroding cliffs, formed from blown sand, clays and gravels overlying Old Red Sandstone, are important for a number of specialised insects, many of which are rarely found away from this habitat. More than 550 species were recorded in total including 45 RDB and Nationally Scarce species.

Since the cliffs are constantly eroding they provide features favourable to certain insects which are not consistently present in other natural situations. Bare ground is favoured by various visual hunters such as spiders and ground beetles and also by ground-nesting bees and wasps. The south and south-westerly facing areas are particularly important for basking, and crevices provide a refuge for various species. Pioneer and ruderal

flowering plants such as common bird's-foot-trefoil *Lotus corniculatus* and kidney vetch *Anthyllis vulneraria* colonise low shallow slopes and are a pollen and nectar source for a variety of insects, while others feed directly on their leaves or seeds. Hydrological features of the cliffs at Great and Little Furzenip such as springs and seepages are important for invertebrates with aquatic immature stages, those associated with plants growing in wet places or particular bees and wasps which collect mud from wet areas to construct their nests.

The long-horned mining bee *Eucera longicornis*, the males of which have spectacularly long antennae, is associated with coastal soft cliffs and the clay cliff faces and clay banks inside the Range provide valuable nesting opportunities. This bee has declined nationally in recent years but was not previously known from Pembrokeshire. The crane fly *Dicranomyia goritiensis*, typically found on cliff seepages, the squashbug *Enoplops scapha*, the weevil



Long-horned mining bee *Eucera longicornis*
© Countryside Council for Wales

Sitona waterhousei, the caddisfly *Limnephilus hirsutus* and several mining bees are similarly important Welsh soft cliff associates present at Castlemartin.

Sand dunes

Survey work on Castlemartin's sand dune systems has been particularly concerned with shieldbugs, bees, wasps and ants. Over 430 hectares of the western part of the site is occupied by sand dunes, with Broomhill and Kilpaison Burrows to the north and Brownslade and Linney Burrows south of this. Coastal sand dune systems support important populations of invertebrates as they offer the warm microclimates preferred by many species, bare sand for nesting and hunting, and often extensive areas of forage and foodplants. The various stages of dune succession, from bare sand to grassland and scrub all have a characteristic insect fauna and more localised features from driftwood to sand dune fungi, mammal burrows and dung also have their associates.

A key feature of the sand dunes is the presence of bare and partially-vegetated sand. This supports many of its specialised insects which are rarely found away from coastal sand dunes in the UK. Partially-vegetated areas resulting from rabbit, winter sheep and cattle grazing, military activities and past sand extraction encourage plants such as stork's-bill *Erodium* spp.,

Total numbers of invertebrate species recorded from Castlemartin Range and their conservation status

	Total number of species	Red Data Book species	Nationally Scarce species
Beetles	377	1	34
Flies	306	2	16
Bees, wasps, ants etc.	209	3	20
Moths and butterflies	184	2	10
Spiders etc.	142		5
True bugs	90	3	3
Slugs and snails	39		
Centipedes and millipedes	15		
Caddisflies	10		1
Woodlice	10		
Grasshoppers and Crickets	9	1*	
Lacewings	9		1
Dragonflies	6		
Other groups	6		1
Total	1412	12	91

* Heath grasshopper *Chorthippus vagans* (RDB3) is included from old records which cannot be verified



Shrill carder bee *Bombus sylvarum*
© National Museums Liverpool

restharrow *Ononis repens* and wild thyme *Thymus polytrichus*. These are the preferred foodplants of two RDB bugs, the shieldbug *Odontoscelis fuliginosa* and the seedbug *Pionosomus varius*. These bugs were recorded during survey work in 2003 and subsequently found more widely in suitable habitats across the peninsula.

Bare and partially-vegetated sand is also vital for a large proportion of the 102 bees, wasps and ants recorded from Linney and Brownslade Burrows. Solitary wasps such as *Oxybelus argentatus*, *Podalonia hirsuta*, *Dryudella pinguis* and *Tachysphex nitidulus* and the leaf-cutter bee *Megachile dorsalis* construct their nest burrows in warm, sandy banks and slopes. All are uncommon in Wales and virtually restricted to coastal sand dunes which have not become too stabilised by vegetation. Large accumulations of driftwood on beaches adjoining Linney Burrows are another special feature of the site which surely would not have persisted in a more easily accessible location. This supports a suite of interesting insects which are linked with dead wood including the weevil *Pselactus spadix*, the solitary wasp *Ectemnius sexcinctus* which nests in dead wood in sunny places and the cuckoo bee *Stelis ornatula*, a nest parasite of bees living in dead wood.

Grassland

Our most recent visits in 2007 and 2008 have focussed on the invertebrate faunas of the vast area of unimproved grassland on the Range. Britain's richest grasslands can support large and interesting assemblages of specialised invertebrates. However, the loss of unimproved grasslands during the second



Marsh fritillary butterfly *Euphydryas aurinia* © National Museums Liverpool

half of the last century has had a profound effect on these faunas, including some of our rarest invertebrate species. Grasslands within Castlemartin represent the largest known area of grassland of its type not subject to intensive management in lowland Wales, and includes a significant proportion of the total Welsh resource of certain limestone and neutral grassland communities. These grasslands support important populations of the shrill carder bee *Bombus sylvarum* and brown-banded bumblebee *Bombus humilis* as well as the marsh fritillary butterfly *Euphydryas aurinia* and the silver-studded blue butterfly *Plebejus argus*.

A total of 713 species, including 27 RDB and Nationally Scarce species were recorded during the survey from a small selection of flower-rich neutral and limestone grassland areas. As well as significant species of beetles, spiders, moths and flies, the limestone grassland proved especially important for mining bees, many of which had not been noted from other habitats. One of the most significant discoveries was a large nesting aggregation of the RDB mining bee *Andrena hattorfiana*. This species has declined substantially in Britain to around 15 sites and was not previously known from Pembrokeshire. It was a pleasant surprise to find the bees nesting in banks alongside a moving target track which also supported dozens of long-horned mining bee nests. Throughout the site, these localised areas of disturbance create nesting, foraging, hunting

and basking opportunities for invertebrates and suitable growing substrates for the plants they are often linked with. Tank tracks, banks dug for targets and small areas burned or cleared during exercises give the grasslands a more varied structure and generally promote invertebrate diversity. Dynamic processes are vital to maintain and promote invertebrate diversity. Whether these occur by natural means such as erosion of soft cliffs or as a by-product of military activity on the Range, exposing sand and countering sand dune stabilisation or adding structure and heterogeneity to grasslands, the end results are the same and help to ensure the long-term survival of Castlemartin's rich invertebrate fauna.

Guy Knight, Curator of Entomology, National Museums Liverpool

With thanks to current and previous Commandants of Castlemartin Army Field Training Centre, Lt. Colonel (Ret'd) Peter Hollins OBE and Lt. Colonel (Ret'd) Johnny Rogers OBE, as well as Major Paul Snelling for allowing access to the Range; Mike Howe and Bob Haycock (CCW), Nicola Hawkeswood (DE), John Prior and Anna Sutcliffe (LSS) for commissioning projects and for generous advice and support. The entomological expertise and fieldwork of Carl Clee, Chris Felton, Cathy Fiedler, Tom Green, Mike Hull, Steve Judd, Tom Mawdsley, Janine Mullineaux and Ian Wallace in Liverpool.

Ringling in the Century



Three obliging buzzard chicks at Feldom, Catterick Training Area © Tony Crease

2009 for the British Trust for Ornithology (BTO) is the Centenary year for its British and Irish bird ringing scheme. Bird ringing on the defence estate makes a significant contribution to conservation by allowing better understanding of migration, population trends and bird breeding success and informs conservation decisions at a national and local level.

Swaledale Ringing Group (SRG), based at Foxglove Covert Local Nature Reserve on Catterick Training Area, have for the past 18 years operated across the UK estate, from Cape Wrath in Northern Scotland through all the training areas in North Yorkshire as far south as Driffield. During that time the number and variety of birds processed has made a significant contribution to the work undertaken by the BTO with close to 150,000 birds being handled. It would seem appropriate in this Centenary year to

highlight a few of the fascinating facts that have emerged from these Catterick-based studies.

Bird Ringing – Migration and Longevity

Bird ringing was initially employed to help develop our knowledge of bird movements and migration patterns. Over the years it has also provided an insight into the life expectancy of different species and it has

been used to develop an understanding of site fidelity and productivity in both the resident and migrant bird populations.

By way of an introduction to this fascinating research some of our more spectacular recoveries (subsequent reports of ringed birds) to date include a kittiwake ringed as a nestling at Faraid Head, Cape Wrath during July which was shot for food by a local hunter 2,500 miles away in southwest Greenland in September the following year. This unique recovery provides an exceptional example of the wide post-juvenile dispersal of birds of this species. Another seabird which provides a large number of recoveries is the storm petrel. One such bird ringed in August 1997, again at Faraid Head, was recaptured in March 2001 when it flew into a spotlight on board a ship sailing off Port Elizabeth, South Africa, some 10,600 miles from where it was originally ringed. Storm petrels from Faraid Head have been recorded regularly in France and Portugal as they moved to and from their wintering grounds in the South Atlantic or western Indian Ocean. These examples give just a flavour of the fascinating recovery data which has been accrued.

Whilst the main thrust of our ringing activities is aimed at catching the expected annual migrants we also catch the occasional rarities. These have included parrot crossbill, icterine warbler and firecrest - all migrants from northern or central Europe - which make occasional appearances in the United Kingdom mainly in the autumn. These particular examples were all caught at Catterick.

Our ringing studies are also able to demonstrate complex movements within the resident bird populations and with the aid of modern computer technology analysis of the data for some of the more common species is equally interesting. A recent and major surprise was information returned on a juvenile kingfisher ringed at Catterick which became the first ever British-ringed bird of this species to be recovered in Holland some three months later.

Having the ability to call up individual birds instantly has shown that many of our small common species are living much longer than

expected and we have recently retrapped a ten year old chaffinch, two long-tailed tits over five years old, and a great spotted woodpecker which is eight years old. Several of our well known garden species have lived for more than four years.

Population Monitoring

By applying scientific principles and following an annually repeatable ringing regime the quality of information gained has improved considerably. Over the 18 years, members of the SRG have participated in the BTO's Constant Effort Site (CES) Scheme which involves making 12 'standardised' visits to a site during the months of May to August. At the time of writing, members of SRG have made 196 10 hour CES visits to the Foxglove site without missing a single one, which is quite an achievement. Standardising the ringing activities through a national programme of consistent dates, hours and nets used makes it possible to monitor trends in population size, survival and productivity. Due to the number of birds caught and the longevity of the data set, the Foxglove Covert data is recognised as being particularly significant and a key indicator in the CES process nationally.

Regular monitoring at a specific site also allows an accurate assessment of the individual site faithfulness of migrant birds, which may spend the summer with us in the UK and winter in parts of tropical and southern Africa. We have one example of a willow warbler which was first caught in May 2002 and has been caught again every year up to 2008. Not only had the bird returned to Foxglove Covert, but it has itself been breeding within 100 metres of its own natal area on each occasion. Similarly, we have two garden warblers which we first caught in May 2000 and were last seen in May 2008. Sadly, it now seems certain that neither of these birds has survived the latest ca. 10,000 mile round trip to winter in sub-Saharan Africa. These journeys are particularly remarkable as these birds all weigh less than 20 grams each and some as little as 8 grams!

Much the same process applies to the seabirds who may spend nine months of the year at sea but who, with few exceptions, return to the same scree slope or cliff ledge



Sophie Benaiges, Reserve Manager at Foxglove Covert, rings a razorbill on Clo Mhor boulder field, Cape Wrath
© Tony Crease

to breed each year – often within the same colony in which they were born. Some of our seabirds date back over 20 years and were ringed in the 1980s which makes the recovery data even more valuable.

Sadly, in common with many other coastal sites around the UK, seabird numbers at Cape Wrath have been declining in recent years with a rapid reduction in the number of pairs of birds attempting to breed and in the number of these breeding attempts which have failed to produce young. This phenomenon has been noted at most of the major breeding colonies around the Scottish coastline and is thought to be the result of low availability in a key food item, the sand eel. The puffin population at Cape Wrath which once boasted ca.25,000 breeding pairs has dropped by more than 50%, and the thousands of guillemots, kittiwakes and razorbills now fail to raise more than a handful of chicks. Boulder fields where we would ring more than a thousand auks in a day have up until recently been depressingly silent.

That said seabird numbers in the Cape Wrath colonies have seen dramatic and welcome improvement this year. Sand eels appear to be in abundance once again, breeding birds are back to numbers not seen for several years and eggs and newly hatched young are evident throughout the boulder fields.

Ringling in the Century continued

Over the years we have noted a similar decline in the abundance of many songbirds including song thrush and willow warbler, but this has been compensated for in part by an increase in other species on our sites like lesser redpoll and reed bunting. Whilst standardised ringing allows us to start to understand population dynamics, it also throws up some interesting questions. Two great tits, for example, ringed with successive rings on the same day in 2004 were caught again side by side in the same net in 2008. Have these birds been together for the last five years or is this just an almost impossible coincidence?

Breeding Success

Birds of prey suffered badly in the 1960s due to the effect of pesticides. SRG has for years been helping their recovery by providing large nesting boxes suitable for breeding tawny owl, little owl and kestrel. Annual inspection of these nest boxes, and individual identification of the birds using them, has yielded useful information on both site fidelity and some migration. Tawny owls are quite abundant around Catterick and regularly breed in nest boxes in the area; the oldest resident has been with us for 16 breeding seasons and there are several others which have been nesting for between five and ten years. Adult kestrels have been shown to breed for up to five years and their offspring, ringed in the nest boxes, are normally recovered within 20 kilometres of their point of ringing although we have evidence of south-westerly movements into southern England or across the Channel to France.

An interesting feature of the last 20 years has been the increase in number and spread of buzzards eastwards across North Yorkshire. The secluded woodland areas on and around the Training Areas appear to suit this species and the group has ringed over 200 young buzzards with the numbers increasing annually. To date ringing recoveries have shown movements of ca 20 kilometres, and our oldest known bird is seven years.

In cooperation with staff from the Yorkshire Dales National Park Authority and the Joint Services Mountain Training Centre at Ripon we have, in recent years, undertaken the very specialised ringing of peregrine falcon for which a species specific licence is required. This work requires the trust and confidence of various different agencies, including Police Wildlife Liaison Officers, and has been carried out successfully with care and sensitivity.



Peregrine falcons © Terry Pickford



Air Vice Marshall Martin Routledge RAF, undertaking a bird ringing course at Foxglove Covert © Colin Weern



Admiral Martin Alabaster, FOSSNI, releasing a red-throated diver, Cape Wrath © Sophie Benaiges

Summary

With the development of specialised computer programmes and supporting infrastructure, the data gathered by the ringers of SRG are entered locally and forwarded to the national database. Currently SRG rings about 1% of the new birds ringed in the UK each year and contributes in many other ways to the Integrated Population Monitoring Programme which informs conservation policy and is one of the Government's Life Indicators.

Whilst we can admire the birds we process and enjoy understanding more about their biology, bird ringing needs people who are not only keen but are also highly skilled and motivated thereby ensuring that the information collected is accurate and meaningful. To become a ringer requires potential trainees to undergo a rigorous training programme which lasts

for several years. For the last ten years, SRG has organised annual training courses for ringers from across the UK, and more than 200 of them have benefited from the resources available in the purpose-built ringing room at Foxglove Covert and other military sites nearby. It is only by investing in the volunteers that support these studies that we can hope to discover more about the complex lives of our birds and ensure that the BTO is providing the authorities with accurate information on which to base future conservation decisions.

SRG recognises that none of this activity would have been possible without the support of Defence Estates (Commanders Defence Training Estate North and Scotland), Commander Catterick Garrison and the Fleet Patrol Group Royal Marines at Faslane. Further support and involvement is illustrated in the photographs showing Rear Admiral Martin Alabaster RN, Chairman of the

Royal Naval Birdwatching Society releasing a newly ringed red-throated diver at Cape Wrath and Air Vice Marshall Martin Routledge RAF, Chairman of the Royal Air Force Ornithological Society undertaking a bird ringing course at Foxglove Covert.

Major (Retd) Tony Crease, Deputy Commander DTE North, Defence Estates and Mr Tom Dewdney, Ringing Representative, Foxglove Covert LNR Management Group.

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There are two useful websites to access:
The BTO at <http://www.bto.org/>
Foxglove Covert LNR at
<http://www.foxglovecovert.org.uk>

THE BEST OF BOTH WORLDS – A Sustainable Approach to Military Training

Castlemartin © Allan House

The defence training estate consists of some of the most remote, beautiful and environmentally diverse land in the United Kingdom.

The high plateau of Sennybridge is intersected by deep valleys containing the remnants of ancient woodland. Spectacular sea cliffs at Castlemartin Ranges on the Pembrokeshire coast support some of the best seabird colonies in the country whilst the Essex coastal marshes around Fingringhoe are home to thousands of migratory waders. Upland habitats on northern training areas include species-rich hay meadows as well as vast areas of heather moorland, bogs and mires which offer glimpses of rare and elusive birds such as the black grouse or merlin.

North of the border in Scotland, the mountainous terrain of Garelochhead with its dark conifer woodlands plunges steeply to a narrow sea loch, whilst on the east coast Barry Buddon has one of the best preserved and extensive sand dune systems in Europe. Back down in the south of England, shingle beaches are washed by the English Channel, tracts of lowland heath flourish in the Home Counties, chalk grassland rolls across Salisbury Plain and the windswept moorlands of Dartmoor continue to thrive.

Given this astonishing diversity, the delicate balance required to provide safe and effective military training whilst simultaneously fulfilling sustainability and biodiversity responsibilities for the land over which training takes place, is a complex and challenging task. Landmarc Support Services (LSS), Defence Training Estates (DTE) strategic management partner, working closely with the Defence Estates Environmental Advisory Service, local conservation groups and other stakeholders including Natural England and the Forestry Commission, manage DTE's environmental sustainability and biodiversity responsibilities.

Historically, maintenance of the training estate was reactive with funding constrained to a fixed budget. Now, following three years of extensive trials, a proactive or 'output' management system has been introduced to ensure funding is targeted to the areas that need it most. The effective prioritisation of funding has been made possible by the development of a register which lists every feature or 'asset' on the training estate which requires management or maintenance. It includes all fences, tracks, forestry compartments, cattle grids, Sites of Special Scientific Interest (SSSIs) and Scheduled Monuments along with details of the standard to which they will be managed

and information about key environmental sensitivities or constraints.

In addition, an extensive SSSI Improvement Programme is in place which funds a diverse range of projects such as clearance of scrub on Salisbury Plain to prevent loss of valuable chalk grassland and the rotational cutting of reed beds at Penally in Pembrokeshire to regenerate rare habitat.

Military stewardship of the training estate has awarded it protection from the ravages of other forms of land use and careful management has led to the retention of habitats and species which have been lost in other parts of the country. Sensitive management to fulfil both military and conservation objectives is challenging for all individuals and organisations involved. However, it is clear that it is possible to maintain a sustainable approach to military training - one which not only meets the requirements of our armed forces, but protects some of the nation's most beautiful and environmentally diverse land for years to come.

Duncan Glen, Conservation Management Coordinator, Landmarc Support Services.

CASE STUDIES

Woodland management supports black grouse

The last remaining black grouse *Tetrao tetrix* population of note in Northumberland is to be found at DTE Otterburn. The loss of open and diverse woodland which is particularly important for over-wintering birds is one of the main reasons for their decline. They are a fickle species and have specific and exacting requirements which vary depending on the time of year.

However, DTE Otterburn has a number of woods that are perfect for black grouse as they support a mixture of both broad leaf and conifer species with just the right amount of fruit bearing species such as rowan for winter food and denser areas for shelter. Unfortunately, when the canopy of the wood begins to close, the birds can no longer use the woodlands and will move on. If other appropriate winter habitat cannot be found, the population declines. To address this, LSS staff are working closely with DE and subject matter experts to deliver woodland management projects which not only create the ideal conditions for black grouse but benefit a range of other species, enhance the landscape and create a useful military training resource.

Stewartshiels Forest, for example, covers approximately 1,000 acres and was originally planted as a conifer dominated commercial forest. When the site was clear felled in the mid 1980s it was acquired by the MOD for military training use. Over the years natural regeneration of colonising broad leaves, such as birch, has been impressive and creates good habitat for black grouse. However, other areas are completely dominated by regenerating Sitka spruce to such a density that it is impossible to penetrate - no good for soldiers and even less useful for black grouse. LSS has been carrying out an intensive programme of felling, chipping of cut material and stump mulching which also breaks the ground surface exposing the dormant seed bank. This selective clearance has led to the regeneration of birch, rowan, alder and other broad leaf species, scrub such as hawthorn and broom with a ground layer of long-dormant heather reappearing rapidly.



Black grouse © Jez Kalkowski

The basil thyme case-bearer moth

The basil thyme case-bearer moth *Coleophora tricolour* is only found in a small handful of sites in Norfolk. The largest and most important site for the basil thyme plant and the basil thyme case-bearer in the UK can be found at Stanford Training Area (STANTA), near Thetford.

This unprepossessing micro-moth thrives on the unimproved Breckland at STANTA, unlike other areas that have been subjected to hard grazing. This is not the only exacting habitat requirements this species has. The moth gets its name from the practice of sealing the young flower heads of the basil thyme plant with silk to form a protective case. Eggs are laid on the host plant in August and when hatched each larva occupies and feeds within a single flower head. It then migrates to grasses such as Yorkshire fog for the winter before pupating and emerging as adults the following summer.



Basil thyme case-bearer adult © Robert Dyke

Maintaining the right conditions for the plants upon which this moth relies and managing the correct balance between the different plant species can be challenging. It is essential that the basil thyme is not out-competed by more vigorous species but its protection must not be at the total expense of grasses which are themselves an important element in the life cycle of the rare basil thyme case-bearer.

On an annual basis, LSS undertake a forage harvesting and tree sapling removal operation on an area in Old Bodney Camp. It is not sufficient just to cut the vegetation and leave it as this will lead to a build up of nutrients favouring more vigorous species so all the vegetation cut has to be taken away. Additional work is carried out to scrape away coarse grasses and soil at Thorpe Great Heath to allow the basil thyme plant to re-colonise with the intention of expanding the population of both the plant and the moth.

Diving Into History

In 1944 as the Allies prepared for D-Day, almost 7,000 ships and vessels of all sizes gathered in ports and harbours along the south coast of England. The assembled Allied forces after being delayed by 24 hours due to poor weather, finally set sail on the evening of 5th June under the cover of darkness and in heavy seas. Unfortunately, not all of these vessels made the crossing to the Normandy coast safely.

Bulldozer B & conger eel © Alison Mayor



Some 65 years later many a keen diver has explored a wreck site eight miles south of Bracklesham, West Sussex, where two tanks and two bulldozers rest on the seabed 20 meters below the surface. As there is no shipwreck nearby, the mystery of how these vehicles came to rest here has puzzled divers for many years. One theory is that they had slipped from a Whale Bridge on one of the two Mulberry Harbours, as a section of bridge is the closest wreckage to the vehicles. However, a team of divers recently undertook an expedition to solve this mystery.

Early in 2008 planning for the expedition to survey the tanks and bulldozers site began in earnest. With the help of Silent Planet Ltd who provided the dive boat *Top Gun* and a grant from the British Sub-Aqua Jubilee Trust, 25 divers from Southsea Sub-Aqua Club spent five days in July mapping the site in detail and looking for clues to explain how the tanks and bulldozers had ended up on the seabed.

Dive Site

Even though an echo sounder was used by the team, the site was tricky to find as the tanks and bulldozers lie close together in a scour and only stand proud of the seabed by a couple of metres. The whole site is only 30m x 20m wide but once the site is found the uniqueness of the wrecks and how well preserved they are, is quickly appreciated. Over the course of the expedition numerous measurements, photographs and hours

of video were taken and some surprising discoveries came to light.

The first breakthrough came after an initial dive when the team realised that the tanks were not the most commonly used Allied Sherman tanks they had expected to find. The tanks were in fact British, with a shorter barrelled, large calibre gun that were subsequently confirmed by David Fletcher, historian and tank expert at The Tank Museum, as Centaur CS IV tanks. The team could hardly believe their luck as only 80 of these tanks had been destined for use in combat with only two others in known existence, both of which are D-Day memorials in France.

The Centaurs were used by the Royal Marines Armoured Support Group (RMASG), a specially created regiment, who provided heavy fire support during Operation Overlord. The 2nd RMASG Regiment, supporting the Canadian led Force J, were amongst the first to land at Juno beach using modified Mark V Landing Craft identified as Landing Craft Tank (Armoured) (LCT(A)). Over 100 feet long and carrying up to three tanks, the LCT(A)s were adapted with an extra 50 tonnes of armour around the bridge and with ramps on which to mount the tanks so they could be fired over the bows as they approached the shore. This RMASG was disbanded a few months after D-Day but has since been re-established in 2007. The new RMASG now operates Viking BVS10 tracked armoured vehicles in support of 3 Commando Brigade and other UK forces in Afghanistan.

The second breakthrough was the discovery of a large kedge anchor tucked underneath one of the tanks and two four-bladed propellers. This type of anchor was used by the Landing Craft to pull themselves back off the beaches after dropping their cargo. It is believed the anchor and propellers were spares for a LCT(A), another indication that the vehicles had been lost from a ship or vessel rather than a Whale Bridge.

The Wreck

At the site one tank lies upside down, the other is on its right side at an angle of approx 45 degrees. Because of their armoured construction they are in excellent condition despite more than 65 years on the sea bed. The distinctive 12 inch round plate on the front of the tanks, a unique identifier for Centaurs, is clearly visible on both tanks. The bulldozers lie on their sides just three or four metres behind the tanks. One is complete with its magnificent huge blade standing almost three metres high. Sadly the blade of the other bulldozer has broken off but lies close by.

Other items found on the site kept the team perplexed for some time including what was first thought to be a field gun. Although the wreckage is similar to a gun barrel there was no evidence of a gun carriage. The team now believe that this is the barrel of a 20mm Anti Aircraft gun from a Landing Craft. Also identified were the broken up remains of a vehicle, possibly a jeep, with the engine block, axles, wheels and tyres scattered on the site. Two items thought to be 'porpoises' were also found at the site. Porpoises were special waterproof sleds designed to carry extra ammunition and be towed behind the first wave of tanks on D-Day as they could not be re-supplied immediately.

Diving into D-Day History

Armed with this information and with the help of David Fletcher and other experts from the Royal Marines Museum, Naval Historical Branch and Landing Craft Association, research began into the Royal Marines and Naval War Diaries and other historic papers relating to Operations Neptune and Overlord.

Diving Into History continued



Tank A © Martin Davies



Centaur CS IV, Hampshire © The Tank Museum

The Whale Bridge theory was quickly discounted as it became clear that such a structure could not have supported over 100 tonnes of vehicle and equipment when installed in its final position as each section was designed to support a maximum weight of 56 tonnes. There must have been another reason behind the sinking.

Tracing back through these historic documents led to a report from the night of the 5th June 1944 that LCT(A) 2428 had failed to make it across the Channel due to engine trouble and was taken under tow by the tug *Jaunty*. The additional armour and the raising of the tanks on ramps severely affected the stability of LCT(A)s and with the heavy seas resulted in a number of overloaded vessels being swamped. At 1100 on the 6th June a signal from *Jaunty* reported that the landing craft had capsized and subsequently had been sunk by gunfire from the tug as it posed a hazard to other vessels. All crew and other personnel were reported safe on board. A survivor's report of the time from Able Seaman C R Hunt confirmed that the landing craft had capsized and continued to float for some time until finally being sunk by gunfire.

The discovery of the loading tables for Force J confirmed that this landing craft had

been carrying two Centaurs, two Armoured D7 Bulldozers, a jeep and ammunition. This evidence, linked with the underwater discoveries has finally answered the mystery of how this particular wreck came to be and puts an end to the speculation surrounding it. However, there are more puzzles to be solved – where is LCT(A)2428?

The team will be diving again this year as part of a project to locate the wreck of the landing craft along with the exploration of other wrecks in the area including a number of barges or dumb lighters which may have been used to support the Normandy invasion forces. The Royal Navy requisitioned over 1,000 of these vessels which were modified to provide workshops, kitchens, stores, water and many other services to the troops in the months following D-Day.

Reaction to the project

The project report which included advice on the robustness of the site and risks to it from fishing, dredging and visiting divers was submitted to various interested parties, including the MOD. The team have been surprised by the enormous interest from the general public, the media as well as the diving community. The expedition was

filmed for the popular BBC2 Coast programme and even the son of Able Seaman Hunt has been in touch to find out more about his late father's war history.

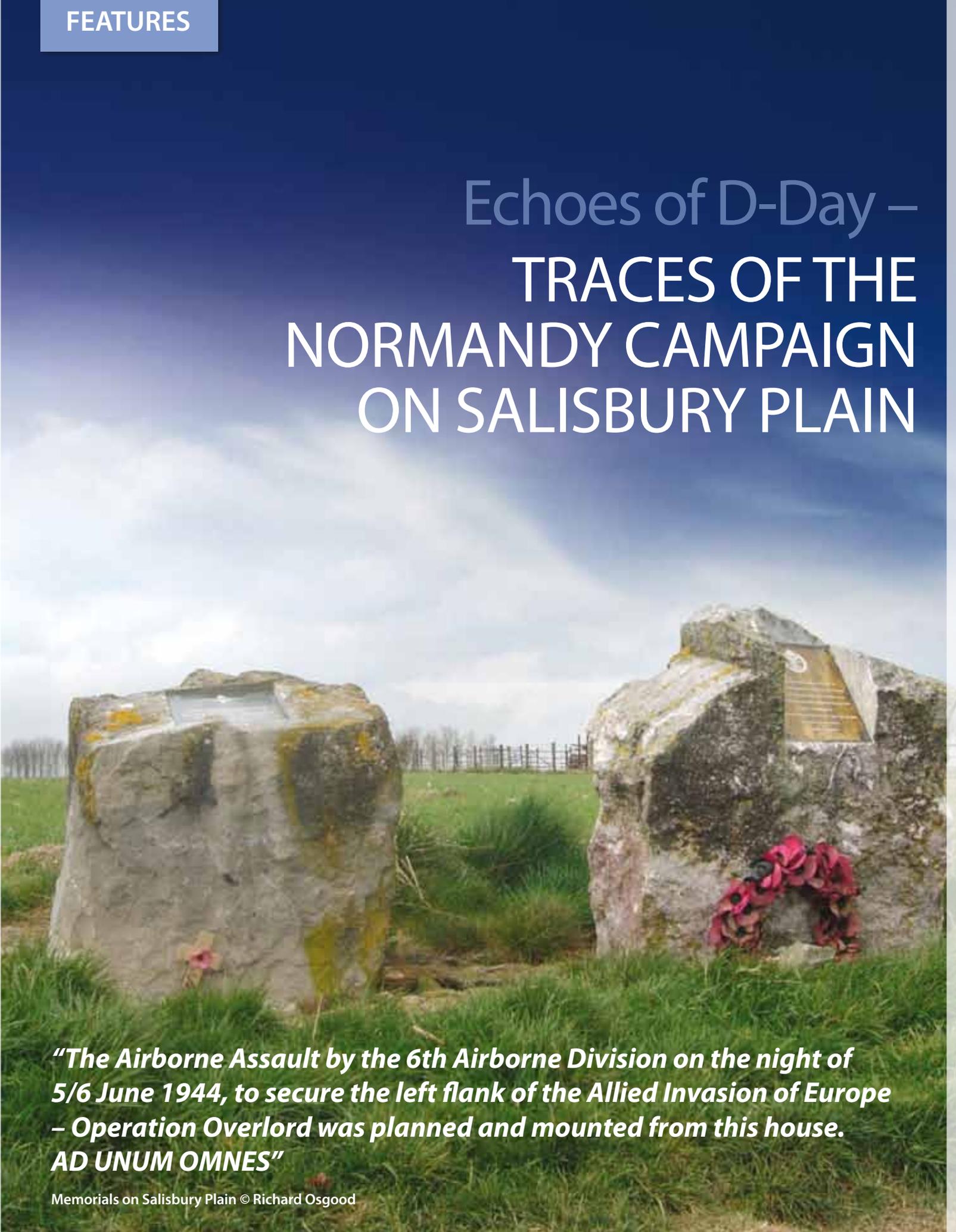
The project has won the British Sub-Aqua Jubilee Trust Award for the most worthwhile diving project in British waters and the Southsea Sub-Aqua Club has adopted the wreck under the Nautical Archaeological Society 'Adopt a Wreck' scheme and will continue to monitor the site in the years to come. The Southsea divers also participated in the 65th D-Day anniversary events in Portsmouth with a display and with talks to veterans and the public.

To dive this site is something different, unique because of its history. The team were amazed at what was discovered about how these wrecks came to be and researching the historical context brought the expedition to life.

Alison Mayor, Navy Command, Portsmouth

For more on the project see www.southseasubaqua.org.uk, or contact Alison by email at alisonmayor2003@yahoo.com.

Echoes of D-Day – TRACES OF THE NORMANDY CAMPAIGN ON SALISBURY PLAIN



“The Airborne Assault by the 6th Airborne Division on the night of 5/6 June 1944, to secure the left flank of the Allied Invasion of Europe – Operation Overlord was planned and mounted from this house. AD UNUM OMNES”

Memorials on Salisbury Plain © Richard Osgood

Echoes of D-Day continued

N.D.G James in his book "Plain Soldiering" notes that the above sentence is written on a plaque placed beside the front entrance of Syrencot House on Salisbury Plain. But, almost 65 years after the Normandy Landings, this is not the only trace of the campaign that survives on the Plain. Buildings, tracts of landscape, vehicles, graffiti and memorials all bear testament to the training that took place in Wiltshire prior to deployment on D-Day, the downtime and boredom before the event and the commemoration of those that failed to return.

Although many other areas on the defence estate still retain traces of beach defences and obstacles through which Allied forces practiced their landing techniques, in the early 1940's Salisbury Plain became a focal point for armed forces from all across the world. These units were making ready for embarkation on Operation Overlord and training for the eventualities they would face in theatre following the beach landings.

Perhaps the most visible remnant of this training and one which has been most controversial is the village of Imber, situated in the west of the Plain. As with modern military operations, the ability for the British and Americans to train in an urban environment was an imperative. To this end, the villagers of Imber were evacuated in December 1943 and the site became the Plain's first Fighting in Built Up Areas (FIBUA) training facility which is still in use today. Nowadays, alongside the Grade II* listed Medieval church of St Giles (strictly out of bounds for training) are the remains of the village houses, Imber Court and the more modern post Second World War breeze-block structures. It is perhaps easier to envisage a GI in his jeep here than it is to picture a Victorian family going to attend church.

Close to Imber are two other training facilities associated with the preparations for the Normandy campaign and the campaigns further on into Europe. A curious collection of hedgerows on banks, incongruous amongst the sweeping chalk grassland of the



St Giles Church, Imber Village © Wayne Colsh

rest of the Plain, are sited at Southdown Barn. Replicating beautifully the bocage country of northern France these sunken lanes around the field systems are, as my father recalled from personal experience in Normandy, dreadful tank country providing cover for anti-tank units and natural obstacles to armoured vehicles. They would, however, have been invaluable training facilities for tank crews heading for Normandy, and in the years to come they would become known as the 'Armagh' hedges indicating differing training needs and the adaptability of the training estate.

Having broken out from the beach-heads, Allied units were to push German forces out of France and the Low Countries, and ultimately back into Germany. Part of this would thus require breaching the imposing Siegfried Line, which ran from the Netherlands to Switzerland, on the German border. The Line had emerged in many ways from defence in depth tactical doctrine derived from the later years of the Great War with wire entanglements strung out in front of anti-tank 'dragon's teeth' and with re-enforced bunkers providing a third defensive line. The Allies first faced this obstacle in theatre in August 1944 but had already encountered a similar configuration of defensive installation on the Plain, much

of which still survives by the copse known as the 'fish hook' south of Imber.

I have been approached by members of British military regiments keen on the preservation of this stretch of monument as it is a part of their unit 'ethos'; as much a part of their heritage as a Bronze Age burial mound will be to others. How one provides protection measures to prevent tank damage to a series of anti-tank obstacles is still open to debate.



Replica Bocage (hedgerow on the Plain)
© Richard Osgood



Replica Siegfried Line on the Plain
© Richard Osgood



Sherman BARV range target in situ on the Plain
© Chris Moore

One of the enduring images of D-Day is that of the collection of bizarre equipment used to overcome obstacles to ensure that the invasion was a success. These vehicles, or 'funnies' as they became known included a large armoured vehicle with a flail used to clear mines, another was the so called Sherman 'BARV' (Beach Armoured Recovery Vehicle). These tanks had no turret and had been waterproofed to enable them to clear tanks that had sunk and blocked the landing areas. One of these BARVs stood for many years as a Range Target in the central impact area of the Plain but recently the hulk has been recovered for renovation by the Tank Museum at Bovington. As such it is an intriguing reminder as to how quickly events become history and worthy of museum accession.

The Americans used major training elements on the west of the Plain with armoured units prevalent. The insignia of these divisions has been found carved into the bricks of buildings at Tidworth, recorded as part of redevelopment work by English Heritage – names too abound with individual soldiers leaving a trace of their presence and existence far from home. Names carved on trees too are a powerful remnant as in some cases these must surely have been carved by men who did not return home and for whom this graffiti is the last physical trace on earth.



US Graffiti carved on trees on the Plain
© Richard Osgood

D-Day was a phenomenal success and yet it was achieved with a high cost in human life, with some 425,000 casualties from the overall Battle of Normandy. Many of those who fell on D-Day itself were from Allied airborne divisions. Photographs taken at the time show large tracts of the Plain covered with the Horsa Gliders which were to carry troops and their equipment to positions behind the beaches, and in later campaigns such as Operation Market Garden. On a small track close to Westdown Camp is a memorial to the men of these units who were killed in action.

Archaeology is all about people and these powerful reminders of the actualities of combat remind us that, although now a matter for study by historians, those challenges and fears faced by the armed forces in their battles 65 years ago are not dissimilar to those faced by today's troops.

Richard Osgood
Head of Historic Environment Team
Defence Estates

Reference: James, N.D.G. 1987. Plain Soldiering: a history of the armed forces on Salisbury Plain. Hobnob press, Salisbury.

“THOSE CHALLENGES AND FEARS FACED BY THE ARMED FORCES IN THEIR BATTLES 65 YEARS AGO ARE NOT DISSIMILAR TO THOSE FACED BY TODAY’S TROOPS”

Bovington – The Spiritual Home of the Tank

David Willey, Curator © The Tank Museum

Surrounded by the unspoilt countryside of Dorset in the south west of England, Bovington Camp is the home to the Royal Armoured Corps. It is also home to The Tank Museum, arguably the world's finest and largest collection of armoured vehicles.

The Tank Museum, like other museums affiliated to the MOD, plays an important role in promoting a sense of heritage, ethos and identity to enhance the *esprit de corps* of the Services. The Museum provides valuable insights into our history through the preservation, education, display and archive of material of military significance and demonstrates to the visitor the continued links past, present and future between the military and public.

Not only does the Museum provide an excellent facility for the public, it is also the Regimental museum of the Royal Tank Regiment (RTR) and Royal Armoured Corps (RAC), preserving and recording the individual human history of those who have served with these regiments. The close relationship is summed up by the curator, David Willey:

"The Tank Museum has always seen itself as an extension of the camp and we like to think we have many mutually beneficial roles. We have always been a place where the public and serving soldiery can meet, and a venue where the Army can demonstrate its vehicles. Our recent Tankfest event attracted 10,000 visitors who saw a fantastic display of in service equipment and had the chance to chat to the crews and mingle."

The Museum

The Tank Museum, a registered charity and independent Museum accredited by Museums Libraries and Archives Council, houses the national collection of tanks and armoured vehicles. The collection features over 300 unique vehicles from almost 100 years of armoured warfare, some of which cannot be seen anywhere else. Star attractions include the world's first prototype tank Little Willie built in 1915 and the infamous Second World War German Tiger Tank – the only one in the world still running.

The Museum employs over 40 full-time staff to look after the vehicles and the thousands of supporting artefacts such as medals and memorabilia, documents, diaries and photos. The Museum also relies upon a dedicated group of volunteers who act as guides in the museum, and help out in the workshops and during special events.

During 2008 the Museum attracted 127,000 visitors, 4,000 of which were school children, and over 700,000 web visitors. With new facilities and many more people taking UK holidays, 2009 looks like it will be a bumper year with 160,000 visitors anticipated. A series of special events such as Tankfest are also held throughout the year combining entertaining family days out with an education in the historic and modern military.

Although the main aim of the Museum team is to preserve and explain tank heritage, they also assist the Army and defence industry with vehicle loans, training and comparison material, advise other museums (including some overseas) and help members of the public who want to find out more about their family history or an object they have acquired or inherited.

At Close Quarters

As a not for profit organisation, all surplus income is reinvested in the Museum for a variety of projects, including the recently completed Heritage Lottery Fund backed redevelopment project 'At Close Quarters'. This was a major project to upgrade the facilities and bring the collection displays into the 21st century. The Museum required security of tenure before they could raise the funds for the project which was arranged by Defence Estates (DE) who are also responsible for overseeing the maintenance of the museum.

The key aims of the redevelopment project were: to improve display conditions to ensure the long term preservation of the unique collections; increase the museum space to allow more room to display a larger number of vehicles and artefacts; utilise the latest technology to create cutting-edge exhibitions and displays, enhancing the visitor experience; upgrade the visitor facilities, including improving the tank arena to provide greater spectator viewing and facilitate an enhanced programme of events; and create an environment where visitors can be engaged and captivated.

After almost 10 years from initial planning to completion and a £16 million investment, the project was completed early in 2009 and opened by the Queen on 11th June. The Museum now boasts a new reception area, restaurant, shop and outdoor tank arena, but without a doubt, the centre piece of the project is 'The Tank Story'.

The Tank Story

On the 4th April 2009 to coincide with the 70th Anniversary of the formation of the RAC, 'The Tank Story' was opened in a new 50,000 sq ft purpose built display hall. This new exhibition tells the fascinating tale of the tank through the major 20th century armoured conflicts using 35 vehicles from Little Willie to Challenger 2. The story of the tank crews takes on new significance with specially created audio visual displays that feature archive footage, photos and veterans' accounts. The supporting collections, some of which have never been displayed before, are given greater prominence with uniforms, small arms and memorabilia integrated into the storyline.

Creating the exhibition involved everyone at the Museum, from the archivists who painstakingly organised the supporting collections to create the new displays, to the workshop staff who moved the 35 tanks into the new hall. Many of the vehicles had not been moved for at least 25 years. Although some ran under their own power, most were towed and the more fragile vehicles like the 90 year old Mark II was loaded onto a transporter and moved the short distance of 600m from the main museum to the new hall.

Archiving and Preservation

The Museum's Archive and Referencing Library, an approved place of deposit for the National Archives, is extensive and contains one of the largest photographic archives of

its kind in the world, with some 250,000 images. Great importance is placed upon capturing living history especially that of the current serving soldiers in the RAC. The Museum welcomes donations of their old kit and photos along with the stories behind them in order to create a record of the military today for future generations. Although the Museum relies mainly on donations for artefacts, if the funds can be obtained, items are occasionally purchased from dealers and auctions such as eBay.

A challenging part of the Museum's work involves the recovery and preservation of abandoned vehicles on the defence estate for the benefit of the collection. Some of these vehicles could become exhibits or be used to assist with the restoration of other vehicles. The Museum is helping to establish a group to assist DE Defence Training Estates to identify the remaining historic range targets and wrecks on the training estate. This will not only help to safeguard genuinely important heritage items, but will also provide advice and guidance to estate managers who are often approached by private collectors and dealers wanting such items.

The Future

Work to further improve the Museum is underway and will include an upgrade of the workshops and expanding the vehicle storage facilities. This will enable better conservation and maintenance of the running fleet of vehicles and more storage will also allow vehicles to be rotated into Museum displays. At the moment much of the Museum is simply providing cover for this important collection.

Undoubtedly the hard work of the Museum team has ensured that stories of courage and sacrifice told at the museum will live on for future generations to come. The new facilities meet the requirements of the discerning modern museum visitor and create an environment where learning and enjoyment go hand in hand. Bovington certainly remains the spiritual home of the tank.

Rebekah Jones, Editor

With thanks to The Tank Museum, in particular David Willey (Curator), Nik Wyness and Martin Langford (PR and Marketing) for their warm welcome and support in writing this article; and Anita Jeffers (MOD Heritage Branch).



The Tank Story Exhibition © The Tank Museum

'Streamlining away in the vagaries of the wind' - BRAUNTON BURROWS

© MOD Crown Copyright

If you turn west off the B361 just before the north Devon village of Braunton, jammed with holidaymakers in the summer, and head across the timeless tranquillity of the grazing marshes of the Taw estuary, you will find yourself on the fringes of a vast complex of sand dunes. Created after the last Ice Age, three and a half miles long and rising to a height of 40 metres, they defend the Devon coastline from the breakers that crash along the enormous beach that separates the land from the Atlantic Ocean.

This is Braunton Burrows: the epicentre of a UNESCO Biosphere reserve (one of only three in England); within the North Devon Area of Outstanding Natural Beauty; a Special Area of Conservation; Site of Special Scientific Interest and one-time National Nature Reserve. It is not owned by the MOD but by Christie Devon Estates, from whom the MOD hold a 25 year lease on the southernmost 583 hectares of the Burrows for the purposes of military training. Training area maintenance is carried out by Landmarc

Support Services on behalf of Defence Training Estates. However, the military presence predates the current lease by 45 years.



Braunton Burrows © John Breeds

D-Day preparations

In the lead up to D-Day the whole of Braunton Burrows was taken over and developed to allow Allied troops to be trained systematically and step-by-step in the art of amphibious warfare. Three adjacent beaches, Saunton Sands, Croyde Beach and Woolacombe Bay together with an area of hinterland were taken over by the U.S. Army and became their Assault Training Centre (ATC). While the beaches of the ATC suffered the drawback of exposure to the stormy Atlantic weather, they were found to be perfect for amphibious exercises and had the crucial advantage of being almost identical to the intended Omaha Beach in terms of sand quality, beach gradient and tidal range.

ATC staff drew up a series of training programmes and exercises for troops landing on a hostile beach, while U.S. Army combat engineers got to work building makeshift camps, providing fresh water, digging drains and laying roads. The ancient lane leading from Georgeham to the ferry over



Dummy Landing Craft Bow © John Breeds

to Appledore was straightened and became known, as it is today, as the 'American Road'. Much of this work was carried out by the U.S. Army 146 Engineer Combat Battalion who also built a series of training obstacles consisting of concrete pillboxes, anti-tank ditches, dragon's teeth and minefields.

During training, after mortar and artillery fire had 'softened up' the obstacles, troops would disembark onto the dunes from landing craft with live ammunition including, tanks and artillery, and assault the obstacles under the cover of smoke, flamethrowers and grenades. Finally, the troops would clear the obstacles using satchel charges, bangalore torpedoes and rocket launchers. Needless to say the Combat Engineers probably spent more time re-building the obstacles ready for the next exercise than they got to practice demolition themselves.

Today a surprising number of these obstacles remain on Braunton Burrows, although most are buried or overgrown and are barely recognisable. The most clearly visible are the dummy landing craft, including one that is, in fact, a building within Fremington Camp.

This building, known locally as 'the ship' was built to allow instructors and trainees to look down from a raised gallery and watch the progress of the vehicles being marshalled into floorspace marked out to represent a landing craft.

Even more interesting are the remains of dummy landing craft constructed from concrete. There are a number of flat concrete bases which have been built to the exact layout of either the 36 foot Landing Craft Personnel or the 108 foot Landing Craft Tank (LCT). The dummy LCTs are particularly impressive and at least two of them still have their bow section intact. Looking at these remains it is not difficult to visualise the careful loading of trucks, artillery and tanks as they were backed through the narrow concrete bow before being lashed down to rings in the deck and then, finally, driven off forwards to simulate a beach landing. On one concrete base the constructing unit left its mark in the cement, still visible after 65 years: '146 ECB, Co C, 1st Platoon' – undoubtedly the 1st Platoon of C Company of the 146th Engineer Combat Battalion.

However, within a few months of this frenzy of activity, this hitherto quiet corner of Devon fell silent once more as the American forces departed for the massive combined assault on the Normandy beaches. There can be no doubt that the Burrows played an invaluable part in the success of the landings in those early June days of 1944.

Conservation Importance

Training has continued on the Burrows ever since, albeit with less intensity, and gradually the visual legacy of the American occupancy has diminished. Christie Devon Estates invested heavily in restoring the dune system immediately after the war and the animal that is perhaps most synonymous with all burrows, the rabbit returned, as did the ecologists. In 1964 a National Nature Reserve was established over part of the area and the then Nature Conservancy Council assumed direct management of 400 hectares exclusively for conservation purposes until 1996.

It is impossible to overestimate the importance of the Burrows in conservation terms, and the designations alone barely do it justice. The eminent 17th Century naturalist John Ray monitored the flora and fauna of the Burrows in the 1660s and in 1898 CE Larter reckoned that 600 of the country's then indigenous plants could be found there. Henry Williamson mentioned the area in *Tarka the Otter*, and waxed lyrical about the dunes '...streamlining away in the vagaries of the wind...'

The Burrows

The Burrows are formed by windblown sand, and shingle beds can be seen in the 'slacks' which lie in the lee of the higher foredunes. Marram grass acts as an obstacle to the sand blown from the beach and forms a trap around which the dune takes shape. In these seemingly hostile conditions the marram thrives and so contains more and more sand. Once the sand has stabilised the marram grows less vigorously and other plants begin to colonise the surrounding area.

'Streamlining away in the vagaries of the wind' continued



Eyebright and bird's-foot-trefoil © Iain Perkins

At the high tide mark, braving the hostile ocean can be found prickly saltwort and sea rocket. Sheltering behind the dunes are short sea-holly, sea bindweed and the rare evening scented stock. Further to the east, on the fixed dunes, a carpet of spring and summer flowers: biting stonecrop, viper's bugloss and evening primrose thrive. Elsewhere can be found restharrow, bird's-foot-trefoil and wild thyme, and more unusually, sand pansy, sand toadflax and water germander. In the summer butterflies thrive: dark green fritillary, marbled white, meadow brown and gatekeeper are amongst the 34 species that can be spotted, whilst the six-spot burnet moth is a fond visitor to the marsh orchids. Today the site boasts some 470 flowering species, so the variety has sadly reduced since Larter's day. However, there are in addition 17 dragonfly species, five of the six English reptiles and all three species of newt.

Management

Of course, none of this happens by accident and in the 1960s a management regime between the Christie Devon Estates, the MOD and the Nature Conservancy Council (now Natural England) began to take root. Together this alliance has managed the Burrows through a succession of practices, policies and joint funding initiatives ever since.

The 2009 Sanctuary Award winner John Breeds MBE has been instrumental in the success of the relationship and more particularly in the care of the Burrows. Since 1979 John along with his wife Mary has worked tirelessly monitoring, recording and helping to protect the wildlife of this huge area. The couple have led walks of young and old alike, spoken at meetings, written articles and organised groups of volunteers. Now retired, John acted as a vital 'hinge' in the relationship between the various legitimate users of the Burrows. Always keen to prevent unnecessary damage but at the same time ready with friendly and invaluable advice over the effects of training and how it can be mitigated, or even, in some cases, encouraged.

Since 1997 trials have been conducted to determine whether mixed sheep and cattle grazing can help control succession and particularly the invasion of scrub species. The findings were positive and in 2008, supported by Defence Estates, the Christie Devon Estates successfully entered the Burrows and some adjoining land into the Higher Level Stewardship scheme. The contract has been let for the first phase of the project to divide the area into large fenced enclosures prior to the reintroduction of livestock in autumn 2009.

The rabbits have also played their part in maintaining the abundance of flora by keeping the turf grazed short, favouring plants such as thyme. However, in 1954 the population was all but annihilated by the first attack in the UK of myxomatosis. Although numbers have varied since then, they have remained at a generally low level, giving rise to the growth of more luxuriant



© Iain Perkins

vegetation which threatens to choke out the less vigorous and shyer species. But here the botanists have perhaps an unlikely ally – the military.

The Military Ally

The Burrows provide an excellent facility for modern marine, amphibious, aerial and terrestrial training. It is through the use of vehicles like the Jackal armoured vehicle, that the interests of the soldier and the ecologist most closely coincide. The dunes are heavily used by all three Services trialling equipment and for driver training in desert conditions. The disturbance to the surface caused by this heavy equipment is perfect for destroying the ever-encroaching scrub and opening the ground to provide seed bed conditions essential for the survival of the rarer species. Areas that appear to the uninitiated to be ruined by this mechanised onslaught are often successfully re-colonised, and the cycle begins again.

The area is also heavily used for dry training and exercises took place virtually every day in 2008. Such a statistic often amazes local people who use the land for recreation, a testament to the ability of troops to remain largely unseen by the general public. In fact, public access and training coexist satisfactorily and it is proposed to upgrade the status of the American Road from a public bridleway to a restricted byway.

For somewhere only a mile or so from the nearest village, the Burrows remain a wild place. The Atlantic winds and the sand combine to smother and erase the impacts of man. They make survival difficult for many wild plants and creatures, but at the same time provide a home for a wide variety of unusual and delightful species. For the past 60 years the stewardship of the Christie Devon Estates, the MOD and the statutory conservation agencies has ensured its survival as a vitally important environment for conservation and the defence of the nation.

Mark Lyall, Defence Estates and Lt Col James Porter, Commandant Defence Training Estate South West.



Cooking over an open fire © Army Welfare Service

“I’m not eating that, it’s disgusting”

- Community Outreach on Salisbury Plain

The community outreach initiative Xplanation, a one year Heritage Lottery Fund project brought together the Wiltshire Wildlife Trust (WWT), Defence Estates (DE) and the Army Welfare Service (AWS) to ‘explain the Plain’ to young people living in four Wiltshire military communities and encouraged them to create four community spaces.

The project started when the AWS identified the lack of social and community engagement that exists within many service families. With the majority of service families coming from areas outside of Wiltshire and many from urban backgrounds, there is often a disconnect between the families and the area in which they are living. To address this, the project team arranged a series of activities in locations around Wiltshire and Hampshire along with visits to the Stonehenge landscape with the National Trust. The AWS provided the trained and Criminal Records Bureau checked Youth Community Workers, the WWT provided staff trained in ecological and environmental matters and DE staff provided the land management expertise and provided the appropriate licensing for the project to proceed.

Young people from AWS youth groups at Bulford, Larkhill, Perham Down and Trenchard Lines at Upavon voluntarily walked and worked in pouring rain, driving hail and

blazing sunshine; cooked over open fires; slept on a woodland floor in shelters they had built themselves; dug a considerable amount of turf and sowed wildflower seeds; picked apart owl pellets; dyed t-shirts with beetroot; detected bats in the dead of night; and hurled themselves into nettles and brambles to avoid detection on a night exercise. They also participated in activities such as basic environmental art with willow; the identification of wild foods; visits to the Hawk Conservancy Trust; pond dipping; bird watching; bushcraft, and, quite often, just sitting or lying around on logs and fallen tree trunks just ‘being’.

The highlight for 13 of the young people was the natural resource based survival weekend undertaken on the Erlestoke Training Area, part of the wider Salisbury Plain Training Area. A survival scenario was devised by Guy Hagg (DE) and Sgt Lee Henderson, (6 Battalion REME) and involved the group being washed up on an island and having to survive using natural resources. They were shown how to, and some succeeded in, make fire using bows, spindles and drilled boards and how to collect and purify water from a spring. They constructed their own shelters out of ash poles and brush wood and participated in a night stalk, whereby they used the landscape to avoid detection in trying to get back to camp. The group were also given a demonstration of how to skin, butcher and cook a deer as part of

the licensed culling of deer on the Plain, which caused one particular individual to exclaim; “I’m not eating that – it’s disgusting” – shortly before eating about £75 worth of venison! The young group thoroughly enjoyed themselves and gained an in-depth close up and personal appreciation of the natural heritage of the Plain.

Inspired by these activities the AWS youth groups organised a Youth Community Forum at Bulford Beeches. This provided the local military and civilian community with a chance to view the proposals of the young people for their community spaces. Some of the young people excelled at informing the adults present of their plans and providing enthusiastic interpretations of why they had chosen the community space features, resulting in many positive comments. Sue Harper the Senior Community Development Worker at Tidworth, Netheravon and Bulford Garrison, commented that the project “has provided young people living across the garrison with the opportunity to explore their local heritage and look at their own community in terms of how they perceive their part in it and how they can change it for the better.”

As the young people have been involved with the project from inception through to completion it has fostered a sense of stewardship which will leave the local environs in much ‘better shape’ for future young people. Managed as a partnership between the organisations and local community, the project has shown what can be achieved in a short time and brought funds that would not have been available from internal sources. The success of the project has resulted in approximately £300,000 of additional funding from Natural England to create and enhance the natural spaces in and around the garrisons on Salisbury Plain.

It is hoped that others will be inspired to develop similar projects and use the Xplanation experience as a template for other sites. As for the young people involved – they now feel more engaged with the communities in which they live, resulting in less anti-social behaviour such as graffiti, litter and under age drinking occurring within their communities.

Guy Hagg - Head of Conservation Group Team, Defence Estates, and Dean Sherwin, Wiltshire Wildlife Trust.

The Flourishing Management Group and Wildlife of Penhale Sands

Shetland ponies borrowed from Natural England grazing Liggerheads © Sarah Taylor

Situated on the north coast of Cornwall and covering the rocky headlands from Holywell, southwards to Perranporth behind the three miles of sandy beach, Penhale Sands is the highest dune system in Britain. As well as accommodating the MOD's Penhale Camp and Training Area, which was established in World War Two to train anti-aircraft gunners and now used for low-level infantry skills training, it is an important Site of Special Scientific Interest and Special Area of Conservation (SAC).

The MOD has responsibility for just over half of Penhale Sands (c1000ha) and its varied dune habitats. In 2003, an SAC Management Group was established under the chairmanship of the Defence Training Estates (DTE) Penhale Commandant and representatives from the other main landowners; Bourne Leisure who run a large holiday Park (Perran Sands) near Perranporth, Perranzabuloe Parish Council and Perranporth Golf Club, along with Natural England, St Piran's Trust, National Trust and Cornwall County Council (CCC).

The Group provides a forum for discussing issues and managing the SAC, and jointly fund a Ranger, employed by CCC.

In 2007, Cornwall Wildlife Trust (CWT) joined the Group as licensees of MOD and applied for a Higher Level Stewardship Agreement (HLS) with Natural England. The MOD area has now been accepted into HLS and the majority of the SAC is now within this scheme. The 10 year agreement should help to provide funding, greater security in planning and the ability to carry out future management work.

The DTE Penhale Conservation Group are also actively involved in advising on management of the site and provide invaluable information about a plethora of species, with expertise ranging from bryophytes and flora to invertebrates and small mammals. This information is integrated with other issues, such as the military use and public access to achieve a balance between the different land uses and specific requirements of the dune species. (Read more about the group's activities on page 71).

Habitat Management

The habitats at Penhale range from mobile dune fronts and cliff tops through to dune slacks, although the majority of the system is made up of stable dunes. With public access largely limited to the coastal footpath and military training mostly low level and carefully managed, resulting in less disturbance and erosion to the dunes, encroachment by scrub is one of the main conservation issues.

Over the past few years large swathes of blackthorn and gorse scrub have been mechanically cut from cliff and dune areas. Not only has this stemmed the spread of scrub onto adjacent habitats, but created long rides through the remaining scrub to form a habitat mosaic. It has also uncovered archaeological features such as mediaeval field boundary ridges and World War Two trenches.

Each year the cut areas have been topped to control the regrowth and are slowly starting

to support a wider range of flora and fauna. Plants such as thrift, sea storks-bill and sheep's-bit have been increasing and adders have been frequently seen sunbathing in the open rides. Last year privet scrub was cut where it was threatening the rich short turf habitats of adjacent species. The arisings were also removed to reduce nutrient input. This has reduced the potential loss of habitat for flora such as common centaury, lesser centaury, bird's-foot-trefoil and eyebright, as well as the rare early gentian *Gentianella anglica* and scrambled egg lichen *Fulgensia fulgens*, for which Penhale is nationally important. Last year viper's bugloss also appeared in some of these locations.

The long term aim is not to remove all areas of scrub, as islands are essential for the variety of wildlife, providing shelter and food for invertebrates and rabbits. During the summer the carpets of wild flowers such as wild thyme and biting stonecrop



Six-spotted burnet on shore dock © Iain Perkins

support a mass of invertebrates, including the protected butterfly silver-studded blue. Burnet moth cocoons are also a common sight on the marram grass stems.

Rabbits play a vital role in grazing the dunes, but ponies have also been used. In spring 2005, a small trial compartment was electrically fenced on an area of seasonally wet dune, where locally rare fragrant orchid and marsh helleborine grow, but taller grasses were starting to invade. Shetland ponies were borrowed from Natural England and more recently two Exmoor ponies were loaned from CWT. This compartment has since been enlarged to include an area of stable dune, grazed each spring and monitored using fixed point photographs and species quadrats. As flora varies annually and is affected by other factors, a longer period may be required to establish any trends, but the ponies have visibly broken up the dense mat of grasses and allowed the dune flora to flourish.

Following this successful trial, larger compartments on Holywell and Ligger Headlands were permanently fenced and have been grazed over the winter and spring. The ponies are taken off species rich areas in spring or early summer to allow the flora to flower. Military training on these areas was minimal due to the scrub, but stiles were built into the fencing to allow access and so far training and ponies have existed happily side by side. While this grazing has been of low intensity, due to the promising results the introduction of a greater number of ponies, cattle or sheep are being discussed.

Another habitat where management work has taken place is the dune slacks. Over several years the slacks had become increasingly dry, leading to encroachment by willows and a build up of nutrients. The main cause of lower water levels was probably reduced annual rainfall. In 2007, a network of 10 piezometers was installed, in liaison with a CCC hydrologist and Natural England, to monitor ground water levels and inform future management. Of the five areas managed, Mallard Pool is one of the main dune slacks where mature willow had established. This was cut in 2004 and the root plates pulled up while carefully leaving any remaining patches of dune slack flora. The slack has once again become a large seasonal pool supporting frogs, toads,



Sheep's-bit *Jasione montana* © Iain Perkins

palmate newts and grass snakes. Plants such as bog pimpernel have grown in huge numbers and adder's tongue was noted for the first time.

Shore dock *Rumex rupestris*

Only found in a few locations worldwide, the threatened shore dock is supported in significant numbers in the Penhale dunes. However, in 2007 shore dock disappeared from the MOD area of Penhale, possibly due to a combination of a series of dry slacks over several winters and subsequent competition from other flora. There was also a concern that the lack of water meant that rabbits could reach and graze the young plants, which have lost the protective chemicals found in other dock species. Colonies were rabbit fenced to protect them and the dense vegetation cleared. In 2008, the plants were again seen within the MOD slacks, much to the excitement of the Conservation Group and Natural England, as this plant is one of the SSSI/SAC features. Very rare hybrids occur at Penhale, as unusually, the shore dock is found in proximity with other dock species – one is even named after a long standing and well respected member of the conservation group:



Willow weedwipe Sept 2008 © Cornwall Wildlife Trust

Rumex rosemurfhyae. We hope that with another wet winter this year and ongoing management shore dock numbers will increase again.

Military Training

Military training on the dunes is carefully managed by the DTE Commandant, in liaison with visiting Units, the Range Warden and Natural England to reduce wildlife disturbance and habitat damage, whilst recognising that some activities may also benefit the dunes. Controlled erosion in carefully selected locations can benefit certain invertebrates and colonising flora. Consequently, an off road driver training route was agreed with Natural England and the Conservation Group, as the dunes were becoming too stable in places and there was a lack of bare sand overall. To restrict vehicle access elsewhere, a series of crocodile posts have been installed.

Other important practical and dune management work is also carried out through close liaison between Defence Estates, Landmarc, Natural England, CWT and CCC. On the ground the Ranger and Range Warden work together with Units and contractors to monitor and manage training activities and conservation management. The Ranger offers briefings and walks to visiting Units about the dune wildlife and explains why certain activities are controlled, or leads practical conservation tasks. Recently groups of Cadets have helped to clear scrub and pull ragwort. Talks are given to a range of local groups about the SAC wildlife and management work. A programme of events is held each year for the public, many of which are promoted through the local press. These include a range of guided walks and children's activities including several within the MOD area where public access is not usually permitted and are always popular.

With such close working between a range of organisations and the potential for expanding the existing management work within the HLS agreements, the future balance between military use, public access and conservation value should continue to improve and the flora and fauna of Penhale Sands continue to flourish.

Sarah Taylor, Countryside Officer for Penhale Sands SAC. Cornwall County Council, Environment & Heritage Service.

Grazing towards Sustainability



White park cattle on Salisbury Plain © Guy Hagg

Since pre-history, grazing animals across the British Isles have played a vital role in shaping our vegetated landscape and managing our plant life through browsing, grazing, dispersing seeds and disturbing the ground. As man cleared the woodlands, introduced domesticated livestock and planned seasonal grazing and cutting systems our pastoral systems were established. To this day, the detail and language used to describe how these systems are managed vary between regions and countries, but to maintain their integrity consistent management approaches such as grazing, cutting, burning and disturbance must be applied.

Livestock grazing is vital to the management of the MOD's pastoral systems across the defence estate in order to provide a realistic training and working landscape. However, for many military establishments it is becoming increasingly difficult to secure graziers due to a national decline in numbers of suitable livestock. This together with new disease risks such as Blue Tongue, poses a major threat to the future management and condition of our training areas.

Investing in a new grazing partnership

Over the past 10 years MOD has participated in and benefited from the Grazing Advice Partnership (GAP), formerly called the

Grazing Animals Project. The scheme has been instrumental in supporting our site managers grazing needs in England, Northern Ireland, Scotland and into Wales through GAP's Welsh partner PONT. GAP and PONT have successfully bridged the gap between graziers, landowners, government departments, research and conservation organisations to take forward conservation grazing management systems. As well as enhancing the conservation benefits of Sites of Special Scientific Interest (SSSI) on the defence estate, it has also provided training, technical information, workshops and a biannual conference.

Within the recent reorganisation of English Nature into Natural England, GAP's core

Grazing systems on the defence estate:

- manage the height and structure of vegetation to allow military personnel to use rural areas effectively for snipers, armoured vehicles such as Challenger 2 tanks, to air support
- reduce fire risk by depleting the accumulation of leaf litter and providing a safer place within which to operate for our personnel and the neighbouring community
- combat the encroachment of invasive scrub and tree regeneration - one of our largest rural management costs
- achieve Biodiversity Action Plan and Public Service Agreement targets for the condition of Sites of Special Scientific Interest and Scheduled Monuments
- support and work with the local rural community by establishing working relationships with local farmers and graziers
- support the use of native breeds of cattle, sheep, ponies, goats and deer, and local marketing schemes producing local food for local people
- contribute towards maintaining the distinctive landscape character and cultural heritage of the defence estate
- provide an income to the MOD from rental and grazing licence agreements

funding was reviewed and new investing partners sought. Defence Training Estates (DTE), along with Natural England, Rare Breed Survival Trust and the National Trust, has provided funding for three years and support to the scheme. GAP now intends to broaden its approach to a wider audience of land managers and into mainstream agriculture. In concert with regulatory and grant provisions, and along with PONT, it aims to reverse the UK-wide decline in the environmental landscape and cultural value of our pastoral land.

These schemes are vital in supporting the MOD establish grazing management into the most challenging of our locations. Feedback from Defence Estates (DE) Environmental Advisers demonstrates how closer alignment between DE, our tenants and the GAP will bring substantial benefits into the long term. Successful examples include: introducing grazing to improve the SSSI at Pirbright Ranges in the Home Counties using red deer and goats; establishing new grazing licenses to restore and sustain the heathland of Ash Ranges also in the Home Counties; grazing using Highland cows in Barry Buddon in Scotland; extensive grazing of the chalk grasslands on the Salisbury Plain by white park

cattle; using ponies to graze the heathlands of Bovington and the coastal grasslands of Manobier Range in Pembrokeshire.

Heathland restoration at Ash Ranges, Home Counties

The aim of the project is to establish an enduring and sustainable range management system for the military use and improve the condition of the SSSI across Ash Ranges.

The Ash Ranges complex is 977 hectares of lowland heath and woodland located east of Aldershot and west of Guildford in West Surrey. It has been owned and managed by MOD since 1854 and is part of the DTE Home Counties supporting nine small arms ranges. These are vitally important for military training within southern England and used by many thousands of personnel every year. The ranges are closed to the public when the red flags are flying. However, come 4.30pm when the flags come down or when firing stops occasionally for maintenance, the whole area is open to anybody to enjoy the vastness of the site and its spectacular open heath.

The site is one of the most important conservation areas in southern England supporting a range of Red Data Book species such as sand lizard, smooth snake, tiger beetle, sundew sp., marsh clubmoss and silver-studded blue butterflies. An area of nationally and internationally important lowland heath and woodland it is part of the Ash to Brook Wood Heaths SSSI designated for its wet and dry heath flora and fauna. It also forms part of the Thames Basin Heaths Special Protection Area designated principally for the protection of ground nesting birds such as woodlark, nightjar, Dartford warbler, and the Thursley, Horsley Ash, Pirbright and Chobham Special Area of Conservation. The site is divided into six SSSI units, the majority of which were in unfavourable declining condition five years ago.



Winter grazing on Salisbury Plain © Guy Hagg

Grazing towards Sustainability continued

“THE WHOLE PROJECT IS AN EXCELLENT EXAMPLE OF WHAT CAN BE ACHIEVED THROUGH INNOVATIVE THINKING AND ORGANISATIONS WORKING TOGETHER TO ACHIEVE A COMMON AIM”

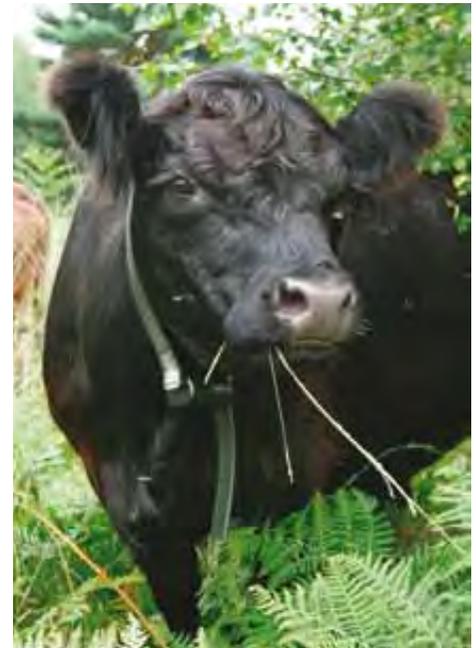
DE and Landmarc Support Services have worked together with Natural England and the MOD Conservation Group for Ash and Pirbright to establish a management regime for this important habitat. This cooperation resulted in a working plan in 2003, with the objectives to clear the invasive scrub and keep it clear, control bracken, and open up the important mire areas of the site. Also, in 2003, Surrey County Council's Heathland Project Team in partnership with local District Councils and the MOD launched a five year heathland management project called Surreys Last Wilderness which was supported by a £1 million grant from the Heritage Lottery Fund with Ash Ranges being a major benefactor. The Project has resulted in clearance of large areas of scrub from the heathland. At the same time the first stages of the MOD SSSI improvement project became a reality and we were able to fund further large scale clearance work. The impact of these two projects enabled Natural England to move some SSSI compartments into a favourable recovering status.

To positively manage Ash Ranges, we along with Natural England, were keen to explore the possibility of introducing a grazing regime onto all or part of the site. Following the success of similar agreements with the Hampshire Wildlife Trust, in 2006, DE negotiated and signed a licence agreement with the Surrey Wildlife Trust (SWT) to provide conservation grazing and management on the DTE lowland heath in the county. This included 1,325 hectares around Ash Ranges as the flagship site. In 2007, SWT signed a 10 year Higher Level Stewardship Scheme with Natural England, principally to deliver conservation management through grazing to 983 hectares including Ash Ranges. The scheme has been designed to further the

management of the Ranges dry and wet lowland heath and achieve and sustain favourable condition status across the SSSI.

DE have led this project seeking financial support from the MOD SSSI improvement project for large scale heathland clearing, initial fencing and infrastructure such as the provision of water and a cattle handling area prior to the release of cattle onto site by the SWT. The fenced Range Danger Area was targeted for grazing and an area of 600 hectares was enclosed with cattle grids and gates to allow military training and public access. In the summer of 2008, SWT released 35 Belted Galloway cattle onto the site and a further 30 animals in 2009, with the intention to build up a herd of up to 150 head over the next few years. The cattle are owned and managed by the SWT.

This is a fantastic achievement for all concerned and the culmination of two years of planning and preparation. The whole project is an excellent example of what can be achieved through innovative thinking and organisations working together to achieve a common aim. My thanks go to all who have been involved with this project from DTE, DE, SWT, GAP, Surrey Heathland Project, Natural England, Landmarc, Herpetological Conservation Trust and the Ash and Pirbright MOD Conservation Group.



GPS tracking collar on Belted Galloway grazing Ash Ranges © James Aldler, Surrey Wildlife Trust

Mr Richard Snow, DE Environmental Advisor, and Mr Jonathan Gasson, DE Senior Estates Advisor.

Contact:
Richard Snow - Tel: 01985 848735
www.grazinganimalsproject.org.uk

Water - a valuable commodity

Male great crested newt
© Fred Holmes

We tend to take for granted that turning on the tap provides clean fresh water but with changing patterns of rainfall it is essential that we manage what we use wisely. The MOD is one of the largest landowners in the country, with over 600 key sites ranging from training areas, operational airfields to offices and uses over 24 million cubic metres (Mm³) of water annually to conduct its business.

Over the past few years the erratic rainfall in Britain has caused both flooding and water shortages. It is essential therefore to safeguard future supply to ensure sufficient water to continue operations at home whilst protecting water dependent wildlife and the wider environment on the defence estate. The Government's drive for cost effectiveness is as keen as ever and reducing the water we use makes good financial as well as environmental sense. It saves the energy expended in supplying, treating and processing of potable water and reduces waste water disposal costs and final effluent.

Aquatrine, the MOD GB-wide Water and Waste Water Public Finance Initiative, has responsibility for providing a continuous clean supply of water to the defence estate. The Aquatrine Service Providers (ASPs) cover three geographical areas: Package A managed by BREY Utilities covers the Midlands, Wales and South West England; Package B managed by Veolia Water Nevis covers Scotland; and Package C managed by Coast 2 Coast Water (C2C) covers the North and East of England. The ASPs are responsible for the provision and distribution of all water for drinking; collection/removal of surface water and waste water; fire fighting; leakage reduction;

maintenance of water assets such as water pumping and emergency water supplies; along with investment and upgrading of the water system.

The Sustainable Operations on the Government Estate has placed a target on MOD to reduce water consumption, relative with 2004/05 levels, across its estate by 25% by 2020. With the ASPs expertise and the knowledge gained from metering the water supplied, the MOD to date has already reduced its gross water consumption from 33.5Mm³ to 24.8Mm³. The ASPs are keen to build on this success. C2C who conducted water audits at the major sites within its area, identified usage patterns and what water saving measures could be fitted to achieve a saving with no detrimental changes for the user.

Wellington Barracks in London was picked as the trial site and C2C installed 568 water saving devices such as tap aerators which put a tiny bubble of air within each water drop, push taps on hand basins and movement sensors so urinals only flushed when used. The buildings originally used 47,815m³ per annum, this dropped to just 24,455m³ after the installation of the water saving devices - a 49% reduction. These measures were replicated at 12 other sites in water stressed areas in 2008 and included water displacement devices, also known as hippos - cheap but in many cases very effective. Over the 12 sites an annual saving of 64,567m³ is anticipated.

However, it's not just humans that appreciate the water and facilities provided by Aquatrine. MOD sites often provide ideal conditions for great crested newts. Protected under UK and European legislation and

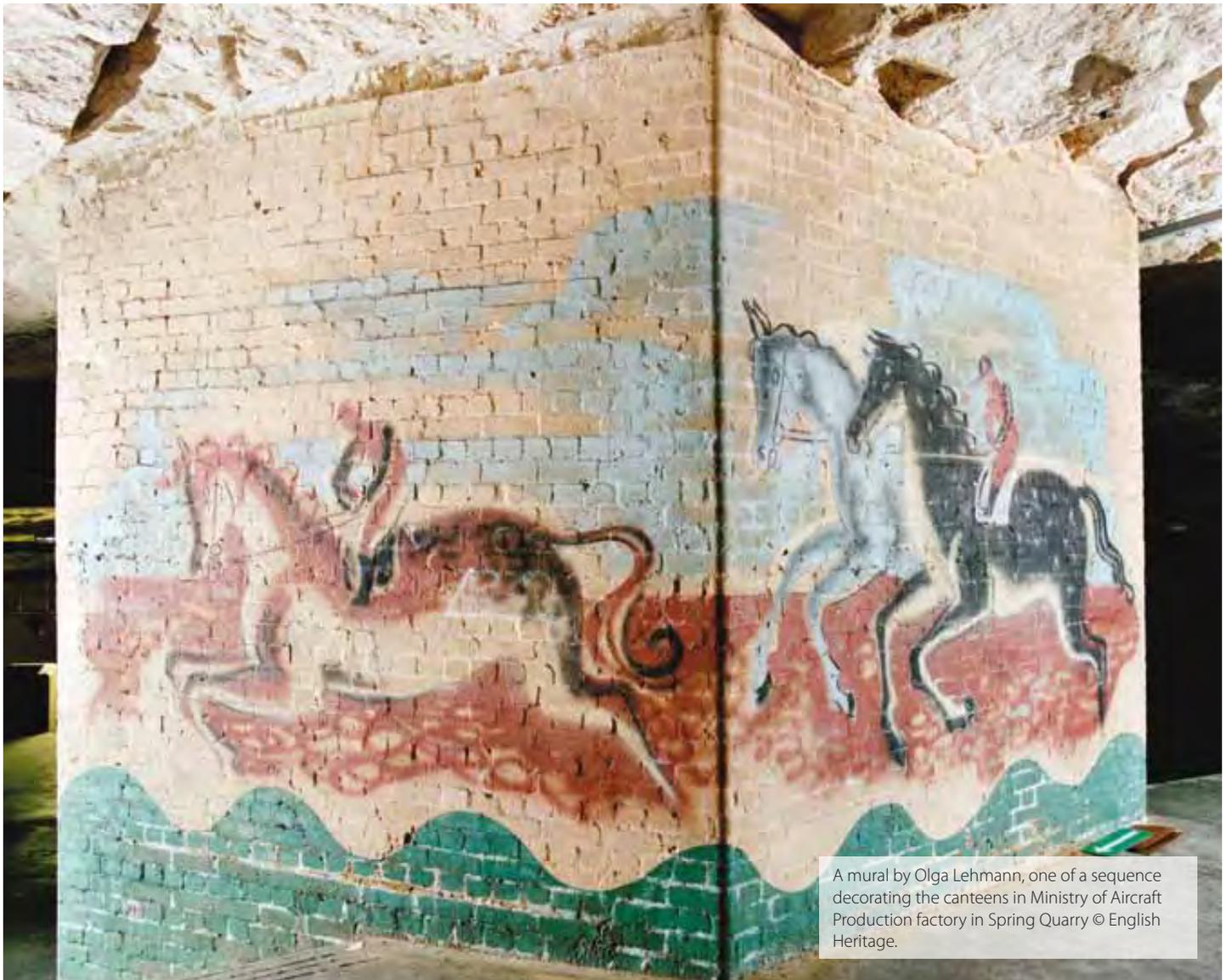
a European Protected Species, the newts like to forage and hibernate in grassland and scrub and use a variety of natural and man-made clean water bodies found on the estate for breeding. They seem to thrive in some Emergency Water Supply tanks, laying their eggs on plastic carrier bags and crisp packets that get blown into these man-made structures. Earlier this year the MOD, ASPs and Natural England discussed how to undertake routine activities such as cleaning and test pumping of these tanks to ensure there is a minimal impact on the favourable conservation status of great crested newts and comply with legislation.

ASPs routinely clean out these tanks in January and February each year when the newts are out of the water. However, in the summer algae blooms and it is necessary to clean the tanks again. One of many practices recommended is to rake the algae out by hand in cool moist conditions, leaving the rakings on the side for 24 to 48 hours to allow any insect larvae and newts to move back into the water. As great crested newts have been found at 30 sites, but it is possible they are present on far more, the MOD is encouraging environmental protection officers and volunteers to train to undertake night-time torch surveys.

The MOD, through Aquatrine, is driving down leakage, and coupled with investment in infrastructure and water-saving internal fittings, is reducing the volume of water demanded and ensuring water is used efficiently. This will help to protect supply in the future, continue to reduce the financial cost and safeguard one of the habitats of the protected great crested newt.

Annette Shaw, Aquatrine

Shining a light underground – INVESTIGATING THE MILITARY USE OF THE QUARRY TUNNELS AT CORSHAM



A mural by Olga Lehmann, one of a sequence decorating the canteens in Ministry of Aircraft Production factory in Spring Quarry © English Heritage.

The underground tunnels at Corsham are one of the most intriguing and little-known heritage sites on the MOD estate. Covering an area more than 280 acres underground, the site is awe-inspiring and was shrouded in secrecy until 2004, when its existence was first revealed to the public. Will Holborow, Head of the Government Historic Estates Unit at English Heritage explains the significance of this underground world and the ambitious project to record the site for posterity.

During the 19th century extensive underground quarries were developed in the Corsham area for the commercial extraction of building stone. They form a huge labyrinth of chambers and passageways, about 100 feet below ground level. The Box tunnel, which was built in 1841 as part of Brunel's Great Western Railway, traverses the site below the level of the tunnels. A branch from the main line enters the underground complex through a separate portal at the eastern end of the Box tunnel.

Several of the Corsham quarries were acquired by the War Department in 1935 and the Tunnel Quarry was adapted over the next three years by the Royal Engineers to house the Central Ammunition Depot, one of four national depots. During the Second World War it played an important role in the administration of ammunition and it continued to be used until 1962. In another part of the complex, Browns Quarry became the home of No.10 RAF Fighter Group in 1940, with responsibility for the air defence of the western region. A large part of Spring Quarry was adapted at great expense in 1940-41 to house the Bristol Aircraft Engine factory.

From the mid-1950s, Spring Quarry was further adapted to accommodate the secret underground facility which was to serve as the Central Government War Headquarters. This is the bunker from where the survival and restoration phases of the Cold War would be conducted, in the event of a nuclear attack on the UK. Completed by 1962, this bunker was fully equipped to house 4,000 people, including Government ministers, officials and military staff for a 90-day period. It was known by a succession of code names including Burlington, Turnstile and Stockwell. Developments in military technology during the 1960s meant that a surprise attack on the UK would not have allowed time for the Prime Minister and other officials to reach Corsham from Whitehall. By 1965, reliance on a single government bunker had been replaced with a plan for eight smaller groups dispersed around the country. Nonetheless, the bunker was maintained throughout the 1980s.

The Project

Following a visit to the tunnels by English Heritage's Chief Executive Simon Thurley and former Chairman Sir Neil Cossons in 2006, English Heritage in partnership with the MOD and Defence Estates (DE) have undertaken a project to survey, study and evaluate the site. Photographic recording was carried out, followed by studies of the archives, artefacts and fixtures, and then a characterisation study and values study. Regular meetings have been held throughout the project with stakeholders that include the Corsham Development Project, the Information Systems & Services organisation (the site's occupier), Inteq (the private sector partner selected to develop the establishment) and Wiltshire County Council. As well as its involvement in the survey and evaluation work, English Heritage is carrying out its statutory role in advising the Department for Culture Media and Sports on heritage protection issues.

The work has led to a clearer understanding of the site's history and confirmed its outstanding importance. This knowledge will help to guide future decisions about the management of the site, and the conservation of its most important areas and artefacts.

Archives and Artefacts

Many items of historic or archaeological interest remain underground. These include a group of original wooden cranes, some dating back to the 19th century, and quarrying artefacts in the West Lung of Spring Quarry. In Tunnel Quarry there is a railway infrastructure and the conveyor belt system used in the ammunition depot. Spring Quarry retains a series of murals by Olga Lehmann, painted in 1943 to decorate the canteens of the wartime factory. The former Government bunker contains an intact Cold War telephone exchange and a huge assortment of supplies, equipment and papers.

A rapid assessment of the Cold War artefacts and fixtures was undertaken in 2007 by a team led by Mark Bennett, a private consultant. The results are contained in a two-volume report and catalogue, completed in 2008. Detailed recording and conservation of the artefacts and archives will be a major challenge for the MOD. English Heritage is providing strategic advice on appropriate standards and practical solutions for recording, conservation and storage.



Corsham locomotive © English Heritage

Shining a light underground continued



Telephone exchange in Spring Quarry © English Heritage

Site Studies

Oxford Archaeology was selected by English Heritage in 2007 to carry out a characterisation study. This is a map-based approach used to provide a broad understanding of a site and its landscape and to put it in a historic, cultural and social context. As well as the underground establishment itself, the study has looked at its impact on the local area, including the construction of hutted accommodation for the thousands of temporary workers who built the underground facilities and worked in them. The project report was completed in November 2008 and based on extensive historical research, it provides a detailed history of the site linked to a series of maps that show the layout of the site at key stages in its history. The background data is stored in a Geographic Information System which allows the layering of spatial information, and the digital linking of maps and data.

Building on this work, Oxford Archaeology has completed a values study and a statement of significance which summarises the values of the site and places it in a local, national and international context. The study compared Corsham with other similar types of site, ranging from local stone quarries to international examples of Cold War command bunkers. The assessment of the social and communal values of the site has drawn on the memories of those who worked in the establishment or whose lives

have been affected by it. A public meeting was held at Corsham Town Hall in January 2009, at which the results of the study were presented to a capacity audience of local people. A dedicated website has been established (<http://corsham.thehumanjourney.net/>) which includes image galleries and historical information, and invites feedback from the public.

Overall, the site is considered to be of outstanding significance. Some of the individual components of the site are also considered to be outstanding and these include:

- The West Lung of Spring Quarry, with its original timber cranes, the best surviving example of a traditional Bath stone quarry.
- The Central Ammunition Depot in Tunnel Quarry, which has the highest level of survival of Second World War underground storage depots nationally.
- The murals in Spring Quarry by Olga Lehmann, which are the only known examples of such wall paintings within a subterranean environment nationally.
- The Central Government War Headquarters in Spring Quarry, which had a unique national function during the Cold War. Comparisons for this site are international, encompassing the emergency headquarters built by foreign

governments to the east and west of the Cold War divide.

- The telecommunications equipment in the Corsham complex, which represents the leading edge of technology for government electro-mechanical communications in a pre-digital age.

The Future

English Heritage considers that much of the importance of the site is in its artefacts, plant and infrastructure. Today, most of the underground areas are empty and in various stages of dereliction. In some areas environmental conditions, especially high humidity, are such that organic materials like timber and paper are rapidly deteriorating. English Heritage's priority is to advise the MOD on a programme of work to protect the most vulnerable artefacts and historic features from further decay. Work has begun to deal with the asbestos contamination, which will then enable commercial uses for the redundant tunnels. It is recognised that commercial uses will help to bring the investment needed to stabilise environmental conditions.

Currently, the site does not have any statutory heritage protection, although this possibility has not been ruled out. English Heritage are involved in ongoing discussions with DE, MOD and Inteq about developing a conservation management agreement. The aim of this would be to set out an agreed approach to managing change so that the majority of the site can be developed for commercial and operational purposes whilst protecting those parts which are of special historic interest.

Any readers hoping to visit the site will be disappointed; public access is unlikely in the foreseeable future, for health and safety reasons as well as cost and practicality. However, a virtual tour can be enjoyed on the BBC Wiltshire web site: www.bbc.co.uk/wiltshire/underground_city/

Will Holborow, Head of the Government Historic Estates Unit, English Heritage.

A range of military fungi

What makes a good site for the collection and study of wild mushrooms?



Fly agaric *Amanita muscaria*

The answer is an area that is not too big to be surveyed regularly, with a wide variety of habitats, preferably undeveloped and not overrun by people and pets. Step forward the Strensall Ranges and Dry Training Area on Strensall Common near York, a site that has been in use since the early 1880's and is today the home of HQ 2 Medical Brigade.

The area is approximately 600 hectares with both wet and dry heathland and a variety of birch, scots pine, oak and alder trees. The land has not been blanketed in fertiliser and weed killer, unlike the surrounding farmland, and is undeveloped, unless you count the ruts created by the tank manoeuvres some years ago and even they have provided the perfect habitat for the round-leaved sundew *Drosera rotundifolia*.

The area has long been well known for its varied and rare insect life and some of these insects attack and eat fungi. However, the most appropriate fungi for this site is now fighting back; the scarlet caterpillar club *Cordyceps militaris* infect and digest the underground pupae or lava of a moth and then produces a fruitbody. Although the main flush of fungi arrives in the autumn there are specimens to be found all year and what follows is a walk through the fungi seasons.

With the spring arrives the St George's mushroom *Calocybe gambosa* which is often hiding in the long grass along with the winter polypore *Polyporus brumalis* which can be found on fallen logs. In the ditches

amongst the previous years fallen oak leaves you may be lucky enough to come across the bog beacon *Mitrella paludosa*.

The summer brings with it the first of the boletus family, those fungi with a spongy under surface rather than the gills of the field mushrooms that can change colour when they are cut.

The autumn heralds the real bonanza with species too numerous to mention but the pick of the crop are the saffron milkcap *Lactarius deliciosus* which bleeds orange milk and the brightly coloured waxcaps *Hygrocybes*. Recent seasons have brought ruby bolete *Boletus rubellus* and a species very rarely found in Yorkshire, orange oak bolete *Leccinum quercinum*. Another, found while searching for signs of the thriving water vole population, was *Mycena bulbosa*. This species lives on the stems of rushes. It is no more than 2cm tall but can easily be recognised by the bulbous base of the stalk.

As we move into the winter, fungi such as the impressive oyster mushroom *Pleurotus ostreatus* makes its debut and after the first frost we get the herald of winter *Hygrophorus hypothejus*. During the last few months of the winter most of the larger fungi grow on trees. Amongst them are the very common birch polypore *Piptoporus betulinus*, the hoof fungus *Fomes fomentarius* which is only found down the eastern side of the country and birch conk *Inonotus obliquus* which is rarely found outside Scotland.



Winter polypore *Polyporus brumalis* © Malcolm Greaves



Birch polypore *Piptoporus betulinus* © Malcolm Greaves

And finally, what list of fungi would be complete without the fly agaric *Amanita muscaria*. Although it is a relatively common fungi and often seen on the grassy areas of the common, it still delights each generation of children introduced to it in Fairy Stories.

Then we come to the end of the year but you know with 600 hectares there will always be new gems to find next year and the next and...

Mr Malcolm Greaves, Strensall Training Conservation Group,

Mr Greaves has been a keen mycologist for 20 years and is attempting to catalogue all the fungi he finds on the Training Area.

Operational Capability and Conservation

— THE SCOTTISH HIGHLANDS

RAF Kinloss © MOD Crown

The Scottish Highlands and Islands host a number of strategic MOD sites and facilities of which some are the only example of their type in the country. These include the Royal Air Force (RAF) bases Lossiemouth and Kinloss which combined with the surrounding mountainous countryside and the Air Weapons Range facilities of DTE Tain and Cape Wrath Training Centre makes flying training in the region some of the most arduous, realistic and dynamic in the world. Alongside their day-to-day activities, the airfields also attract many multi-national training exercises throughout the year making environmental protection and conservation a challenging priority for all.

RAF Lossiemouth and RAF Kinloss

RAF Lossiemouth and RAF Kinloss stand only 10 miles apart on the shoreline of the Moray and Nairn coast. The coastline is an integral part of the Moray Basin Firths and Bays Ramsar site. It comprises the Culbin Bars, Findhorn Bay and Spey Bay, which together form the eastern most estuarine component of the Moray Basin ecosystem. Being set in such a prestigious surround adds to the importance of effectively managing conservation on the operational airfields.

Whilst operating dissimilar aircraft types (Tornado GR4 at RAF Lossiemouth and Nimrod MR2 at RAF Kinloss) both experience similar environmental protection issues and have gone to great lengths to control pollution levels. Discharge to water at both sites immediately influence Ramsar sites and Sites of Special Scientific Interest (SSSIs) and could easily directly pollute the Moray Firth and beaches making environmental risk management a daily business.

The habitats that both stations work hard to protect attract many a rare resident and migratory protected species. Regular visitors, common to both sites, are Arctic terns using the Moray coast for breeding and feeding. The building of a reed bed system has delivered an environmentally friendly solution to RAF Kinloss' sewage treatment and also acts as a breeding ground for the Arctic tern. Setting aside breeding areas is important for not just the species but also for ensuring flight safety to the aircraft and public alike.

Grassland management is a huge undertaking whilst ensuring the risk to aircraft from bird strikes are minimised. Much time and effort is also spent controlling the ferocious growth of gorse across the sites. Both often need to be controlled by hand to protect historical and listed buildings and

structures. One of the busiest of the RAF's fast jet bases, Lossiemouth is of historical importance to both the service and the local community and the local parish Kirk and grave sites which date back as far as 1640 require regular attention.

RAF Lossiemouth personnel have volunteered to help many conservation organisations who ranger the site. Activities include: sapling clearing and tree planting for the Forestry Commission Scotland specifically in support of the RSPB to maintain Culbin Sands salt marsh and sand bar habitats; road maintenance to allow public access to amenity sites; and beach clearing and survey work in support of the Whale and Dolphin Conservation Society at Spey bay.

RAF Kinloss is bounded by water on two sides. The northern boundary is marked by a dune cliff and heath and is a very important habitat structure containing many species including lowland heather, crowberry, harebell, sand sedge and marram grasses. The area is subject to natural erosion and the beach is home to sand martins and a variety of sea birds. As an annual project, the station conservation group take on litter collection and beach cleaning tasks. On the western edge of the airfield is the large tidal estuary of the Findhorn Bay, a Ramsar, Special Area of



RAF Kinloss woodland © MOD Crown

Conservation (SAC) and a Special Protection Area (SPA) in its own right. The estuary provides a dramatic seasonal flight safety issue with tens of thousand geese and other wader and wildfowl species.

RAF Kinloss' woodland is of a mixed Scots and Corsican pine and is home to a number of high priority species such as the red squirrel, crossbills, pearl bordered fritillaries and the rare twinflower. This pinkish-white flower has a characteristic habitat and is only found in native pine forests. However, due to the height of the trees becoming a flight safety issue near to an Air Traffic Control radar mast, careful management of the ground had to be undertaken when felling operations began. The woodland habitat also requires the management of deer. Actively controlled by culling, the Defence Deer managers allow the roe deer to roam the Northern Wood plantations, maintaining a small but healthy size in numbers. This on-going cull allows the resident herd to thrive in the woodlands at a level which keeps them clear of the active runway and also prevents other herds from entering the base area.

DTE Tain and Cape Wrath Training Centre

DTE Tain is an Air Weapons Range (AWR) in Ross-shire on the southern edge of the Dornoch Firth, and is used by Lossiemouth based aircraft on a daily basis. The Air-to-Ground range has SSSI, SAC, SPA and Ramsar status comprising mainly of salt marsh, sand dunes and woodland. The range is the single largest expanse of coastal juniper in Britain, some 15-20% of all Britain's coastal juniper. This rich habitat extending across Morrich More harbours many species including the rare wildcat.

Being a very busy AWR with many targets and structures the sustainability of the SSSI

species and habitats is highly challenging. For example, a target matrix made to look like an 'Urban Village' has been built on stilts to allow vegetation to grow underneath and minimise loss of habitat. Due to the sensitivity of the site the location of targets and structures are selected in consultation with Scottish Natural Heritage, and Scottish Wildlife Trust species experts provide valuable survey and census work. Heathland management is also required and recent initiatives have included cutting fire breaks using an Aardvark mine-clearance machine to allow safe burning to maintain the habitat, along with a sheep grazing policy. Specialist all terrain vehicles are also used on the salt marsh to allow access without damage to the habitat.

Cape Wrath Training Centre is situated in the isolated and environmentally hostile tip of northwest Scotland. The range is sub-divided into Garvie Island and Cape Wrath Close Air Support ranges. The facility allows the use of ship-to-shore bombardment and air-to-

ground weaponry and is regularly utilised by RAF Lossiemouth base and their visiting aircraft.

Due to the remote location, access difficulties and some of the largest cliff tops along the mainland north coast, the annual MOD bird count here is arguably by far the wildest and most extreme in the country. In order to even gain access to the colonies Royal Marine fleet protection vessels and crews are drafted in from the Royal Naval base at Faslane to allow access to the cliffs. Deer management is also a huge challenge and not just because of the remote situation. Even with careful sheep grazing and fencing the indigenous numbers require continuous management. Otter and mink surveys have also been conducted, attracting support as far afield as Oxford University and thanks to local support the local angling club have access to three fresh water lochs.

Never before has such close liaison between the four sites helped to deliver achievable and sustainable environmental and conservation targets. By combining resources and expertise the MOD and the Scottish public can be assured that conservation remains at the forefront of all daily operations across the highlands of Scotland.

Flt Lt Sam Bailey
RAF Lossiemouth Conservation Officer



Tain Scrub Clearance using an Aardvark © MOD Crown

Archaeology on the Edge - CAPE WRATH

Question: What do an ancient fort, a 19th century cottage now used as a bothy and four redundant Saxon Armed Personnel Carriers have in common?....Answer: They are all included in an archaeological survey of the Cape Wrath Training Centre (CWTC), the largest tri-service range on the UK mainland.

CWTC, situated on the north-west tip of the Scottish mainland, is a 59km² expanse of peat bog and moorland known locally as The Parph (Norse for Turning Point), stretching 11.5km north-west to south-east and up to 7km transversely. To the east is the Kyle of Durness, to the north and west the Atlantic Ocean, with high mountainous land lying to the south. The cliffs along the Atlantic coast are an awesome sight to behold and at Clo Mhor, where they reach 195m, are ranked as the tallest on the UK mainland. It is a little known fact that CWTC is marginally closer to the Arctic Circle than it is to the south coast of England!

Military activity has been recorded at Cape Wrath since the beginning of the last century. Nowadays the range is used by British and

NATO forces and it is the only area in the UK where live 1000lb bombs can be dropped and live ship-to-shore naval gunfire support can take place; a training area where land, sea and air activity can take place simultaneously.

Within such a volatile environment as a military training area it might appear to be optimism, bordering on lunacy, to consider that fragile archaeological remains may be present. So, in line with MOD policies, which ensure that the MOD have in place arrangements for protecting, maintaining and enhancing archaeological sites, it was agreed that a survey would be undertaken to identify how many archaeological sites are present on the range and, perhaps more importantly, to establish a baseline for their condition, stability and vulnerability.

The Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) is Scotland's principal body of archaeological survey and a joint partnership project was established between them, Defence Estates and Defence Training Estates to undertake a survey and compile a report on the archaeology at CWTC. Prior

to commencing fieldwork the surveyors examined aerial photographs, historic maps and archive documents. Finally, after months of preparation, in August 2008, the RCAHMS team, led by John Sherriff, set up their base HQ in the Loch Inshore bothy. For 10 days they methodically walked the area of the range, checking out the known archaeological sites and recording hitherto unknown sites which had escaped previous discovery. At the start of the survey 17 sites were known on the range. On its completion a remarkable 120 archaeological and architectural monuments had been described and mapped, 442 individual structures and features recorded and six sites surveyed and drawn in detail. Quite a feat when one remembers that it was one of the wettest summers in living memory!

It was something of a revelation to find that there was relatively little evidence of prehistoric activity on CWTC. Burial cairns, hut-circles, burnt mounds and clearance cairns or stone walls that might indicate the existence of prehistoric field-systems were notable by their absence. A promontory fort at Eilean nan Caorach on the eastern side



Kearvaig River. The Bridge was constructed in 1828 to carry the road that linked Cape Wrath lighthouse and the store house at Clais Charnach with a second store house on the Kyle of Durness © RCAHMS

of CWTC may be of later prehistoric date (i.e. constructed in the 1st millennium BC) but in the absence of any dating evidence this cannot be established with certainty. The reasons for this relative paucity of early occupation sites, both in the prehistoric and historic periods, is almost certainly related to the harsh climate and poor soils which render large areas of The Parph unsuitable for long-term settlement. Having said this, the shelter and fertile soils afforded by the small coastal bays at Kearvaig and Port Odhar would have provided a haven for more permanent settlers. Although the buildings and cultivation strips at these two sites cannot be shown to be dated to before the 18th Century, it is possible that earlier sites could be present in the vicinity.

Harsh and rugged though The Parph undoubtedly is, this is not to say that its occupants did not make good use of the vast expanse of boggy moorland on their doorstep. The seasonal grazing of animals, particularly sheep, in favoured pastures during the summer period was an established practice in the Highlands and the small buildings and enclosures (known as shielings) used by the shepherds are present on the CWTC. An intuitive case can be made for linking these temporary inland shielings to the more permanent settlements on the coast thereby helping to create a vivid picture of the cycle of farming activity on The Parph throughout the year.

One of the most important developments on The Parph was the construction in, 1827-28, of the Cape Wrath Lighthouse and its supporting infrastructure, by the doyen of such projects – Robert Stevenson. Although not on MOD land itself, the lighthouse was associated with a slipway and a storehouse at Clais Charnach, a narrow inlet 2km to the south-east. Here, there are also the remains of a temporary construction camp and the start of the road that led initially to the lighthouse but later to another storehouse on the Kyle of Durness. All these sites are on MOD land. Originally there were eleven milestones beside the road, but milestone 8 is now missing. A local tradition that the milestones were fabricated by lighthouse keepers cannot be substantiated, but it would provide an explanation why there is such a wide variation in their respective design and dimensions. The road is still in use today and



Recording a Saxon APC target © RCAHMS

used by visitors to travel from the jetty at the Kyle of Durness to the Lighthouse.

The Parph has been used for military training for the best part of a hundred years, and the impact of this activity on the landscape was assessed by the survey. Craters and shell holes created as a result of gunnery practice and bombing have taken their toll although the templates for this activity are now tightly controlled and constrained. The use of the range for gunnery practice has meant that of the four roofed structures on the range only two, the former 19th century shepherd's house at Inshore, now used as a bothy, and the former hunting lodge at Kearvaig, are used to house military personnel. What has had the greatest impact on the landscape, at least in visual terms, are the large number of redundant armoured vehicles and transport containers that have been airlifted on to the range to be used as targets and, in the case of the latter, for storage and shelter. Although perhaps not considered as being traditional archaeological features, these are now as much a part of the story (or history) of The Parph as the promontory fort and the farmsteads, and it is only right that they should be recorded for posterity.

In the past 140 years or so the ownership of The Parph has been divided between various estates, farms, the Northern Lighthouse Board and the MOD. The wide ranging approach to the survey taken by

the RCAHMS has ensured that the history of The Parph has been updated to include the abandonment of traditional forms of settlement around the mid-20th century and the impact on the landscape through the military presence. Marker cairns, redundant armoured personnel carriers that are now used as military targets, the 19th century milestones along the lighthouse road, and, indeed the road itself are all important components of the landscape and deserving of inclusion in this important survey. The Parph is still a sheep-walk, but the shepherds are few in number and their former cottages now provide temporary accommodation for military and civilian personnel during exercises. There are no permanent residents on The Parph but - in what may seem a strange twist of fate - it now regularly welcomes more visitors than it has ever done.

Phil Abramson, Defence Estates Environmental Adviser – Historic Environment

This article is based on a detailed archaeological and architectural survey report of CWTC compiled by the RCAHMS. Instrumental in this: John Sherriff and team at the RCAHMS, Major David Halpin and staff at CWTC, Ricky MacKenzie, Defence Training Estates and Michael McNeil, Iain Robertson and Dave West, Defence Estates.

The Last Wilderness - PIRBRIGHT RANGE DANGER AREA

Red deer stag © Geoff Kaczanow

Imagine a vast wilderness of heather covered valleys and a system of crystal clear pools and streams overflowing with wildlife. A herd of red deer wade through lush mires, where grass whispers in the wind... This isn't the Scottish highlands, or the North Yorkshire Moors, but how much of northwest Surrey would have looked in the 18th century.

Today, the finest remnant of this stunning landscape is the Pirbright Range Danger Area (RDA) located only 25 miles from central London. Its heathlands roll over nearly 1,000 hectares of the county, but the red deer are now locally extinct. A place like this is usually a magnet for hikers, horse riders and dog walkers, but there is not a path or sign of human activity to be seen. It is truly Surrey's last wilderness and one of the best kept secrets of southern England. It is a haven for heathland wildlife in one of the most populous parts of the UK.

The Pirbright RDA, part of the Pirbright Range Complex is a fundamental land resource for the UK armed forces and houses the internationally famous National Shooting Centre at Bisley. The land, bought by the British Government in 1877 has remained undeveloped and little disturbed since that time. This lack of disturbance has created a thriving wildlife community. Defence Training Estate Home Counties and the National Rifle Association are jointly responsible for the management of this special area.

Natural History

Lowland European heathland is at the heart of Pirbright's wildlife value. This habitat exists only in a narrow climatic belt along the North Atlantic seaboard and is dependent on certain soils and altitude. Once an important pastoral resource, heathland gradually lost its economic importance during the industrial revolution. The UK lost 85% of its heathland between 1850 and 1980, a far greater loss than that of tropical rainforests.

The heathland's great value for wildlife is demonstrated by it supporting some of the UK's most charismatic and rare species. It is the only habitat to support all six British reptiles, is home to the best known native carnivorous plant; sundew *Drosera ssp.*

which entices flies to its lethal embrace by glistening with fake dew drops. It also has more species of dragonfly and damselfly than any other UK habitat and is home to what is claimed to be the fastest (size for size) land animal on earth, the heath tiger beetle *Cicindela sylvatica*, which, if it were the same size as a cheetah, would have no problem catching the cheetah or dispatching it with its giant sickle shaped jaws.

The RDA enjoys a wide range of environmental protection which provides the perfect sanctuary. It is a Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) for the undisturbed peat and wetland areas and Special Protection Area (SPA) for three threatened heathland bird species nightjar, woodlark and Dartford warbler, which breed either on the ground or within the heather sward.

Management

The RDA heathland until recently had not received any formal management but unlike most heathland sites this has not resulted in a rapid transition from heath to scrub to woodland. This is due to large fires that have swept across the site either started by accident, military pyrotechnics or by acts of vandalism. With the low levels of management on the site the vegetation grew, which provided a ready fuel supply for any potential fires. Due to the risk from unexploded ordnance the emergency services were restricted in their access which allowed fire to burn over larger areas of the site, occasionally breaking out of the area to threaten local homes. Obviously this created problems for the local people, for the emergency services who would find their resources stretched and for the shooters at Bisley and Pirbright who would not be able to train. It also caused problems for the wildlife. Less mobile species would be caught

in these fires whilst others that escaped found that their habitat had been destroyed.

Consequently several actions were taken to address this. The military ceased all use of tracer and phosphorous grenades; the fire brigade have changed their response to heath fires and have been successful in stopping fires that start outside the RDA burning their way into it; and finally Defence Estates (DE) provided fire breaks on both sides of the fence and improved perimeter access and fire plans. Unfortunately just as large fires are a bad thing for wildlife on heaths, so is a lack of fire when it is the only check on vegetation.

The reduced incidence of fire within the RDA has led to a build up of biomass, which would give any future fire greater intensity and encourages encroachment by scrub and coarse grasses. These invaders overwhelm the more fragile, interesting and rarer species and reduce the overall biodiversity. On other sites heathland managers use a variety of methods to combat them, including mowing, tree and scrub cutting, turf stripping and grazing using domestic livestock. Due to the access restrictions on the RDA, none of these proven techniques are viable. Due to the international importance of the site there was never an option to do nothing and allow the site to turn into secondary woodland with a massive loss of species and landscape. What followed was the beginning of an exciting conservation project.

The Deer Project

After observing the positive effects that sika deer were having on the heathlands in Dorset, the idea of introducing a herd of large deer to the RDA was born in 2005. Natural England was keen to introduce stock into the area and looked to partner organisations, DE, Defence Deer Management (DDM), RSPCA, Defra, the Deer Initiative, Surrey Heathland Project, Grazing Animals Project and Surrey Wildlife Trust (SWT) to come up with a solution. With the grazing license in place in 2006, SWT successfully applied for Higher Level Stewardship funding which together with funding from DE provided sufficient resources to get the project off the ground.

The Last Wilderness continued

By October 2007, a working group had been set up to plan the details, organise any necessary works and to manage the herd within the RDA. After a comprehensive series of meetings that discussed everything from stock type to biosecurity, from escapes to fire plans and from monitoring to management, it was decided that the most appropriate species to introduce into the RDA were red deer and wild caught goats.

A Natural England commissioned report recommended red deer be selected for their ability to eat the coarse grasses, rip up bracken and inhibit scrub growth. It was anticipated that the deer would have the greatest beneficial effects on the bog and mire systems and the non-breeding herd of wild caught goats were chosen for their remarkable ability to control scrub. A trial at nearby Ash Ranges had effectively halted soil succession using goats, who were seen climbing small saplings to get to the lushest growth. The animals would be obtained from native British stock that had been living wild for over 150 years. With the stock types carefully chosen, the project could start to move towards implementation.

A key issue was the fencing. The working group visited deer parks including Richmond Park to see how best they might contain red and other large deer species at Pirbright. Deer specialists Dr Jochen Langbein and Neil Brooks provided expert advice on how best we might adapt the existing fence to include badger gates, holding paddocks, deer grids and antler protection. All the new deer fencing is in place thanks to the help of the MOD's Environmental Support Group who surveyed the new fence lines for unexploded ordnance and Landmarc Support Services who cleared the vegetation.

The Future

As the project infrastructure is nearing completion, the new livestock will be shortly introduced. The goats will be first with a small herd being hefted (setting up a home range) to an area where access to the animals is permitted. Once the impacts of these animals is monitored and understood,

further introductions may take place. The initial deer herd of thirty hinds and ten stags (with an appropriate age structure) is anticipated for 2010. The animals will be under constant surveillance. Their impacts upon the site's flora and fauna will be studied and the herd will be managed in response to these factors, along with direct observation of the condition of the animals. This is one of the things that make the project so unique; the animals are on site as conservation grazing tools rather than as trophy or meat stock and animal welfare remains of the highest importance to the MOD.

The herd movement patterns will be tracked using Global Positioning System (GPS) collars on certain individual animals. This is a unique opportunity to monitor movement and dispersal patterns, behaviour, feeding habits and responses to seasons and stimuli. Further plans are being considered to undertake a yearly census of the animal population by helicopter mounted thermal imaging equipment. This will allow a complete head count (dependant upon cover height) to be

determined. The information and knowledge gained will be made widely available to provide a useful evidence base to support future management decisions.

Following years of careful planning, the project team has worked in partnership to ensure that animal welfare, sustainability principles and agreed best practice lie at the heart of this unique project. With help from native livestock, it is hoped that the project will safeguard this last wilderness of southern England and very soon the sound of the wind whistling through the grassy mires of Pirbright will be joined once again by the roar of red deer stags in the rut. The sound will not only reflect an age when these animals roamed naturally across the Surrey heaths, but it will be testament to the great lengths gone to in order to protect this very special area.

James Adler, Grazing manager, Surrey Wildlife Trust and Rosie Rowe, Defence Estates Deer Operations Manager.



Red deer hind & fawn © James Adler, Surrey Wildlife Trust

Recycling Champions

ARMY LONDON DISTRICT

Over recent years, waste management in the UK has faced a period of rapid and radical change, which, driven by European legislation and public expectation, has seen the need for improved environmental protection. As a result it has become imperative that we find ways of reducing our current dependence on landfill and move towards more sustainable methods of managing waste.

Three years ago the 13 military establishments within the Army London District (LONDIST) had a waste management disposal bill of some £260,000 with the majority of waste going to landfill. LONDIST waste, including that from residential properties, is considered to be commercial waste and therefore charged by the London Borough Councils for its removal. Recognising the changing emphasis on waste management, LONDIST has sought to reduce the growth in its waste, increase recycling and find waste management solutions that will not compromise the future. In 2006, inspections were carried out in order to establish how each location was managing their waste. During the survey, it became clear that much of the waste was actually recyclable and if properly separated, could drastically reduce the amount destined for landfill. Furthermore, the associated disposal costs for the removal of refuse could also be significantly reduced.

The Borough Councils where the Army barracks are situated were approached about the matter of residential waste collection and the possibility of LONDIST taking part in their recycling and environmental initiatives. A successful partnership was formed with each authority and new waste and recycling arrangements were soon put in place.

The London Borough of Greenwich Council was the first to introduce their recycling scheme into the Royal Artillery barracks. It was agreed that at least 50% of the waste could be recycled and 20 of the 40 current commercial waste containers were replaced with recycling containers. Soon after,

Westminster City Council and the London Borough of Hounslow introduced recycling containers to each of the barracks within their area, achieving similar recycling and waste minimisation results.

The London Borough of Camden went one step further by treating the barracks at Regents Park as if it were a small residential estate. Commercial waste containers were replaced with recycling containers and each property was provided with recycling boxes, achieving approximately 75% recycling, leaving only three commercial waste containers to be collected each week for the whole of the barracks.

With the support of council workers, MOD personnel on site and LONDIST support staff, these new initiatives have been running smoothly for the past three years. There has been a marked reduction in waste collected for disposal and significant savings in waste collection costs. Accrued savings of over £400,000 have been achieved and the recycling rate has significantly increased to over 82%. LONDIST has not only met the Sustainable Operations on the Government Estate target of 40% recycling by 2010 and 75% by 2020, but exceeded it.

However, it doesn't stop there. A new contract with Sodexo will see the composting of over 6,000 tonnes of horse manure to be used in mushroom farms in the Surrey area. Plastics recycling has also been introduced at Hyde Park barracks, with the acquisition of a new plastics bailing unit, with further units planned at other stations for plastics and cardboard



Launch of the new recycling scheme at Royal Artillery barracks, Woolwich © London Borough of Greenwich Council

recycling. The Royal Military School of Music, Kneller Hall within the London Borough of Richmond, are considering waste recycling measures at events such as the contemporary music festival 'Rhythm Force'. Finally, Royal Artillery barracks Woolwich, have introduced a separated food waste scheme in partnership with the London Borough of Greenwich.

The efforts made by the LONDIST team were recognised in November 2008 when they won the prestigious BCR Global Textiles Best Partnership Award at the National Recycling Awards. They continue to build on this success and are committed to seeing further substantial increases in waste recycling and waste minimisation, with a corresponding reduction in waste being sent for disposal. In forming successful partnerships with the Borough Councils, LONDIST has become a leader in recycling and environmental initiatives, an example which many others might wish to follow.

Rob Gamble, London District Waste Advisor, Bright Management Associates Ltd.
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Terrier Training – Bovington

The Bovington Training Area in the heart of Dorset is an important biodiversity site with around 1,000 hectares designated either as a Site of Special Scientific Interest (SSSI), a Special Area of Conservation or a Special Protection Area. It is also the location of the new training facilities for the Army's Terrier Engineer Vehicle.



Terrier Engineer Vehicle © MOD Crown

View of western corner of Dig Area © Dave Duggon

The Terrier Engineer Vehicle, is a 30 tonne highly mobile armoured general support vehicle designed to provide obstacle and route clearance and excavate anti-tank ditches. The Terrier comes with a demanding training schedule and requires specialist training facilities. The Armour Centre at Bovington, the Army's centre of excellence for armoured warfare training, was selected as the preferred location due to the existing facilities. As Terrier training relies heavily on the use of simulators, with only 20% of training actually taking place in the vehicle, the impact of the vehicle on the Training Area is reduced. Additionally, the new facilities will be utilised by other engineering vehicles such as Titan and Trojan, further reducing the impact on other parts of the Area where years of continuous digging has created very mobile sand vulnerable to erosion.

Almost a hundred years of military training has taken place at Bovington, creating a mosaic of heathland habitats and a range of rare and protected species associated with heathland such as nightjar *Caprimulgus europaeus*, Dartford warbler *Sylvia undata*,

sand lizard *Lacerta agilis*, smooth snake *Coronella austriaca*, heath tiger beetle *Cicindela sylvatica*, heath bee fly *Bombylius minor* and silver-studded blue butterfly *Plebeius argus*. The training area even supports a small reintroduced population of the remarkable ladybird spider *Eresus sandaliatus*, which has been established as part of the Natural England Species Recovery Programme.

Across the Area the range of habitats include dry heathland, mire, bog pools, humid heath, ponds and ancient woodland. Parts of the site are particularly important for rare species associated with bare ground such as the heath sand wasp *Ammophila pubescens*. This is due largely to the legacy of military training and a time when armoured vehicles moved freely across the site and the erosion scars and sand cliffs left behind are now ideal habitat for burrowing insects, sand lizard and even sand martin *Riparia riparia*.

With such a high ecological interest any new military activity must be carefully planned. Across the defence estate there are strict procedures in place to ensure compliance

with all the relevant wildlife legislation. However, as part of the MOD's Biodiversity Duty most projects go well beyond compliance and incorporate ecological mitigation and enhancements that deliver valuable benefits to wildlife.

The Terrier Project provides an excellent example of how these procedures work in practice. The project had two key requirements: a new building to house simulators for training and; a new digging



A male ladybird spider in habitat © Natural England

site to facilitate a required driver test. The Terrier building was built on a brownfield site in close proximity to existing developments and with easy access to the existing all weather driving circuit. While adjacent to the SSSI the assessments by Defence Estates and Natural England agreed there would be no adverse impact on the designated site or any scarce or protected species. Additionally, a breeding bird survey of the surrounding area was undertaken to assess the potential for disturbance of key bird species. Woodlark *Lullula arborea* nests have been recorded less than a metre from the busy and often very noisy driving circuit, which highlights how easily these birds become habituated to certain activities.

Establishing a digging site where Terrier could train was altogether more complicated. The military need was for a five hectare site close to the other training facilities to avoid unnecessary movement of troops, equipment and vehicles. It had to be large enough so that some parts of the site could be left fallow each year to allow sand and topsoil to reconsolidate. From an ecological perspective, a key requirement of the project was to ensure no overall adverse impact on the designated sites or any protected species. As it turned out the project delivered some major gains for biodiversity with the creation of additional areas of heathland habitat.

After careful consideration by specialists within the project team and early consultation with Natural England, a suitable site was identified. It took in a small existing digging area but it was mostly covered by pine plantation with some remnant patches of heather and bare sand. As nearby sites were known to support notable species, the ecological appraisal of the new digging site saw surveys of breeding birds, reptiles and invertebrates commissioned in 2007.

The breeding bird survey showed that none of the three heathland specialists, Dartford warbler, nightjar and woodlark or any other notable species had established nests or territories close to the digging site in 2007. The reptile survey recorded both sand lizard and smooth snake on the fringes of the plantation to the north of the digging site. The invertebrate survey was the most revealing of all with 214 species recorded



Male sand lizard © Iain Perkins

from the digging site, of which one was a Red Data Book species and 13 were classed as Nationally Notable. A further 42 were classed as local, meaning they are of regional or county importance. Many of the Nationally Notable species were heathland specialists covering a range of taxa including the orb-web spider *Araneus angulatus*, the wolf spider *Xerolycosa nemoralis*, the cockroach *Ectobius panzeri* and the potter wasp *Eumenes coarctatus*.

In addition to the species interest the ecological appraisal considered the proximity of the SSSI to the new dig area, just over 100m to the north. A major consideration was surface water runoff from the digging site and the potential for this runoff to carry silt downstream where it could be deposited across Cranemoor Bog, part of the SSSI. To investigate the potential scale of this problem a hydrological survey was also commissioned in 2007.

Following the completion of the ecological and hydrological surveys it was clear that there was a risk of some adverse impacts from the creation of the new digging site. A detailed mitigation plan was developed which included the following:

- Improvements to 0.6ha of heathland adjacent to the digging site by felling conifers, exposing a deep ditch and retaining a pond. With careful felling and removal of all arisings it is anticipated that the heathland will regenerate quickly, providing additional habitat for sand lizards, smooth snakes and silver-studded blue butterflies in particular. The south facing bank within the ditch will provide bare ground and basking habitat for insects and reptiles.

- Artificial earth bunds at least 1m high, totaling over 450m in length, were created around three sides of the digging site using surplus sand and topsoil. The outer layer of the bunds was unconsolidated sand to allow reptiles and invertebrates burrowing opportunities. The bunds provide bare ground habitat and recolonisation by heather will stabilize them to create additional heathland habitat.
- Creation of an additional 1.6ha of heathland by retaining a buffer strip around the edge of the digging site using cut tree stumps to exclude vehicles. The seedbank should retain enough viable seed to allow natural regeneration of the vegetation.
- A wide band of mature conifers was retained to create a screen to prevent the dirt or dust blowing onto the SSSI. The prevailing wind direction meant that any dust generated in the dig site could potentially smother heathland plants and invertebrate burrows.
- To manage storm water runoff and mitigate against flooding, a series of Sustainable Urban Drainage measures were adopted, including the installation of perimeter surface water ditches, flow balancing/settlement ponds, pollution interceptors and a groundwater recharge trench.
- To address specific concerns about downstream siltation onto the SSSI, a small number of silt dams made from conifer brush were erected downstream from discharge points.

The Terrier project was delivered successfully, the result of collaborative working between the project team that included Defence Estates specialists, Debut Services SW Ltd and Natural England. The ecological interest surrounding the project was properly investigated and assessed; ensuring appropriate mitigation and enhancement measures were identified and implemented. The outcome of the project has not only been the delivery of a world class military training facility but the overall impact of the project on the ecology of the site has been a positive one.

Oliver Howells, Natural Environment Adviser, Defence Estates.

RIGHT KIT, RIGHT PLACE, RIGHT TIME - Shark Tagging in the Eastern Pacific

Great white shark © Major Andy Reid

In 2008, a Joint Services expedition called Exercise Jurassic Shark 2 was undertaken to electronically tag three species of shark; great white, scalloped hammerhead and whale sharks around the Guadalupe and the Revillagigedo (Socorro) Islands off the Pacific coast of Mexico. The expedition was a follow-up to the work started around Cocos Island, Costa Rica, in 2006 to map the movements of sharks in the Eastern Pacific. The great white sharks were the highlight of this expedition but surprisingly tagging them proved to be considerably easier than the other two species. Tagging sharks around the Revillagigedo Islands proved to be the real challenge as the sharks were largely absent from the protected waters. Sadly shark finning boats had got there first.



Guadalupe © Major Andy Reid

Guadalupe

The expedition started in Guadalupe, working with a locally based scientist to place two radio receivers underwater and tag 10 great whites. The island is a Mexican nature preserve and lies 260km offshore off Baja California, rising out of deep water (>3500m). It is a remarkably beautiful almost primeval place, with mist rolling off the high cliffs. Calm, cool, azure blue water, dramatic scenery and a warm, temperate, climate made this one of the most attractive places to dive. Paradise it may be but the team never considered jumping into the open water as at least 86 great white sharks are known to be constantly patrolling the elephant seal, fur seal and sea lion colonies along the rocky foreshore. In reality, however, there is very little evidence that the seals and sea lions are being predated by the great whites. Unlike other places where great whites are known to congregate, the great whites of Guadalupe seem to prefer yellowfin tuna, a species commonly seen whilst diving in the shark cage.

Diving outside the cage is permitted providing the boat crew are satisfied that you know what you are doing. With great whites you must always cover your back; ensuring

that eye contact is always maintained with every shark. As the large team were relatively new they were not really ready in terms of the teamwork required to take such a step. In addition, an unusually aggressive female shark known as 'Honey' had bitten a hole in the inflatable boat during filming for Discovery Channel's 'Shark Week' the week before. Her potential presence was a key factor in the decision to stay within the confines of the cage. This expedition was not the place to push that particular envelope. As a result the radio receivers were positioned by boat with a monofilament line leading back to the shore to make sure they could be re-located easily.

Great whites from all over the Eastern Pacific are known to congregate at a location between Guadalupe and Hawaii known as the Great White Café but little is known about their movements on either a daily or annual basis. The underwater radio receivers will enable scientists to continually record exactly when tagged sharks move in and out of residence around the island. Up to now scientists have been largely limited to physically following individual sharks around the island using a hand-held underwater hydrophone.



Matt Palmer shark tagging © Major Andy Reid

Great white tagging and tissue sampling was carried out by boat by simply throwing out some bait (fish) on a piece of string and sitting and waiting and, waiting and... waiting. Shark tagging is a minimum of 95% inaction and never more than 5% action, it really can be incredibly boring! The tagging itself is carried out using a radio tag mounted on a pole spear whilst the shark is videoed for identification purposes. Attempting to spear a five metre shark on the left flank below the dorsal fin is an incredibly exciting thing to do but the obvious parallel with hunting can be an uncomfortable thought. It does also result in the occasional soaking as the shark takes the bait alongside the small boat. All the great whites are listed on the Marine Conservation Science Institute database (www.MarineCSI.org) and the team were fortunate to encounter a new female shark which was added to the database. She was the 86th shark to be photographed off Guadalupe and was distinctive in that she appeared to have anti-fouling paint (or something similar) on her.

Whilst some of the team were tagging from the boat, others were diving in the shark cage. This involved waiting in two metres of relatively cold water without any guarantee of seeing a shark. The individual record for this was three and a half hours! Despite the waiting, there is no doubt that a great white taking the bait in front of you is a remarkable spectacle that cannot fail to set your heart racing. Some of the best encounters were with 'Bruce', a five metre male shark who typified the kind of shy, almost diffident, behaviour typically displayed by all the sharks. Attracted by the bait he would swim around the cage before disappearing for 20 minutes at a time. On one occasion it was clear that he really wanted the bait and there finally came a point where his obvious intelligence simply gave way to raw, high-speed aggression, throwing the team in the cage everywhere. Seconds later he returned sporting a brand new gash to his face and took the bait with incredible speed, agility and sense of purpose. As you might imagine the team were more than a little concerned that our actions had resulted in harm to a shark. Fortunately, great whites heal incredibly fast. They often inflict damage on each other, particularly to the gill area, a behaviour thought to be linked to mating.

Right Kit, Right Place, Right time - continued

Revillagigedo Islands

From Guadalupe the team moved south to the Revillagigedo Islands with a stop in Cabo San Lucas to re-supply. This was something of a long journey by sea down the entire Baja California peninsular and beyond. Four days later the team finally arrived off the island of San Benedicto in the Revillagigedo Islands.

Tagging sharks in the Revillagigedo Islands proved to be unexpectedly difficult. This was primarily because the sharks were only present in relatively small numbers, were incredibly timid and not everyone had the skills in terms of patience, tenacity and marksmanship required to tag sharks. The team only had a small number of spear guns and tags (particularly satellite tags that cost about £2,500 each) to work with and the game was constantly changing as a result of currents, sea conditions, water temperature and time of day. As a result, half the team dived with a massive heavily pregnant whale shark but not one of them was equipped to tag her.

The hammerheads made things difficult by not behaving in the way expected in the area, especially their use of cleaning stations. Sharks spend the night feeding in deep water and then come up to cleaning stations during the day to have their parasites removed by the tenacious barber fish. Despite this, the cleaning stations occupied by these small yellow fish were important to the team's success in terms of locating the sharks. The divers waited for the hammerheads to swim into a cleaning station and then moved in slowly to tag them using a spear gun. The sharks swim much more slowly and often roll over to one side while waiting to be cleaned rather like a dog having its tummy tickled! They generally reacted to being tagged with a surprising degree of lethargy.

Socorro

The team moved rapidly from San Benedicto to the main island of Socorro with barely a shark sighting. The highlight was, however, the presence of a small pod of bottlenose dolphins. One of the dolphins left the rest of the pod as soon as it saw divers and proceeded to act as if it wanted to be scratched; repeatedly coming alongside



Moray eels, Roca Partida © Major Andy Reid

divers, going into a trance like state and falling through the water before returning to the divers. This was a remarkable display from a wild animal that left some of the team in a state of absolute euphoria. Despite the presence of the dolphins the expedition moved on via a compulsory check-in at the naval base. It was interesting to discover that the Mexican Navy regularly encounters an average of five or six illegal fishing boats per month. These boats fish within the 12 mile protection zone round each of the Revillagigedo Islands and are totally indiscriminate in terms of what they catch; even catching manta rays, which are fully protected in all Mexican waters.

Roca Partida

Finally, the team made the six hour crossing from Socorro to an isolated rock pinnacle called Roca Partida. This is an 80m long isolated pinnacle of rock surrounded by sheer rock walls that proved to be home to silver-tips, white-tips, Galapagos sharks, silky sharks, scalloped hammerhead sharks and whale sharks. Underwater real estate was at such a premium here that it was not uncommon to see up to a dozen moray eels in a single hole. Co-ordinated teamwork was required to get as many of the right people with the right kit for the job (different species required different equipment) into the right place at exactly the right time. The team ultimately got this correct for the hammerhead and Galapagos sharks but the whale sharks decided to stop playing much too early in the game and as a result

there was no longer a right time or place. All this proved to be a useful case study in coping with constant, unpredictable, change in a challenging environment with limited resources. It also clearly demonstrates that you must always be prepared to take an opportunity as soon as it presents itself – like whale sharks, really important opportunities rarely seem to come around twice!

The team saw two whale sharks at Roca Partida, one of which was an eight months pregnant female, which confirms the hypothesis that whale sharks use the deep waters of the southern area of the Gulf of California and Revillagigedo Islands as their primary nursery. Unfortunately, the team did not manage to tag her and she will sadly remain unidentified for the time being.

Expedition Success

Despite the setbacks the team finally tagged ten great whites, six hammerheads, three Galapagos sharks and one silver-tip shark. The team also deployed four new radio receivers at the sites: two at Guadalupe, one at Socorro and one at Roca Partida. These will record the comings and goings of tagged sharks as they move around the islands.

The expedition was something of a roller coaster of emotion that started with the excitement of diving with great whites, continued with the boredom of the long sea passage followed by the frustration and euphoria of San Benedicto and Socorro, before finally moving into hard work and final success represented by Roca Partida. The next expedition is being planned and a team will return to Cocos Island in June 2010.

Major Andy Reid AGC(ETS)

www.jurassic-shark.org.uk

The expedition was carried out in co-operation with the Centro De Investigaciones Biologicas del Noroeste, S.C. and the Centro Interdisciplinario de Ciencias Marinas, La Paz, Baja California Sur, Mexico. It was sponsored by the Joint Services Expedition Trust, Army Sub-Aqua Diving Association, British Sub-Aqua Club Jubilee Trust, Army Sports Lottery, PADI Project Aware, Selex Galileo and NSSL amongst others. It was approved by the Royal Geographical Society.

Operation Heritage

“IRAQ IS STEEPED IN HISTORY. IT IS THE SITE OF THE GARDEN OF EDEN, OF THE GREAT FLOOD AND THE BIRTHPLACE OF ABRAHAM. TREAD LIGHTLY THERE.”

Lt-Col Tim Collins

On the 19th March 2003 Lieutenant Colonel Tim Collins in his eve of Battle speech to British forces prior to Op Telic highlighted the immense heritage importance of Iraq. In spite of this understanding, as has been widely reported, damage to archaeological sites and looting of museums in Iraq unfortunately occurred. Operation Heritage was set up as a partnership between the Iraqi authorities, the British Army and British Museum to address these issues. Tasks included surveying sites of world importance such as Ur and Uruk and then to re-establish a museum in Basra in the old Lakeside Palace of Saddam Hussein.

The Director of the Basra Museum, Mr Qahtan Abd Ali Al-Mayahi, along with two Iraqi students, have been working closely with members of the British Army (HQ 3 Division) and the British Museum for over a year, on proposals for a new museum in Basra. Funded by the Department for Culture, Media and Sport (DCMS) the three Iraqi delegates have undertaken curator courses at the British Museum and visited Defence Training Estates (DTE) Salisbury Plain to see how military training and protection of the historic environment can work in tandem.

Accompanied by representatives from the British Museum, DCMS and English Heritage, the delegates first visited Stonehenge and then were taken on a journey round the Plain to see the issues faced by Defence Estates in protecting our cultural heritage in a heavily used training area. The group examined sites from prehistory up to those of the Great War, saw attempts to prevent vehicle and burrowing animal damage to archaeological monuments and methods of signage to inform the military of the presence of a site of cultural heritage importance – all issues pertinent to Iraq. Lt Col Mike Beard, Commander DTE Salisbury Plain, discussed the methods of policing the area by Ministry of Defence Police, Training Area Marshalls and Land Wardens to highlight the importance of monitoring all aspects

of a protected landscape. In emphasising that we too face problems with policing our estate, we can share ideas with our Iraqi counterparts on how to best protect cultural heritage.

That we have so much surviving on Salisbury Plain is down to the presence of the Army and through Operation Heritage, the MOD has been able to demonstrate its commitment to heritage worldwide. Although the British Army, British Museum and Defence Estates has been able to offer assistance, the onus is on Iraqis to ensure that their heritage is cared for. It is vital they succeed.

Richard Osgood, Head of Historic Environment Team, Defence Estates

“I shall ride a road I know not:
I beseech you, give me your blessing for my journey!
Let me see your face again in safety,
And return glad at heart through Uruk’s gate.”
– Gilgamesh, Tablet III, 27-30



Op Heritage Iraq, Uruk © MOD Crown

Akrotiri Environmental Education and Information Centre - SOVEREIGN BASE AREAS OF CYPRUS



© AEEIC

Established by the Sovereign Base Areas Administration (SBAA) and run in full co-operation with the local community and the Republic of Cyprus, the Akrotiri Environmental Education and Information Centre is situated in the heart of Akrotiri village, adjacent to one of the most important environmental areas in the eastern Mediterranean. Overlooking the Akrotiri salt lake, surrounding salt marshes and coastal regions of the Akrotiri Peninsula, the Centre provides an excellent location to observe thousands of migratory water birds and raptors making their way from Europe to Africa during the autumn and making the return journey in the spring.

The Pluto antennae project in 2001-2002, which was constructed on the boundaries of the Akrotiri salt lake in support of key military operations, was the catalyst for the idea of an environmental centre. The Environmental Impact Assessment undertaken by Defence Estates for the Pluto project, along with a commitment made by the SBAA to meet part of the Ramsar designation of the salt lake, ensured that such a centre was established to promote the environmental significance of the area. In 2004, the SBAA rented and converted a suitable building and the Akrotiri Environmental Education and Information Centre came to life.

The Centre today has never been busier, hosting international exchange students, tourists and school children. It is also an operations centre for a wide range of research projects and local community cultural projects. The success of the Centre in showing the joint working relationships between the British Military and Cypriot communities ensures that it is always on the

itinerary of a large number of dignitaries from both the UK Government and the Republic of Cyprus (RoC), as it provides a less formal way to appreciate the good work undertaken to protect so much of the natural and cultural history of the Sovereign Base Areas.

Environmental Education for School Children

In 2008, with the support of the local community and as part of the wider network of Environmental Education Centres on the island, the Centre began a formal partnership with the RoC Ministry of Education. This key milestone brought a full time school teacher to the Centre to help existing staff deliver environmental programmes in line with the school curriculum. Eleven programmes are currently offered at different

levels depending on the age of children. Lasting from four to seven hours and delivered in Greek and English, they include presentations and discussions, field work and completion of worksheets back at the Centre. Programmes offered include: flora and endangered plants and bird migration at Akrotiri Peninsula; Natura 2000 and the protection of natural habitats; Akrotiri wetlands and their importance; basketry at Akrotiri Village; plant production at Fasouri Forest Nursery; marine turtles nesting at Akrotiri beaches and the first humans living on Akrotiri Peninsula and hippopotamus hunting.

The response from schools has been impressive, with more than 5,000 children participating in the programmes during 2008. Around 4,000 were from primary and



Basketry at Akrotiri Village © AEEIC



The Centre © AEEIC

pre-primary education, with 1,000 from secondary education.

Visitors and Tourists

The Centre is open to all visitors to the area, including many specialist groups who are offered tailored programmes. Several tourist companies include the Centre and Akrotiri village in their tours, and at least two coaches arrive every week to learn about the unique wildlife and historic value of the area through films and presentations. Visits to basket makers, local coffee shops and other amenities assist in supporting and building closer relationships with the local communities. During 2008, some 5,000 visitors were hosted by the Centre.

European Educational Programmes

The Centre also participates in European Union Lifelong Learning programmes, such as Leonardo da Vinci where University students participate in four to eight week placements and undertake practical study in environmental skills, culture and archaeology. A key programme entitled "Unlocking Hidden Heritage", lasted for two and a

half years and ended in June 2009. The programme involved six countries (UK, RoC, Germany, Ireland, Slovakia and Iceland), working together to implement six cultural actions, including the mapping of the reed and rush species used for the traditional craft of basketry at Akrotiri village. The species were identified with the help of local people, their scientific names were confirmed and their distribution and extent were mapped using GPS. This data will be used for the management of reed and rush species collected from the surrounding salt marshes and reedbeds and will hopefully enable this handicraft to continue to flourish in the future.

Akrotiri Peninsula Management and Research

The Centre plays a key role in the management of the local wildlife habitats. A management plan for part of the Fasouri Marshes is underway, with objectives to sustainably manage activities such as basketry, plant collection, bird watching, endangered plants protection, grazing and providing environmental education. Centre staff have started preliminary work to map sites and cut and control reeds with help

from the European educational programme participants and volunteers.

The Centre is fast becoming a reference point for birdwatchers and other wildlife specialists, with the RAF Ornithological Society utilising the facility as a base during their expedition in spring 2008. Monitoring of the Demoiselle crane migration and marine turtle nesting was carried out through the Centre. Centre staff also patrol the area to ensure the prohibition and reporting of activities such as illegal dumping and hunting. University students utilise information provided by the Centre for their research projects on the Akrotiri Peninsula, something that is encouraged, particularly if the results of their work support the environmental management of the area.

The Future

Since founded in 2004, the Centre has gone from strength to strength and is pulling in greater number of visitors than ever before. It demonstrates the steps taken by the SBAA to look after this unique and environmentally important asset for the local population, military community and the RoC. However, the converted house originally rented for the Centre is now too small to accommodate the success of the current work. Plans for a new larger facility within the Akrotiri Village are being drawn up and land has been purchased to construct it. With local, SBAA and RoC support it is hoped that the new Centre will build on the good work achieved so far in raising awareness of the areas environmental importance.

Ian Davidson-Watts, former Head of Environment Department and Thomas Hadjikyriakou, AEEIC Manager, Sovereign Base Areas Administration.

Cyprus – Conservation Group Update

Part of the MOD, the Sovereign Base Areas Administration (SBAA) has a unique role in governing the 100 square miles of Cyprus known as the Sovereign Base Areas (SBAs). Dr Ian Davidson-Watts gives a short update on conservation activities during the 2008-09.

Special Protection Areas

Delivering the environmental programme and taking forward the legislative obligations in the SBAs has been the main focus of conservation related work during the past year. Specifically the SBAA has completed the consultation on the proposed designation of Special Protection Areas (SPAs) for some of Europe's most important bird areas. Although not in the EU the SBAs have Ordinances (laws) that require similar steps to be taken to protect internationally important wildlife sites. These proposals have met with support, especially from some of the key stakeholders such as Birdlife Cyprus, as well as some resistance from a number of the local communities and larger landowners who have concerns about the possibility of future non-military development in the SBAs. The current policy is such that there is no possibility of large scale non-military development. However, it will be important for the SBAA to ensure the local communities are on-board with these and other future designation proposals, as this is what will ultimately secure the long term future of such sites.

One of the proposed SPAs includes large areas of fruit plantation land due to the presence of hundreds of migratory red-footed falcons *Falco vespertinus* using the area during autumn. Following initial concerns by the plantation owners about the quality of the data about these birds, the SBAA Environment Department led a collaborative study, with Republic of Cyprus Government Officials and the plantation owners own consultants to re-examine the area during autumn 2008. The study involved two driven transects taking three to four hours, three to four times a week through

a range of habitats throughout the Akrotiri peninsular and surrounding plantations. The results clearly demonstrated that red-footed falcons were found in significantly greater numbers in the plantation areas (about 97% of the 5,500 observations of this species) and far exceeded current population estimates, confirming the need to for these areas to be protected.

In addition, the SBAA Environment Department in collaboration with Defence Estates (DE) and British Forces Cyprus (BFC) secured funding to undertake a habitat survey of over 64 square kilometres in the SBAs to provide the scientific basis for the SPA designation programme. Davy Reynolds of DE should be commended here for his efforts on this project. The surveys have confirmed, and for the first time, accurately mapped internationally important habitats and species. This data will also provide a very useful foundation for BFC's Integrated Rural Management Plan, and ensure proposed military developments are informed by environmental considerations.

Turtles

Marine turtle conservation had a mixed year in 2008. Although Akrotiri reported some of the highest numbers of the endangered green turtles nests on record, Episkopi reported the lowest number of nests across all species on record and a very high number of drowned turtles washed up on the beaches. The cause is probably the result of fishing practices and the SBAA Environment Department has initiated a turtle mortality study to investigate when and how these turtles are dying with the aim of better regulating fishing in SBAs waters. Funding has also been secured to deliver nest protection measures such as barriers near beaches, to prevent illegal vehicle use and sand extraction from turtle nesting beaches. Further to this, turtle information and education boards have been erected at a number of key locations to explain the importance of such habitats and the various turtle watches continue to patrol and record nests on the beaches.



Green turtle © Linda Stokes

Other Activities

During spring 2008 the Royal Air Force Ornithological Society with over 25 participants undertook an expedition to Cyprus, resulting in a huge amount of bird data on the SBAs. There have also been some recent discoveries on the botanical side such as Dominican sage *Salvia dominica* within Episkopi Station. This Red Data Book species is only found at one other known location in Cyprus. At Troodos Station a dense-flowered helleborine orchid *Epipactis condensata*, was discovered, making this the fourth known site in Cyprus. The archaeologists from the Republic of Cyprus have also been working on a Roman settlement near Akrotiri, a potentially significant find of comparable importance to Kourion.

The bats of Cyprus are receiving a higher profile. The European Commission run organisation, Eurobats, held their international conference during May 2009 in Cyprus, attended by the SBAA. Again at Troodos Station, SBAA ecologists have found Cyprus' only known breeding colony of greater noctule bats *Nyctalus lasiopterus* using buildings during the summer months. In addition, the presence of Mediterranean long-eared bat *Plecotus kolombatovici* has



Greater noctule bat © Ian Davidson-Watts



Red-footed falcon © Thomas Hadjikyriakou

now been confirmed. Previously recorded as a greater long-eared horseshoe bat in Sanctuary 34 2005.

Last Word

I've been Head of the SBAA Environment Department and the lead for BFC's Safety, Health and Environment policy for two years. A lot has happened during this short time to bring the SBAs into the 21st Century with the appropriate environmental legislation and processes for both the military and civil part of the Areas. I'm moving on to pastures new in New Zealand and would like to take the opportunity to thank those dedicated volunteers and colleagues in the SBAA,

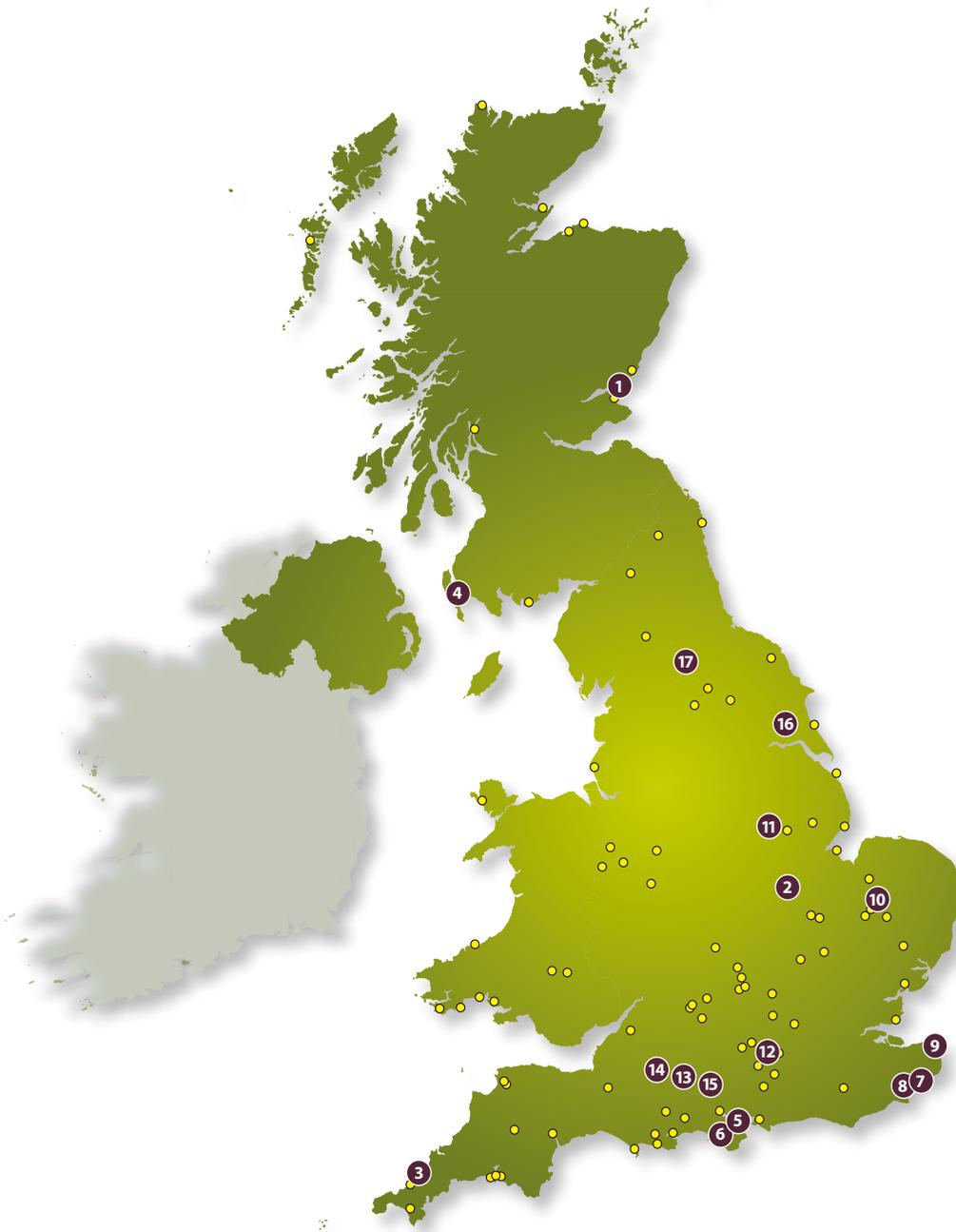
BFC, DE and the Republic of Cyprus past and present, who have done a sometimes thankless job in ensuring the future survival of some of the most important habitats, species and archaeological sites remaining in Cyprus and the Eastern Mediterranean. Without the presence of the military bases and the work of these dedicated people, many of these would have been lost to tourist development years ago.

Dr Ian Davidson-Watts
Former Head of Environment
Department, Sovereign Base Areas
Administration, Cyprus



Around the Regions – with the Conservation Groups

There are over 120 Conservation Groups operating across the MOD. The following section provides an update on the dedicated work of some of these groups.



1. Barry Buddon Training Centre, Angus and Dundee
2. RAF Wittering, Cambridgeshire
3. Penhale Camp, Cornwall
4. West Freugh, Dumfries and Galloway
5. Defence Storage and Distribution Agency Gosport, Hampshire
6. Newtown Ranges and Jersey Camp, Isle of Wight
7. Canterbury Old Park Training Area, Kent
8. Cinque Ports Training Area, Kent and East Sussex
9. Defence Fire Training and Development Centre, Manston, Kent
10. Stanford Training Area, Norfolk
11. Yardley Chase, Northamptonshire
12. Royal Military Academy Sandhurst, Surrey
13. Boscombe Down, Wiltshire
14. Imber, Wiltshire
15. Porton Down, Wiltshire
16. Defence School of Transport, Leconfield CARRS, East Yorkshire
17. Catterick, North Yorkshire



Spotlight on...

Sandhurst Conservation Group

As you make your way around the Royal Military Academy Sandhurst (RMAS) past the serene Upper and Lower lakes and under the shady canopy of the pedunculate oak, sweet chestnut, Scots pine, silver birch and English alder, you understand how it was named so. The name Sandhurst is derived from the sandy soil of the area and 'hurst' meaning woodland. The site is straddled by the counties of Berkshire, Hampshire and Surrey with the border marked by a small stream known as the Wish Stream. Defence Estates maintains the grounds of this iconic Army Officer training centre and Defence Training Estates (DTE) Home Counties maintains the associated Barossa Training and Range Danger Areas.

Originally poor farmland, the area was sold to the Government in 1801 as a new and ideal location for the Royal Military College - close enough to London, but not so close to corrupt the Cadets with the capital's carnal pleasures! The millpond was transformed into ornamental lakes, and large areas of land were left in their original state as training grounds and named "Barrosa" due to the supposed resemblance to the site of a Peninsular War battle.

The world famous Old College was completed in 1812 for a final cost of some £350,000. Above the entrance a roundel of the monogram of King George III is flanked by Mars and Minerva, the gods of War and Wisdom. Other notable buildings and memorials include the Royal Memorial Chapel, the third to be built at the site, and New College built in 1908-11 to house the increasing number of cadets. At the time it boasted the longest corridor in Europe and even today it still remains the longest military building in Britain.

In 1947, the Royal Military College and the Royal Military Academy at Woolwich merged and became The Royal Military Academy Sandhurst. The motto "Serve To Lead" has been taught to, and been adopted by, generations of Officer Cadets ever since.



Conservation at RMAS

The RMAS Conservation Group is an important part of the network of organisations that monitor and protect the woodland and heath on this 926 hectare site. The Group, chaired for the past two years by the Conservation Officer Major Nick Loader, meets twice a year and holds other sub-committees as required. Its 37 regular members are made up of various local volunteer 'ologists' and professional bodies such as Natural England, English Heritage and Bracknell Forest Borough Council, who work together to ensure legislation is adhered to and help coordinate and promote conservation.



Environment Agency conducting the brown trout survey © RMAS



Local children getting involved in the brown trout survey © RMAS

The range of habitats monitored by the Conservation Group are extensive and include ancient broadleaved and coniferous woodland, rough grassland, wet and dry heathland, streams and lakes. Unsurprisingly, the area encompasses several Sites of Local Scientific Importance and forms part of Bagshot Woods and Heaths Site of Special Scientific Interest (SSSI) within the Thames Basin Heaths Special Protection Area (SPA) designated for its internationally important populations of nightjar *Caprimulgus europaeus*, Dartford warbler *Sylvia undata* and woodlark *Lullula arborea*. The area is also a haven for the stag beetle *Lucanus cervus*, hobby *Falco subbuteo* and crested buckler fern *Dryopteris cristata*, water vole *Arvicola terrestris*, roe deer *Capreolus capreolus* and Reeve's muntjac *Muntiacus reevesi*.

The Barossa Training Area and Range Danger Area covers some 668 hectares and despite having been once afforested with pine and birch (in particular Scots pine), it is one of the largest surviving areas of heathland in Berkshire. The relic mire communities support a number of rare plants to Berkshire such as round-leaved sundew *Drosera rotundifolia*, white beak-sedge *Rhynchospora alba* and bog myrtle *Myrica gale*. At Wishmoor Bottom the valley mire supports the nationally scarce moss *Sphagnum recurvum var amblyphyllum* and on the dry heath significant colonies of silver-studded blue *Plebejus argus* butterflies can be found.

AROUND THE REGIONS

The Conservation Group is also helping Defence Estates and Natural England to improve the SSSI status of this heathland from 'unfavourable recovering' to 'favourable'. With the support of Natural England, felling of large areas of Barossa has encouraged heathland recovery and, furthermore, surveys of breeding birds on the SPA have indicated significant increases of woodlark, Dartford warbler and nightjar as a result.

However, the management of the area is complicated by the speedy capacity of the woodland to regenerate itself and prevent the growth of more suitable species. As a method of keeping the regenerating vegetation at bay it is planned to introduce cattle grazing to the whole SPA. Whilst, it is too early to know how effective the use of cattle will be in managing the heathland, the approach is one repeated across the UK as an approved method of control.

The Wish Stream flowing from the Training Area is regionally important for its population of 'genetically pure' wild brown trout *Salmo trutta morpha fario*. Although there is a healthy population of the fish in the northern part of the Wish Stream, they have all but disappeared from the Blackwater network. Working with the Environment Agency plans to encourage the trout back into the network are being developed, informed by the surveying work carried out by the Environment Agency supported by the Conservation Group.

The RMAS controlled waters also support several nationally important dragonflies and damselflies such as brilliant emerald *Somatochlora metallica*, ruddy darter *Sympetrum sanguineum*, downy emerald *Cordulia aenea* and small red *Ceriagrion tenellum*. The Upper and Lower lakes are the home to all kinds of birds, herons, swans and geese including Egyptian and Canadian. At the Bathing Lake a group of famous Sandhurst characters can be found – the Muscovy ducks *Cairina moschata*, who were re-homed from a RSPCA sanctuary in early 2008.

Promoting Conservation

RMAS hosted this year's Conservation Group Chairman's Forum. An all-round success, the



Muscovy ducks © RMAS

60 Chairmen and guests, including Chief Executive Defence Estates Vice Admiral Tim Laurence, enjoyed a tour of RMAS, a demonstration in bat harp trapping and how to conduct a reptile survey. A variety of presentations and workshops were given by Defence Estates specialists, the Bumblebee Conservation Trust, Mammal Society, Amphibian and Reptile Conservation Trust, Million Ponds Project and Professor Mick Crawley of the Imperial College London on RMAS Botany.

The Conservation Group organised for the first time a popular Conservation Corner at the RMAS Heritage Day in June. Group members John Warren, Terry Beaumont and Brian Clews manned the Group's stand and with the help of a falconry display and number of nature conservation groups including the RSPB, Swan Lifeline and Friends



Stag beetle survey © RMAS

of the Earth gave members of the public a greater insight to the conservation work carried out by the Academy.

The Conservation team, led by WO2 (YofS) Laura Midwinter (Deputy Chairman of the Conservation Group) have produced a yearly Conservation Guide to RMAS which is given to all 500 families stationed in the area. Not only a good read, the guide gives an overview to the splendid array of wildlife, flora and fauna to be found at the site and encourages readers, especially children, to get involved with a variety of conservation activities such as ladybird forays, tips on feeding garden birds including a bird cake recipe, how to be nature detective and how to build a wormery.

Engaging with military children is considered a top priority by the Conservation Officer and the Conservation Group. They have actively worked with the Community Development Worker to facilitate participation in activities such as beetle and newt surveys and bark rubbing. The 2009 Summer Holiday Programme included a mini beastie hunt and bird ringing and surveying, utilising the group login to access the British Trust for Ornithology's on line bird recording scheme BirdTrack.

RMAS and Barossa Training Area are not only an excellent example of how the defence estate can be a haven to flora and fauna, but they also provide a kaleidoscope of training scenarios vital to the output of Sandhurst – world class Army Officers. The Conservation Group play an absolutely vital role, providing expert advice to ensure the RMAS as a whole is managed sensitively in line with conservation and military training requirements.

Rebekah Jones, Editor

Many thanks to Major Nick Loader (RMAS Conservation Group Chairman), WO2 (YofS) Laura Midwinter (Deputy Chairman), Sue Polley (Group Secretary) and David Kay (DE Forestry Advisor and Group member) for their warm welcome, for providing an interesting and informative brief and for showing me around the delights of the site.

ANGUS AND DUNDEE

Barry Buddon Training Centre



The Barry Buddon Training Centre is located at the mouth of the Firth of Tay and lies approximately one mile west of the well known Carnoustie golf club. It features 21 ranges, used primarily for infantry training, small arms and light and medium mortars. The site covers 950 hectares, of which 240 hectares is foreshore, with at least an equal amount sea danger area. Most of the training area is a SSSI and an EU SAC as well as a SPA for birds under the European Birds Directive.

Shore nesting birds include terns and shell duck. In summer months, skylarks, meadow pipit, linnets and stonechats use the dune as shelter or nest sites. In winter, passage birds like fieldfares and redwings feed on the plentiful sea buckthorn berries. Mammals are restricted by the lack of cover, although the terrain is suited to rabbits which play an important role in maintaining the short turf and thereby the diverse range of plant species. Maintaining naturally-balanced numbers, not just of rabbits but of voles, mice and even the occasional brown hare, is down to predators like foxes, weasels, stoats and birds of prey. Amphibians, reptiles and invertebrates are also present in many different species, on the warm, dry habitat and around the area's pools and marshes.

Barry Buddon Annual Open Nature Day

This annual event grows more popular with each year and with five local members groups attending, a big turn out which usually numbers 60 to 70 people is guaranteed. Records were set at the outing in August 2008 with a record 77 bird species being spotted and a record number of 14 butterfly species recorded. Those attending enjoyed the Natural History treasurers of Barry Buddon Training Centre and the Commandant Captain Tom Graham, turned out to wish all present a good day.

Wader Comforts

Following on from the success of the Yeomanry Pond established some years ago and still going strong, the conservation committee has created two more small Wader Scrapes adjacent to the Yeomanry. These new scrapes once settled in, will, we all feel, be equally successful as Yeomanry in attracting both resident wader birds like curlew and lapwing as well as passage migrant birds, such as wood sandpiper, pectoral sandpiper, and the rare red necked phalarope which has visited once previously.



Bat box affixing © Bob McCurley

Battling for Bats

Bats surveys have been taking place on Barry Buddon for nearly a decade now. With help from various volunteers over the years, Bob McCurley and Alan Brennan from the conservation team have surveyed many of the various buildings, pill boxes and other various constructions likely to be used by bats. As part of this survey, the Bat Conservation Trust donated timber which was assembled by the joiners department at the camp. Thirteen well constructed boxes were then erected onto mature Scots pine. As is the usual practice three boxes per tree at a height of about ten to fifteen feet above ground. This is part of an ongoing project in order to help boost the number of bats at Barry Buddon. Brown long eared, Daubenton's and both species of pipestrelles have been recorded.



Yeomanry Pond © Bob McCurley

David West, Estate Advisor,
Defence Estates, Rosyth

CAMBRIDGESHIRE

RAF Wittering



One Complete Services (OCS) Horticulture, the RAF Wittering grounds maintenance contractor, provides valuable proactive representation on the RAF Wittering Conservation Action Group (CAG) in the form of Mr Jeff Davies, Regional Operations Manager and Mr Richard Coy, Area Operations Manager. Last years Sanctuary feature on the RAF Wittering Heath outlined the long term management plans that the OCS team hoped to implement on behalf of the CAG.

The benefits of managing this area of semi-natural grassland are twofold; to encourage biodiversity and to maintain a suitable safety level for our rough shoot contingent. Since the initial clearance work was completed further cutting back and clearance of encroaching scrub has taken place and substantial meadow mowing to weaken invasive grasses and revitalize existing swathes. 'Sidings' have been established to encourage natural restoration of the grassland and associated habitats. This second phase of work was completed in January 2009. Having visited the area in February 2009 to look at recent rowan tree planting I can confirm that, visually, the area is much improved and already a pleasure to visit.



View of heath swathes after 1st phase management
© SAC P Major



Rowan trees for the Centre of Ecology Phenology Experiment © SAC P Major

During the summer of 2008 the CAG was approached by Natural England to ask if the Station would partake in the Centre of Ecology and Hydrology Rowan Tree Phenology Project. The Project contributes to the UK and European phenology networks by providing records of planting locations and the various stages of growth. The networks aim to gather information regarding biological and seasonal events to produce more reliable predictions of the likely effects of climate change on the UK's biodiversity. The CAG willingly accepted the invitation and awaited further instructions from Tim Sparks at the Centre of Ecology and Hydrology, Monks Wood, Cambridgeshire.

Tim designed the rowan tree project to look at the effects of origin/local provenance on the phenology (timing) of six sources of rowan; two each from England, Scotland and Ireland. Similar projects on oak trees across Europe suggest that trees 'remember' their origin and continue to develop in line with the climate of origin despite being relocated and grown elsewhere. Due to the closure of Monks Wood it was decided to disperse the experiment to volunteers who would be willing to adopt and monitor six trees each. More than 140 volunteers came forward and the trees from the Monks Wood site are now planted across the UK, from Caithness to Cornwall.

OCS Horticulture team took delivery of six trees in December 2008 and planted them in the Heath as agreed at our autumn CAG meeting. The trees are coded to identify their origin and are currently at the 'whip' stage, little more than a stick. Starting this Spring, a member of the conservation group began to record the eight events for each tree's annual cycle: budburst, 'claw' stage with leaf extending, first leaf open, first flower open, fruit ripe, 50% leaves autumn coloured, 50% leaves dropped, and a bare tree. The information will be fed back to Tim and added to his central records at each stage of the growth cycle. Take a look at Conservation Update (Summer 2007) to find out more about phenology networks and associated websites.

My thanks go to Mr Jeff Davies and Mr Tim Sparks for providing supporting information. Also, congratulations to Mr Davies on his Sanctuary Award this year.

Sharon Rawnsley, Conservation Action Group Secretary, RAF Wittering

CORNWALL Penhale Camp



Penhale Sands Army Training Area covers around 1000ha of cliff top and sand dune habitats on the north Cornwall coast and makes up about half the total area of the dune system here. About 650ha of Penhale Sands, outside the built areas, is designated a SSSI and SAC, of which the MOD own about half.

The Penhale Camp Conservation Group has been actively involved in species surveying and monitoring for many years, with some records dating back 40 years. This information and advice from the members of the Group, many of whom are recognised as specialists in their field, has been invaluable in informing the management and military use of the site. One of the more recent additions to the Conservation Group is Gerry Tremewan who has carried out monitoring of the burnet moth populations and has had articles published in the 'Entomologist's Gazette' in 2007 about his research, from which the following information is taken.

The Burnet Moth

During the late 19th Century, it was considered that there were two different populations of *Z. trifolii* (Briggs 1871) in Britain, one consisting of smaller individuals confined mainly to chalk downs and limestone hills, the other with larger individuals restricted to wetlands. Subsequently Tremewan (1960) used the names *palustrella* and *decreta* to represent the chalk-down and wetland populations, respectively, a taxonomic decision that is currently still accepted. Apart from their size, the two can be separated easily by their behaviour and biology. The flight period of *Z. trifolii palustrella* occurs from the last third of May to the end of the first week of June in a normal season, whereas that of *Z. trifolii decreta* is from the end of June through July. The cocoons of *Z. trifolii palustrella* are spun low down and concealed amongst herbaceous vegetation and are noticeably

smaller than those of *Z. trifolii decreta*, whose larvae are usually attached higher up on the stems of wetland vegetation. Moreover, the larval host-plant of *Z. trifolii palustrella* is *Lotus corniculatus* while that of *Z. trifolii decreta* is *Lotus pedunculatus*.

On 14 June 2005, Gerry found a freshly emerged male of *Z. trifolii* on the top of a dune at Penhale Sands, and later found other populations on these dunes, which are the first sand-hill colonies of *Z. trifolii* known in Britain. On 20th June, it was confirmed that a colony located just outside the MOD area was well established, ca 30 individuals having been observed. It was noted that the cocoons of *Z. trifolii* were spun low amongst the vegetation. Interspersed with these were many cocoons of *Z. filipendulae* which were more conspicuous as they were spun higher and usually on the flower stems of grasses. The nearby slacks were checked for the presence of *Lotus pedunculatus*, the usual larval host-plant of *Z. trifolii* in Cornwall, but

none was located. The plant does occur in low-lying damp areas at Penhale Sands but is very rare, so cannot be the host-plant of *Z. trifolii* where it occurs higher up on the dunes.

On 24th June, Gerry established that *Z. trifolii* was much more widespread than at first thought, as several individuals were located much further south where there was no *Ammophila arenaria* but *Lotus corniculatus* was abundant. The next day a colony was discovered in an area adjacent to the military fence and subsequently was found to be very strong – an estimated population count suggested that 600 individuals were present in an area of ca 11,800m², i.e. 19 per square metre! Accompanied by Dr Frank Smith (also a Conservation Group member, specialising in Lepidoptera), a brief survey was undertaken in the military area beyond the fence and it was established that the colony of *Z. trifolii* (and *Z. filipendulae*) extended northward and north-westward for 400m.



Five spot burnet moth, Penhale © Gerry Tremewan

In 2006, after the abundance of both *Zygaena* species in 2005, it was not unduly surprising to find that it was a 'crash year', as populations often reach a peak, fall suddenly then build up again over a few years. 2007 and 2008 were both wet, poor seasons but some individuals were still recorded in the same locations at Penhale and monitoring of this species will continue.

Interestingly the Penhale specimens of *Z. trifolii* are smaller than those from the wetland habitats in Cornwall. It is interesting to speculate as to how long the small metapopulation of *Z. trifolii* has been present at Penhale Sands and whether the colonies are transient or permanent. The fact that these colonies are the first to be recorded on sand-hills in Britain is, in itself, of great interest. Three small colonies have previously been found nearby in the privately owned Mount Field, within the Penhale SAC boundary, where *Lotus pedunculatus* is found and where *Lotus corniculatus* grows near the boundary with the dry turf, which could be utilised as an additional foodplant by the larva. Gerry feels it is reasonable to assume that the sand-hill colonies could have originated from Mount Field.



Burnet moth chrysalis © Sarah Taylor



Burnet moth caterpillar © Sarah Taylor

When the establishment of the Penhale colonies took place is much more difficult to ascertain. However, if one assumes that colonisation of the dunes occurred during the last decade or so, then such an event and the switch to a different larval host-plant could well be attributed to climate change. While such a hypothesis is open to speculation, there is now a growing body of evidence that the behaviour of *Z. trifolii decreta* (the wetland ecological subspecies) and *Z. filipendulae* in Britain has been changing during the last two decades or so and that the larvae of these two nominal *taxa* occasionally switch to *Lotus corniculatus* and *Lotus pedunculatus*, respectively. Perhaps changing to a new or unusual larval host-plant becomes easier under favourable or optimum climatic conditions.

Other Activities

The Conservation Group have been busy monitoring a range of species, from fungi and flora to invertebrates and birds. The dunes are one of only two sites in Cornwall where live specimens of the round mouthed snail *Pomatias elegans* are found; scrub clearance work here enabled the discovery of a larger population. Among the flora recorded was soft clover *Trifolium striatum*, noted in an area of scrub clearance, which was last found here in 1981. Two large plants of the locally rare Cypress sedge were recorded in one of the dune slacks and flat sedge *Blysmus compressus* was monitored as part of a Botanical Society of the British Isles scheme. The wetter areas also support marsh fragrant orchid *Gymnadenia densiflora* and marsh helleborine *Epipactis palustris*, for which Penhale is one of only two and three sites in Cornwall respectively, and the locally rare variegated horsetail *Equisetum variegatum*. The nationally rare cup fungus *Geopora arenicola* has been found in large numbers whilst peregrine falcons *Falco peregrinus* continue to nest on the cliff fronts, last year successfully fledging three young.

More information about specific species and management work carried out at Penhale can be found on page 38.

The Conservation Group members would like to pass on their thanks for the continued support of the Commandant of Penhale Camp, Mick Pawlak, while in return, I would like to thank the members of the group for their expert advice, assistance and inspiring enthusiasm for the wildlife and habitats of the dunes!

Sarah Taylor, Countryside Officer,
Penhale Sands SAC



DUMFRIES AND GALLOWAY West Freugh Conservation Group

West Freugh, operated by QinetiQ, is a test range for bombs and Air-to-Ground missiles. Its ranges extend over Luce Bay and an area of land at Torrs Warren.

Wildlife Festival

April sunshine and showers greeted the 28 walkers who gathered to explore Torrs Warren dune system, as part of the Dumfries and Galloway Wildlife Festival. The Festival, initiated by the Local Biodiversity Action Plan Partnership, has been held each spring since 2005. It has grown from a handful of activities to more than 50 wildlife events across the region, attracting a total of over 3,000 people. This year was the first time Defence Estates and QinetiQ had been involved. Such events are enthusiastically supported by the Conservation Group, and everyone is keen to do more of them in the future.

The aim of the walk was to give people the opportunity to enjoy this rarely visited area, but also to discover more about the wildlife in order to assist with ongoing management. As the group left the car parking area, those



Torrs Warren Guided walk 2009 © Peter Norman

at the front were fortunate to see an adder, but this had quickly moved off into the vegetation by the time everyone caught up. A few early spring violets were in flower, whilst blushing bracket fungus was found on the willows growing in the dune slacks (wetlands), from where the first willow warblers of the year were in song. However, perhaps the highlight of the walk was a short-eared owl quartering the dunes in

search of small mammals. This is a rarely seen bird at West Freugh.

During the walk, several batches of tiny unidentified eggs were collected from the outside of silken cocoons that bound together dead bracken fronds. Since the walk, the eggs have hatched and the mystery solved. They belong to vapourer moths and have produced black, orange and yellow spiny caterpillars. These spin a cocoon in which to pupate. Once fully grown the males fly off in search of females, but the wingless females only crawl onto the outside of the cocoon to wait for males and then lay more eggs. Though these moths can be a pest in some parts of southern England, at West Freugh there were previously just a handful of local records.

As we returned to the cars, we watched the aerial displays of lapwings, which nest on the grass kept short around the target area - a reminder that some of the managed areas are just as good for wildlife as well as the wilder ones.



Vapourer moth eggs, Torrs Warren
© Peter Norman



Vapourer caterpillar bred from the eggs found
at Torrs Warren © Peter Norman

Peter Norman,
Conservation Group Member

HAMPSHIRE Defence Storage Distribution Agency Gosport

Defence Storage Distribution Agency (DSDA) Gosport is situated on the east side of the Gosport peninsular and covers approximately 400 acres. Our main task is to support, front line commitments by providing an array of munitions and maintenance support specifically for the Royal Navy. On the conservation front it has been a busy year at the site with a number of surveys, including hosting a full Hampshire County Council appraisal for biodiversity, heron and little egret counts and our own ongoing conservation initiatives.

The County Council surveyed all areas for flora and happened to find water voles living in one of our small ponds which we were unaware of and had not recorded. This, our second site inhabited by this nationally threatened species, has been added to our environmental management plan.



Water vole © Iain Perkins



Oystercatcher nesting on a barge © DSDA Gosport



The depot hosts one of the largest heronries on the south coast, which includes a colony of nesting little egrets. The heronry itself is situated in registered ancient woodland and each year we ring a small number of birds. Numbers are counted annually as part of the MOD, and national, bird counts and this year there were recorded 55 occupied heron, and 15 little egret nests.

We have managed with the help of the estate contractors, to remove encroaching hawthorn and brambles from an area of marsh orchids. This is carried out annually and coupled with other measures to protect the water levels has seen the orchid numbers rise from an original eight to over fifty. It is hoped this will increase year on year as the area is cleared and enlarged.

Each year we have reports of birds on site nesting in unusual places. An oystercatcher has decided that one of the depot lighters (barges) will make a nice nesting site using one of the coils of rope as a ready made nest. Last year it used white rope, but this year took the opportunity of using black rope which camouflages the bird far better. Luckily the lighter had a gap in its work schedule which allowed us last year to wait for hatching to take place, but unfortunately this year the eggs failed to hatch despite our best efforts to leave them in peace. Hopefully there is time for another brood.

**John Wray, Ministry of Defence (MDP)
Wildlife Officer**



ISLE OF WIGHT

Newtown Ranges and Jersey Camp

This has been an exceptional year for the Training Area, ranges and accommodation facility. Our popularity on the Island seems to be spreading; bookings have been up for all the facilities we offer. These have included Reserve Forces and Cadet Units from as far away as Northern Ireland and Cornwall, and visits from regular forces.

We have spent this year researching the history of the ranges which first opened in 1912. Ian Broad a local historian has worked diligently on gathering information in particular from our past Range Officers. Some 100 pages of text and countless photographs and illustrations are awaiting print. This document will be incorporated into the Conservation Management Plan and Dossier for the site.

The Conservation Group have also had an exceptional year and can be proud of their achievements. We provided articles and the cover photograph for Sanctuary Magazine Issue 37. Barry Angell who farms next door to the range and is one of our senior group members is a keen photographer, our Lepidoptera expert, and writer of numerous articles for the magazine. A very surprised and proud Barry received a framed copy of the Sanctuary 37 cover photograph from Clare Backman, Defence Estates Conservation Group Team, at the AGM in October. Clare and the Group Chairman, Col (Rtd) Amedee Mieville OBE also presented on behalf of Defence Estates a framed certificate of thanks to Dr Colin Pope for his commitment to conservation work here at Newtown Ranges. Colin is the Ecology Officer for the Local Council. Similar certificates have been passed to Mr Richard Grogan for 10 years commitment to the Group and conservation of mammals, and to Mr Bob Lord on his retirement from Natural England and in recognition of his support over a period of eight years to us and our tenant farmers.



Claydens Pond © Dave Maidment

The Group has been busy carrying out surveys and producing reports which are passed on to the Environmental Support Team and the local Ecology Officer on the Island. Botanists Bill Shepard and Sue Blackwell have identified 159 species in an area not normally covered on surveys. These included 93 ground flora and climbers, 35 trees and shrubs, 26 grasses, sedge and rushes and 5 ferns. They discovered a new species to the range, the medium flowered wintercress *Barbarea intermedia* in a ditch adjacent to Jersey Camp.

We have a new member in the Group, Dr David Biggs who is an entomologist and specialises in parasites and galls. David carried out a number of studies this year finding several new species of micro fungi, mites, hemipteran bugs and micro moths.

The Group's annual open day sponsored and well advertised by the local council as part of their Spring Walk programme, took place on 22nd May 2008. 100 visitors, were shown around by members of the Conservation Group who proudly explained their areas of expertise. As usual donations received were welcomed and this year are going towards a moth trap. This will be used around the site to trap and record species we hope are new to the Island.

The Green Winged Orchid show 2008 was short, but produced more orchids than last year with some 74,000 against 17,000 in 2007. Private viewings were carried out by interested parties from the Island.

John Willmott and Bob Green our stalwart ornithologists, carry out bird counts on at least a monthly basis for the MOD count and local records. Whatever the weather, John and Bob cover most of the training area counting and recording. They reported some 113 species in 2008. Highlights for the year are: 3 singing song thrush; a sedge warbler; 2 green sandpiper; ruff and reeve flying together; Brent geese peaked at 2115 for the whole estuary and this number ensures that Newtown Nature Reserve remains of national importance. Also, we found nesting buzzards in Locks Copse and we hope to do so again next year. Our reckoning was that three young were raised. My favourite couple of weeks was watching a pair of robins building a nest and raising their young in a barn where we keep our machinery. We left them to go about their business, but I was lucky enough to take several photographs of the whole process.

The Range Staff, Stuart Hersey and Trevor Clark, have been busy coppicing, refurbishing nest boxes and discovering great crested newts. Stuart found a female newt on the path close to the Range Office in November 2008 and helped it to go back into hibernation. Close observation of the nearest pond will I hope produce some sightings.

The dormouse population is thriving under close scrutiny of our licensed mammal expert Richard Grogan from the Hants & Isle of Wight Wildlife Trust. We believe we have a water vole on Claydens Pond. However, Andy Rothwell who happened to be carrying out a check for water voles in nearby Rodge Brook, is of the opinion that the sightings and droppings found were of bank vole!



Open Day 2008 © Dave Maidment



Red squirrel © Dave Maidment

Conservation talks to cadets seem to be catching on. I lecture for 30-45 minutes as this is about their retention span. In that time I try to put across what we do here regarding conservation, what wildlife they are likely to see on the Training Area and the Island. Some of the cadets are doing project work towards B Tech and Duke of Edinburgh Awards and have chosen conservation for their portfolio.

It's a pleasure to work with so many dedicated volunteer local experts who are really nice people. We look forward to something new at Newtown, bird ringing. We are lucky to have on the Island, Dr Daphne Ward and Anthony Roberts, members of the British Trust for Ornithology who are licensed to carry out ringing and they started in January 2009.

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

Butterflies on Newtown Ranges

There is a small team of entomologists dedicated to the observation and recording of all insects, butterflies and dragonflies on the Newtown Ranges.

The ranges consist of a mixed habitat of woodland, unspoilt meadowland and the salt marsh of the nearby Newtown estuary. The woodland rides of Locks copse and other odd corners of the range have been left to revert to rough grassland to encourage butterflies to feed and breed. The area is capable of hosting on average 30 species of butterfly per year.



Small skipper © Barry Angell

Butterflies have been recorded on the range since the mid 1980s but prior to 2008 only four of the skippers were known. These were the grizzled and dingy skippers and the large and small skippers. The meadows of the live firing range are particularly attractive to the diminutive skipper butterflies. The small skipper is on the wing from mid to late June and was first recorded on the range on the 25th June 2008. Since then the small skipper has been recorded in good numbers wherever grassy places were found.

Historically the Essex skipper was unknown on the Isle of Wight and has only been discovered within the past 10 years. The national trend appears to be a gradual spread throughout the country, the Isle of Wight being no exception, with odd pockets recorded regularly.

The Essex skipper requires the recorder to establish that the tip of the butterfly's antenna is inky black for the Essex skipper rather than the orange tipped antenna of the small skipper. This unfortunately is the only satisfactory way of telling the butterflies apart and is guaranteed to test the observational skills of the most enthusiastic recorder!

Barry Angell,
Conservation Group Member



KENT

Canterbury Old Park Training Area

Canterbury Old Park, a military training ground extending to approximately 300 acres, is predominantly a SSSI and includes one of the largest areas of acid grassland in Kent. Much of the area is now leased to a local farmer for cattle grazing under the Higher Level Stewardship Scheme.

Ornithology

Surveys since 1984 have indicated that a number of species here continue to seriously decline. Although the site is home to a good number of nightingales, this bird now joins the “red list” after three years without one being ringed. This is a species whose range in the UK is contracting so it is hoped that they will continue to breed here as the Old Park has been a stronghold in the past. The area still holds the British longevity record at 7 years, 1 month and 17 days; a male which nested from 1989 to 1996. Over the year, four mist-netting visits were undertaken by Jan Pritchard and team resulting in a total of 65 ringed birds. On the best day 34 birds were ringed with 22 species reported to the British Trust for Ornithology for their Bird Atlas. Regrettably, the ornithologists have yet to find enough satisfactory net sites to replace those lost following the construction of the golf driving range a few years ago. The 20 nestboxes used have been productive since 120 blue tit and 67 great tit chicks were ringed.



Reed Pond © Mike Chittenden, Nature Table Ltd

Lepidopterology

Lepidopterist, David Gardner was delighted to record the first *Grapholita internana* moth in the East Kent Vice County (vice counties are a Victorian boundary system which allows stable areas for comparison). Distributed widely but locally through Britain, this moth is generally more common in the southern counties. The caterpillars of the moth live in gorse seedpods and feed on the seeds. Three were found and although there is no current

conservation status this is only the third modern Kent record.

Mines of *Ectoedemia atrifrontella*, a rare moth, have been found in the bark of oak branches and in May the site was visited by a large number of painted lady butterflies *Vanessa cardui*, in addition to the silver y moth *Autographa gama*. Both are strong flying migrants from Europe and North Africa.

Pond Life

The Reed Pond Community Fishing Club, established in 2007, continues to flourish and now has over 40 members, both young and old, all of whom are from the nearby housing estate. However, the Club is proposing to expand membership to a wider area. The stock of fish within the pond remains at a healthy level for course fishing. Specimens caught have included roach (the most predominant catch), common and



Clickbeetle © Mike Chittenden, Nature Table Ltd

crucian carp, bream, perch and pike (the Club believes there are at least three – one in excess of 20lb was caught last year). Goldfish, possibly originating from neighbourhood garden ponds, are occasionally landed! Through the Club's efforts the condition of the pond and surrounding land continues to improve.



Leaf beetle © Mike Chittenden, Nature Table Ltd



Painted lady © Mike Chittenden, Nature Table Ltd

Jenny Cole and Mike Chittenden of Nature Table Limited are looking to develop a natural pond just behind the existing one. The area is already very boggy and with the removal of some of the fallen trees it could be reasonably easy to develop. They are seeking to encourage colonies of frogs, toads and newts along with other pond life which readily inhabits near open water.

Entomology

Insect surveys undertaken over the past year have been limited to general foraging and sweep netting. Confirmed findings to date include ladybird (notably the harlequin ladybird – an ecologically harmful and invasive species), click beetle, leaf beetle, weevil, ruby-tail wasp, gorse shield bug, squash bug and nettle ground bug. A larger entomological study is proposed in 2009-10 with the intention to target a specific list of insects associated with grassland habitats since much of what has been seen recently are species that occur widely. Of special interest are dung beetles and related species found in grazed area.

Management

The volunteers under The Kentish Stour Countryside Project have continued with

their excellent work in broom and gorse clearance, particularly along fence lines. Natural England and the MOD are presently in the process of preparing an Integrated Management Plan for the next five years. This will concentrate on the acid grassland, the condition of which is considered to be declining because of high levels of established gorse scrubs. In connection, a maintenance programme is being drawn up in partnership with the Regional Prime Contractor.

Vandalism to gates and fencing, fly tipping, unauthorised motorbikers which are a hazard and damage the ground, and other anti-social activities continue to pose problems. Multi-agency efforts, particularly involving the Kent Police, to deal with these matters have had some degree of success and continue to be progressed.

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



KENT AND EAST SUSSEX Cinque Ports Training Area

Defence Training Estate South East (DTE SE) is the main centre for all UK pre-deployment training. It comprises the Cinque Ports Training Area; five training camps; the Hythe and Lydd range complexes; dry training areas in East Kent, Dover, Folkestone, Hythe and Lydd, Mereworth Wood near Maidstone in Kent and at Pippingford Park near Crowborough in East Sussex. These areas cover some 8,500 hectares of land. The terrain is extremely varied and includes seashore, shingle banks, marshes, woods downland and heathland. The use of the ranges and training areas has enabled the preservation of a number of landscape features which might not otherwise have survived, while at the same time providing habitat to a wide variety of rare species of fauna and flora already lost in other parts of the country.

Folkestone and Dover Dry Training Area (DTA)

The uptake of agri-environmental Higher Level Stewardship Schemes (HLS) across the DTA has been an important part of this year's estate management. Eight tenants have successfully applied or are in the process of applying for HLS and it is hoped that all important areas of unimproved grassland within the DTA will soon be included within a scheme. Consequently, the SSSI will be managed in a way that will enable government targets to be met. This process has involved close liaison between all stakeholders and will hopefully show rapid improvements on the ground.

Unfortunately, a common buzzard *Buteo buteo* with a fractured wing (caused by shotgun pellets) was found on the DTA in November 2008. Following treatment given free by the Burnham House Veterinary Surgery of Dover, the bird was successfully released back onto the estate by vet Pru Harvey and practice nurse Aimee Goument. Buzzards have only recently re-colonised in



Pru Harvey releasing the common buzzard
© Richard Goslett

Kent in any significant numbers thus the hard work of the staff at Burnham House was greatly appreciated.

Coppicing has been ongoing within the SSSI woodlands and Local Wildlife Sites across the DTA. Due to the increasing cost of fuel and interest in renewable energy the market for cordwood has improved, although an unwanted aspect of this upturn is the volume of timber stolen from the estate after sunset.

Pippingford Park DTA

The largest single block of land (100ha) to enter into a HLS within DTE SE has been the lowland heath at Pippingford Park. To facilitate the scheme MOD SSSI Improvement Project funding was utilised to install stock fencing and two cattle grids by Landmarc. The agricultural licensee Richard Morriss (who is also the adjoining landowner and a member of the Pippingford Conservation Group) has installed gates and associated fencing at the lakes on the northern boundary of the area, and will be managing the heath through a combination of grazing by Exmoor ponies and control of invasive vegetation. Spraying to control bracken took place in late summer 2008 and large areas of birch and rhododendron have been

removed. It is expected that the area will now be re-assessed by Natural England to show recovery and eventual favourable condition.

Lydd Ranges

Due to the intensive priority training carried out at the ranges, planning for environmental improvements is a complicated process and support from the range staff is proving to be invaluable. Hay cropping is continuing at Dengemarsh and together with limited grazing it is hoped that the floristic content of a proportion of the grassland on the Ranges can be improved to benefit endangered bumblebee species. These schemes should complement the management of grassland on the adjoining RSPB reserve.



New fencing at Pippingford Park © Richard Goslett

Conservation Groups

The summer visit to view the sea defences at Lydd was conducted during a howling gale and all group members who attended were thankful to complete the 5km walk without being blown or washed away. Not much conversation could be held because of the conditions although Jo Dear of Natural England did manage to convey her organisations stance on the expected sea defence improvements. The visit to Tolsford, led by Peter Gay, was undertaken

in less inclement weather although the orchid species expected to be viewed were somewhat depleted due to rabbit grazing which has been a problem across the estate. However, the lepidoptera seen included the Adonis blue *Polyommatus bellargus* and *Glyphipterix forsterella*.

The winter meetings of the DTE SE and the Pippingford Conservation Groups were well attended. A particular concern was the issue of tree surgery being undertaken for health and safety reasons which was potentially reducing conservation interest. The group was assured that it was not carried out unnecessarily and Landmarc reported that their surveyors had recently undertaken bat roost identification training to ensure a sympathetic approach.



Conservation Group members moth trapping at Mereworth © Richard Goslett

moths recorded were pinion-streaked snout *Schrankia costaestrigalis*, orange footman *Eilema sororcula*, least black arches *Nola confusalis* and the blotched emerald *Comibaena bajularia*. The speciality of the site, the dotted border wave *Idaea sylvestraria* was again noted and Mereworth remains the only known locality in Kent for this dry heathland species. Another local rarity the bilberry pug *Pasiphila debiliata* was found at a new location within the training area. Overall Mereworth has again proved to be very productive for moths due to the diversity of habitats located within the 124ha site. The bird counts carried out by Roger Norman were, as always, thorough and the recording of a Terek sandpiper *Xenus cinereus* at Lydd caused local excitement.



Eric Philp's retirement presentation © Sam O'Rourke

Eric Philp announced his retirement from the DTE SE Conservation Group after many years of involvement. Eric's contribution has been great and included organising and writing up of an annotated list of plants and animals of Lydd Ranges in 1984. All members wish him well and look forward to seeing his New Atlas of the Kent Flora which should be published imminently.

Access Issues

Several byways and footpaths on the estate have been investigated by Kent County Council (KCC) following claimed upgrades to Byways Open To All Traffic. The claims were not successful and the paths in question will remain as Restricted Byways or footpaths. The judgement will remain a contentious issue and appeals are expected as access to local fishing marks at Lydd will be affected. Illegal access continues to be a drain on resources as the car tyre fly tippers have returned.

On a more positive note Landmarc undertook access improvements on the North Downs Way, including drainage works on a particularly wet section and KCC installed kissing gates to enhance this national trail.

Monitoring

Numerous surveys are being conducted across the estate by Conservation Group members and continue to provide important information. The Environment Agency surveyed Seabrook Stream (with Julia Verity of DE EST in attendance) and found that the population of white-clawed crayfish *Austropotamobius pallipes* remained healthy. Tony Steele compiled reports on moths at Mereworth and Hythe Ranges. Fifteen night time trapping sessions were undertaken at Mereworth in 2008 and 29 new species were added to the site list which now totals 420. Some of the more interesting

Sea Defences

The annual Christmas shut-down of Hythe Ranges allowed Landmarc to complete the winter programme of groynes maintenance work on the sea defences at Hythe. Subsequent to completion of these works, the Environment Agency also had to carry out emergency repairs to the Dymchurch Redoubt concrete Apron to prevent undermining of the sea wall when large holes appeared in January following storms. The Apron is being closely monitored, however remedial works on this area ought not to be necessary in the near future as the planned upgrade of the wider sea defences by the Environment Agency will incorporate this stretch of coast.

The overall programme and the Flood and Erosion Risk Management Strategy from Folkestone to Cliff End, is progressing well. With input from Defence Estates, a Consultation Summary Report was published in January of this year, which seeks to address the flood risk over the next century. Working closely with Natural England and the Environment Agency, Defence Estates are keen to assist and support this project while ensuring that a minimum number of training days are lost whilst these essential works are carried out.

Richard Goslett, Defence Estates



KENT Defence Fire Training & Development Centre, Manston

On a crisp, dark night a flash of white swoops down out of nowhere – the resident barn owl is returning to its nesting box. A rustling in the undergrowth reveals a busy hedgehog and the gentle trickle of water marks the serene gathering place for a host of flitting birds, frogs and toads. As dawn breaks, the sun sparkles through the trees and the ring necked parakeets squawk and squabble with impatience. Sometimes you have to stop and remind yourself that this is the Defence Fire Training and Development Centre (DFTDC), where fire appliances, sirens blazing, thunder up to the burning ground to extinguish huge simulated aircraft fires. Manston is a juxtaposition of a unit training for the possible disasters of modern transportation against a tranquil oasis of wildlife and fauna.

Recently, just a one hour slow drive around the perimeter revealed a little owl, a stonechat, redwings, a pair of robins, blue tits, a green woodpecker, wood pigeons and ringed necked parakeets to name but a few. This is in part due to the addition of song bird nesting boxes, bringing our total to 50, plus 12 raptor boxes and two barn owl boxes. A notable event throughout the winter was the sighting of a flock of over 30 long tailed tits. The ring necked parakeets continue to keep us all amused with their antics and loud calls. Originally from southern Asia and Africa, these 'escapees' are now common in Kent and DFTDC is home to a large community of them. Foreign visitors to the unit are amazed that so many are here, having adapted to the colder climate, and find them quite entertaining.

During the last few months, several projects have been undertaken. Our tree planting day last December brought together members of the Conservation Club, friends and volunteers, who planted 250 saplings. Of these, the majority were oak, together with beech, silver birch, horse chestnut, ash, holly, hawthorn and blackthorn.



Completed ponds with wildlife pond in foreground © Keith Dyer

Everyone worked hard, had fun but some got more covered in mud than others! It left us all sharing a great sense of achievement. Now that spring has arrived, seeing the saplings bursting into bud is very satisfying, as well as knowing that we have created woodland which will be there long after we are all gone.

Another success due mostly to the efforts of Keith Dyer, a keen conservationist who works for our Fire Ground Support Crew, was to complete the building of two ponds, one dedicated to wildlife. The plants in and around the pond are maturing well and will hopefully attract many butterflies and bees. Keith has also put a picnic bench by the ponds, fenced off the area and planted fruit trees nearby. It should prove to be a very relaxing and pleasant place to visit.

For the coming year, the Conservation Group are keen to focus on and record the grasses and wild flowers, especially as our first pyramidal orchid appeared last year. We are also looking for a local farmer to graze our meadowland in accordance with best land management practice. The potential of DFTDC to provide a safe haven for our local wildlife is continually being recognised and we have proved that our every day business can carry on alongside the natural inhabitants of the unit without disturbing or harming them.

Sally Valentine
DFTDC Finance Assistant



Members of the Conservation Group on Tree Planting Day © Keith Dyer

NORFOLK Stanford Training Area



Alec Bull, a renowned botanist and head of the Botany Group at Stanford Training Area (STANTA) Conservation Group, provides an insight to the flora, and some of the unusual and foreign species, to be found and how their presence relates to the history of the Area.

The Garden Relics of STANTA

Whilst recording plants on STANTA for the 'Flora of Norfolk' book, I was struggling through wet woodland at West Tofts marked on the map as Horseshoe Covert and came upon an unusual flowering plant for this area which later proved to be *Rudbeckia laciniata*. How did this foreign species get here and could it be one of the garden relics left behind when STANTA came into being 67 years ago in 1942? If so it has had a good life span.

Despite the overgrown habitat this *Rudbeckia* covered an area of three metres by four metres with many of the flowering stalks two metres tall. The plant's preferred habitat is any fertile, well drained soil in full sun. However, Horseshoe Covert is so named from the almost horseshoe shaped body of water partly surrounding it that provided the irrigation for the West Tofts water meadow which was laid out in 1804. It is reasonable to suggest that *Rudbeckia* may well have been planted during the 19th Century as a specimen plant somewhere near the edge of the water in an open situation before the semi island became overgrown with woody vegetation.

There are many other indicators of the industry of long past gardeners to be found in STANTA, even after 67 years of military occupation. West Tofts is a suitable place to start a whirlwind tour that will prove the longevity of many of their plantings, bearing in mind that most would have been in place for much longer.

The first indication of spring at West Tofts is the golden carpet of winter aconites *Eranthis hyemalis* over much of the area of the moated hall site behind St Mary's church. These are accompanied by the nodding white flowers of snowdrops *Galanthus nivalis*. Amongst a nettle bed opposite some trees of heaven *Ailanthus altissima* there are also several large patches of the alien arum lily *Arum italicum*, the veins of whose leaves are outlined in white, whilst the pale yellowish white 'hood' embraces a pale yellow spathe. The leaves are visible from late winter, but by the time the floral parts emerge they have been overtopped by the nettles.

As spring advances, daffodils are to be found wherever there was a habitation. These are mostly of the old fashioned double daffodil *Narcissus pseudonarcissus* 'Van Sion', a cultivar of the native wild daffodil. In places, such as at Sturston Hall on damp ground these have proliferated and are a striking feature of the site. A few other daffodil cultivars have persisted here and there, especially clumps of the pheasants-eye narcissus at Tottington. As the daffodils wilt, West Tofts produces more surprises, with clumps of nodding star of Bethlehem *Ornithogalum nutans* found in and around the site of Little Langford Hall and spilling out into the edges of the adjacent grazing meadow.



Snowdrops at the site of Stanford Cock © Alec Bull

Whilst the aconites are more or less confined to West Tofts, the snowdrops are to be found almost everywhere where houses were formerly situated across the area. One of the best sites for the common snowdrop is probably under the massed plum suckers covering the ruins of Stanford Cock, a former public house. The broad-leaved snowdrop *Galanthus elwesii* and the pleated snowdrop *Galanthus plicatus* can be found under the beech trees opposite Flint Lodge at Buckenham Tofts.



Rudbeckia laciniata © Alec Bull



Narcissus pseudonarcissus 'Van Sion', Sturston
© Alec Bull

As summer ends and autumn is upon us, a truly foreign species to the area the Russian vine *Fallopia baldschuanica* at Little Langford spreads its white flowered tendrils over grass covered heaps of rubble and the bushes growing upon them. However, as its green leaves change to scarlet and crimson the Virginia creeper *Parthenocissus quinquefolia* is soon seen to cover an even larger area of bushes, and indeed, has succeeded in climbing 40 feet or more up into the adjacent pine belt.

To end our tour round STANTA, I feel I must mention some of the trees of long standing which one might not expect to find in a military training area. There is, of course, the avenue of deodars *Cedrus deodara* and Atlas blue cedars and *Cedrus atlantica* south of Tottington, many of which are reaching the end of their lives. However, these trees are not being allowed to disappear as young cedars have been added to the avenue to commemorate Lt Col Tom Dean, a great conservationist, and former Commandant. Other notable trees include the London planes *Platanus x hispanica* and the grove of false acacias *Robinia pseudoacacia* with a mass of white blooms visible from a distance when all such mundane things as apple trees have long gone over. There is also a wonderful wild pear *Pyrus pyrae* at Little

Langford Hall which must have grown from the rootstock after a cultivated pear had died. My favourites amongst the exotic trees, apart from the juniper wood *Juniperus communis* which had obviously been planted in the 19th or early 20th century as a plantation, are the statuesque Grecian firs *Abies cephalonica* which can be found beside the road leading from Stanford towards Bagmore.



Wild pear in fruit © Alec Bull



Giant globe thistle © Alec Bull

My favourite flora survivor? A contender is the birthwort *Aristolochia clematitis*, at the Sturston Hall site, perhaps one of the most important of the plants imported into the area possibly several hundred years ago. It was certainly in existence in 1845 when White's Directory of the parishes of Norfolk was published and was introduced by someone with knowledge of herbal medicine, as it is unlikely to have been brought in for any other purpose. I measured the two largest areas of birthwort about 10 years ago and found that it had increased to the staggering proportions of about 3,000 square yards or nearly three quarters of an acre! But undoubtedly my favourite is the stately globe thistles *Echinops exaltatum* that occupies the whole of the former orchard and garden at the Washpit Cottage site. Spilling out along the hedgerow of the adjacent field for 100 yards or more, the pale blue cricket ball sized heads on leafy stalks reach up to eight feet high.

STANTA may be an SSSI for its native wildlife but after 67 years under MOD, the non-native flora survivors here certainly deserve a mention as well.

Alec Bull,
Head of the STANTA Botany Group
References: Beckett G., Bull A. and Stevenson R. 1999 A Flora of Norfolk



Atlas blue cedar, Dean Drive © Alec Bull

NORTHAMPTONSHIRE

Yardley Chase



Another wet year which has had adverse effects on our insect population. Whilst the volume of rain has been slightly less than 2007 it has been continuous throughout the year, and has kept the ground temperature colder than usual. Coupled with the cooler summer night time temperatures there has been a noticeable effect on our insect numbers and emergent times.

Although it has been a very green year the flowering times have varied and the subsequent fruiting has been very spasmodic. Some plants bearing no fruits and others drying up and not ripening, especially bramble and blackthorn. Ferns have remained green right to the end of the year and the bracken is spreading through the woodland. Bramble is also spreading rapidly (a bramble runner can reach a length of five metres at the rate of 7cm per day) through the woodland and some parts are becoming difficult to access with some of the smaller tracks becoming completely blocked off.

Entomology

The observations this year are very little different from last year. The continued wet weather has not allowed the hope for recovery from last years decline. All butterfly sightings are well down in number with some not being seen at all - dingy skipper, clouded yellow, black hairstreak, green hairstreak and small heath. Coleoptera species are also well down, of our eight listed species of ladybird only three have been seen this year. Our log turning efforts have shown no glow-worm beetles at all and there have been very few sightings of longhorn beetles, these being usually easily spotted. Orthoptera were almost non-existent and pollenating species such as bees and hoverflies were well down on our usual sightings.

The mixed weather was not good for dragonfly recording either but all the expected species were recorded and in their usual numbers. A survey has been carried out this year for 14 breeding species by dipping for larvae and collecting exuviae, including azure damselfly, downy emerald, four-spotted chaser and large red damselfly.

One other very noticeable decline was in galls. Again the oak, usually a very prolific host of galls, failed to support its usual population. Acorns did suffer their normal covering of the Knopper gall *Andricus quercuscalicis* but hardly any other species were found. The spangle and silk-button galls *Neurotis sp.* which usually festoon the leaves of oak trees were conspicuous by their absence as were the marble and oak-apple galls. Other very commonly seen galls such as robin's pincushion *Dipolepis rosae* on briar, bramble stem gall *Diastrophus rubi* and various willow galls were hard to find. Whilst on the subject of galls a new county record has been registered on oak, a small wasp *Andricus aries*. First recorded in Britain at Maidenhead Thicket, Berks in 1997, now common round London and rapidly extending its range and it has now reached Yardley Chase.



Large red damselfly © Iain Perkins



Four-spotted chaser © Iain Perkins

Algae and Liverworts

Our many ponds have produced some very good records over the past years: seven of the nine British species of stoneworts, the liverwort and many desmid species. In 2007, a desmid was found which was sent for verification to the Phycological Society. This desmid was confirmed by Mr David Williamson, a national expert, as *Closterium regulare*. This species has not been recorded in the UK before and does not appear on the accepted check list. An article regarding its status has been published in The Phycologist Newsletter (Aug 2008).

Other Species

The wild weather at the start of the year prompted some early movement of frogs and toads. The first frog spawn was recorded in February but the weather changed resulting in some spawn being frozen. Toads did very well this year, with a later spawning date in April, giving them an advantage over the frogs. Toad numbers are certainly well up on last year. Sightings of grass snakes and slow-worms were fewer than usual again due to the wet weather and with very little sun to bask in.

J.A. Richardson
Compton Estate Conservation Officer



SURREY

Royal Military Academy Sandhurst



RMAS Old College © RMAS

The range of habitats monitored by the Royal Military Academy Sandhurst (RMAS) Conservation Group is extensive as highlighted on page 67. Recent surveys have included county and national bird atlasing, plant gall and an Odonata survey (dragonflies and damselflies). The latter found several regionally important species. A new round of stag beetle surveying is planned with the hope of including children from the local community. Other projects, subject to funding, include: clearing trees located around ponds in the American Gardens area to prevent stagnation and to help develop a nationally important alder carr; and the provision of a hydrologist to research the water cycle of the mire on Barossa allowing more informed measures to be taken in maintaining this crucial area of local biodiversity.

The lake and stream habitat that supports regionally important species such as wild brown trout, is maintained by the Academy's two fishing clubs. Newt trapping under Natural England licenses showed last year that both smooth and palmate newts breed on site, the latter is regionally important with only a handful of known breeding sites. What is less certain is the impact on amphibians resulting from the need to lower the level of the Upper Lake by six inches as governed by the flood contingency requirements of the Reservoir Act. This will inevitably dry out the lakes edges where amphibians

breed. However, the Group will monitor the effects of this over the coming months and recommend action where necessary.

A fond farewell

Having spent two year's as the Conservation Chairman at Sandhurst, it is now time to relinquish the reigns to Major Andy Stephens RLC. It has been a real pleasure working with the different 'ologists' all of whom have inspired me to better understand Conservation. There are far too many to mention individually; however, it would be remiss of me not to mention a few key members. Firstly, Mrs Susan Polley who has done an outstanding job as the Group Secretary and WO2 (YofS) Laura Midwinter who has been inspiring as my Deputy Chairman – thank you both for the amazing amount of hard work you have voluntarily dedicated to Conservation at Sandhurst. And now for the real stars! No conservation Group can operate without the likes of Professor Mick Crawley and John Warren who have been amazing in supporting me in championing the Conservation cause. For that I thank you and the rest of the Sandhurst Conservation Group for all your hard work. Good luck to you all for the future.

**Major Nick Loader,
Conservation Group Chairman**

Cecidologists Invade RMAS

In August 2008, I led an invasion of the RMAS. Before you begin to fret, this particular invasion consisted of 15 harmless Cecidologists.

The plant gall hunt covered a large area of ancient woodland, rough grassland and scrub. We identified over 60 species including some which were relatively new to this country including *Neuroterus saliens*, which causes galls on Turkey oak. This gall causes two different types - one looks like



John Warren assisting with newt survey May 2008 © RMAS

a sea anemone on leaf buds and contains male and female wasps, the other a small round shaped bump on leaf stalks or leaves and contains only female wasps. The galls of the mite *Vasates quadripedes* were found on silver maple causing numerous swellings on leaves with a short and slender neck, a glossy wrinkled surface and lined with single-celled hairs. The galls of the wasp *Andricus aries* on English oak causes buds with a globular base with one or more tapering projections which vary in length or can be fused together. We found many of these aptly named "rams' horn galls".

Plant galls are relatively poorly understood and there is much work that can be done by enthusiastic natural historians. The British Plant Gall Society is willing to carry out surveys at other military sites for free. (www.british-galls.org.uk) My thanks to the British Plant Gall Society experts for participating in the survey, Natural England and the Sandhurst Conservation Officer for permission to undertake the survey.

**John E. Warren,
Conservation Group Member**
(edited by Dr Chris Leach,
British Plant Gall Society)

WILTSHIRE Boscombe Down



The nature reserve at Boscombe Down is a disused section of railway line which once ran between the main Salisbury/London line and Amesbury. The reserve is in two parts, one of which lies inside the boundary fence of MOD Boscombe Down. The line outside the wire is now a public bridle path owned by Wiltshire County Council (WCC) and is subject to a licensing agreement allowing the MOD QinetiQ to manage the site jointly with the Wiltshire Branch of Butterfly Conservation (BC). This agreement, which is valid for 10 years, was renewed in December 2008. The reserve as a whole is of value because of the number of locally and nationally endangered chalk downland butterfly species which it supports and is, in fact, Wilts BC's only reserve.

Butterfly Transect Management

During 2008, butterfly transects were conducted both outside and inside the wire. However, due to the terrible weather and a lack of volunteers they were carried out during only one of the 26 possible weeks in the WCC owned area and 19 of the 26 possible weeks in the MOD Boscombe Down area. Particular thanks go to the dedicated volunteers, Tony Horner, John England and Tim Frawley who conducted the transects within Boscombe Down. Unfortunately, unlike in 2006 and 2007, it was not possible to graze an area of the embankment with sheep, so we had to rely on the cutting schedule specified in the management plan. However, chalkhill blue numbers increased from 2007, so the management of the past couple of years might be having some success.

Butterfly Numbers

The weather during 2008 was not good and actually appeared to be even worse than that in 2007. However, despite this, nearly all species were recorded in larger numbers than in 2007 and the overall total was up by 21. Skippers increased by 26; white were down by 59; blue were up by 53; nymphalid

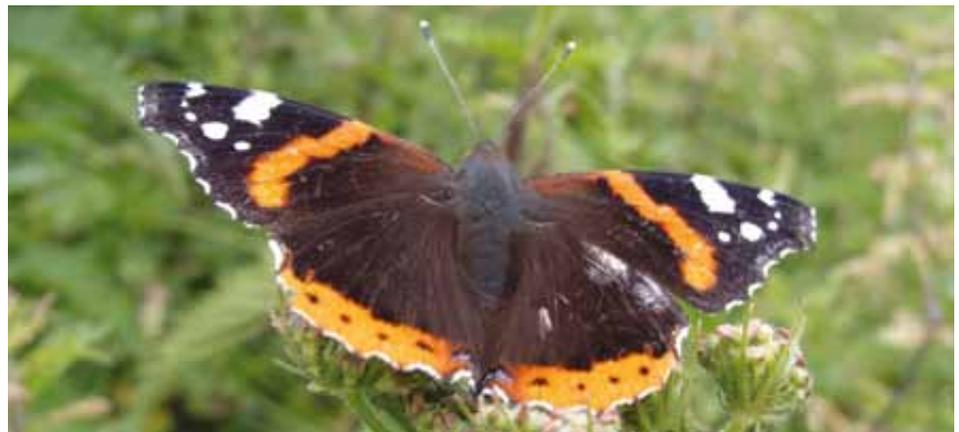
were up by 33 with one specimen of the marsh fritillary *Euphydryas aurinia*, its last sighting was in 2006; and brown were down by 32.

Conclusions

After the exceptional weather in 2006 that spectacularly reversed the overall trend of declining butterfly numbers which has been taking place since the peak of 1997, 2008 proved to be slightly better than the disastrous year of 2007. However, at 1174, the total numbers recorded were still the second lowest since transects began in 1989. The chalkhill blue is confined to calcareous grassland in southern England and has declined dramatically in some areas during recent decades. Although Boscombe Down

is obviously still a very suitable site for many of specialist chalk downland species, the decline in chalkhill blue numbers must be viewed with considerable concern and the effect of the management closely monitored. However, as regular transects have not been conducted within the non-MOD owned area, it is difficult to draw many conclusions here. That said, the species might still be holding its own there, which will provide a good 'pool' for reinforcing the numbers within Boscombe Down, once the habitat is again returned to a more suitable state.

Jon Millo, Conservation Group Member



Red admiral © Iain Perkins



Mating Adonis blue © Mike Stone

WILTSHIRE

Imber Conservation Group



The Imber Conservation Group (ICG) shows no signs of slowing down in its efforts to support Defence Estates (DE) on Salisbury Plain Training Area West (SPTA(W)). Writing this report in May 2009, I can reflect on increasing interest, much hard work by members and an expanding portfolio of activities. However, little of this would be possible without the volunteers themselves who deserve much in the way of thanks from DE and Commander DTE Salisbury Plain. I am glad to report that we do enjoy the full support of all the MOD staff at Westdown Camp and Landmarc, and the continued support of Aspire Defence within Warminster Garrison.

The Field Day and BBQ in 2008 was a huge success and will be repeated in 2010. It gave members and their guests the chance to visit parts of SPTA(W) not visited before, to learn something about what we are trying to achieve and gave us all a good opportunity to enjoy each other's company – and nobody, as far as I know went down with food poisoning! My thanks go to all members who helped to organise this event, particularly Tilly Gregory our most reliable and organised Secretary.

An equally successful event was last year's AGM with nearly 100 guests in attendance. Rather than invite a guest speaker, it was more of a working AGM addressing subject areas close to our activities and I am grateful to Roy Canham MBE, Roger Dickey and Andrew Bray and Oli Howells for their presentations on Archaeology, the MOD Bird Count and Butterflies.

Archaeology

Roy Canham, until recently the County Archaeologist for Wiltshire has continued to generate a great deal of interest amongst would-be archaeologists and there have been a number of successful walks and training evenings. His knowledge



Fragrant orchid June 2008 © Mike Jelf

and enthusiasm is quite infectious and unsurprisingly he has a thriving group. Many archaeological features are being visited for the first time in many years and efforts are being revived to seek out answers to many of the knotty problems these ancient features present. The increasing availability of mapping, aerial photos and satellite photography has been of enormous assistance and has generated considerable interest. Closely linked to this has been scrub clearance on major features which has continued in an effort to stem the expansion of hawthorn and our contribution to the wider DTE Salisbury Plain efforts to remove scrub off large expanses of chalk grassland.

Bats

The potential for surveying bats on SPTA(W) long stood out as a 'must do' and I am delighted that Richard Thompson made contact with me in Spring 2008 and has established a Bat Group. He comes with experience and knowledge of the many and varied varieties of bats, but above all he comes with enthusiasm and much determination. Surveying started in June 2008 and continued right into the autumn with some very interesting and valuable

results for DE records and those of the County Recorder. There is much to look forward to in 2009. We have bought tracking equipment over the winter in time for the new season.

The aim of the group is to identify both individual species and suitable habitat and it would appear that there is a reasonable bat presence on the area. Hopefully in 2009 we will be able to make regular echo locating recordings for subsequent sound analysis and establish with more certainty what species are present. This may then allow us to target specific locations for emergence surveys and ideally do continuous monitoring in order to study and record particular activities and behaviours. The opportunity to observe a rare species would be very exciting especially as Salisbury Plain is such a special area, and that there are no historical records. So our project may prove interesting in the long term.

Botany

Sharon Pilkington did much to encourage a new beginning for the Botany Sub-Group so it is with much regret that she felt unable to continue as the Sub-Group leader and has resigned. She is a noted expert in her field and a County Recorder so we are grateful to her for her support over the last couple of years. We count ourselves very fortunate that we have been able to benefit from her experience.

Entomology

A brave effort was made to contribute to the Butterfly Survey on the West in 2008 and we hope for better things in 2009 now that Tony Baden-Fuller has kindly agreed to take on the role as Sub-Group leader. There are many long standing butterfly and moth enthusiasts within the ICG so it is important to see a revival of group activities if we are to really be in a position to help DE.



Field Day June 2008 © Mike Jelf

Imber Churchyard Project

In recent years, a great deal of money has been spent on the preservation of Imber Church on the inside and outside, and quite rightly so. It seemed a pity that the Church would look brilliant once again, yet the churchyard looked in a very sorry state. Consequently, we have been in touch with various bodies including The Churches Conservation Trust (CCT) to propose creating a churchyard in line with the national 'Living Churchyards and Cemeteries' scheme. Mr Neil Skelton, formerly of the CCT has joined the ICG, 40 sheep have cleared the rank grass and working parties are attacking the scrub, nettles and undergrowth. The project is well underway to meet the deadline of early September 2009 when it is hoped that the annual service in St Giles will be revived.

Ornithology

Major Andrew Bray continues to whip up interest amongst the many ornithologists in the ICG and they were out in 2008 conducting the MOD Bird Count. Andrew feels that there are quite large areas of the West that have been somewhat uncharted in respect of bird populations in recent years and he has started to put that right. 2008 was a poor year for survey work. The weather was against us and the nesting birds during key periods. It was noticeable that plover numbers were down in the winter as was the number of stone curlew nesting during the summer. However, corvids and wood pigeons seem to dominate the Plain and there has been an increase in ravens across the whole of Wiltshire. Winter 2007-08 saw large flocks of bramblings in line with the rest of the country and this past winter lots of singing skylarks were a welcome sight.

Owls and Raptors

All birds need a few basic necessities; food, shelter and somewhere to nest. For the past

25 years our nestbox group, led by Major Nigel Lewis MBE has tried to provide the latter two conditions for the cavity nesting birds of prey on the West and Centre of Salisbury Plain. The Plain is an excellent grassland habitat with controlled grazing in places and wild in others. The Impact Area is uniquely managed by accidental grass fires, set off by incendiary munitions. The combined effect is a rich mosaic for the food chain to enjoy!

With the possible exception of the tawny owl, 2008 was not a good year. Voles are the main food source and when they are down at the bottom-end of their own breeding cycle the results are all too obvious. When voles are abundant a reserve of food is always kept cached to cover periods when adverse weather makes it impossible to hunt. The vole shortage this year made it impossible for birds of prey to have food in reserve and this had a dramatic effect on the survival rate of the young of all our species especially barn owls. A significant number of females incubating eggs deserted because the males had been unable to feed them. Nothing is ever straightforward. Food shortage was definitely a factor but also we had two three-day periods of non-stop rain during the crucial nesting period. I believe that might have been the final nail in the coffin for our breeding pairs. Birds of prey fluctuate from year to year; they are controlled by the food chain and the elements. Barn owls are now well established on the Plain and we are reasonably confident their future is assured. The bigger Mk 7 boxes will help overcome the invasive jackdaw and hopefully, prevent the young owlets from coming out of the box too soon.

The impact of global warming is an unknown factor; be it excessive rain or drought in the summer or deep snow in winter and the weakest birds and mammals will perish. Kestrels and tawny owls need extra help and although it will take two or

three years, our new boxes will help both to realise their potential on the Plain. The little owl status is seriously worrying (2008 was the worst breeding season recorded since 1988). We have installed substitute boxes in their current sites to prevent the owlets from leaving home too soon and have put up extra boxes to increase safer habitat. It is not possible to manage a conservation project of this size without help and we welcomed Emily Joáchim BSc, our PhD research student, to the team. Already she is making an impact on what is going wrong with this owl. Thanks must go also to Len Spackman who leads on box checking, cleaning débris of all kinds, braving nesting hornets, bees and squirrels! To Alan Bush for his ladder carrying, nestbox making, assistant note-taking, and to Peter Green our very mobile engineer who has become a self appointed but much needed quality controller.

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). Aspire Defence have been hugely supportive of the nest box production with the Redstart Project raising funds for conservation groups on the Plain and at Aldershot. A major contract for boxes early in 2009 realised £2,500 alone.

The highlight of nest box production in 2008-09 has been the use of recycled map boards from the Brigade and Battlegroup Trainer at Sennelager in Germany. Some of you may have seen the article 'From Birdtable to Bird Boxes' in Conservation Update (Summer 2009). What was clear from early in 2009 was the impact tawny owl, kestrel and little owl boxes had on the recording of local populations by Nigel Lewis. Geordie and his team of Tony Manning and Neil Simpson have done a brilliant job in satisfying demand and raising money for conservation.

Geordie produces high quality durable nest boxes from recycled timber, so get in touch on 01985 222299 and place your order.

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

WILTSHIRE

Porton Down



In the 1980's conservation interests at Porton Down received a major boost with the return of material about the wildlife and archaeology of the site from an exhibition held at Salisbury Cathedral. The display boards contained a huge amount of text and images and, though very thorough, were seen by some as very dry.

Originally housed in the 'Dstl Museum', in 2001 the displays were moved to a more accessible, modern facility renamed as the Dstl Conservation Centre next to the site's Reception building which, being outside of the secured perimeter of the site, meant that it could be opened to non-Dstl personnel. The opening of this new facility coincided with the involvement of Dstl in the Salisbury Plain LIFE project designed to improve conservation management of the Plain and Porton Down. This project funded and produced a new range of display panels. Aesthetically pleasing, with a concentration on excellent visual images, they paid less attention to textual information. Despite becoming an extremely popular Dstl meeting room, by the end of 2007 the Conservation Centre was in need of a makeover.

An objective to meld the information-heavy museum era with the image-heavy LIFE period was proposed and, over the winter of 2007-08, a great deal of work was carried out to produce new panels to reflect current conservation concerns. The story of the site's archaeology and natural history was arranged around the walls, and display cases were also provided to display artefacts relevant to the information on the panels. By the summer of 2008, the interior of the Conservation Centre had been totally redecorated and a finishing touch of a 42 inch flat screen TV showing wildlife images from a remote camera installed.

Just at the point when we were beginning to congratulate ourselves on the near-completion of this improved facility for conservation we (and the Centre) received a jolt. An unfortunate new staff member arrived to take part in his induction and parked his car at the end of the car park, which slopes uphill from the Centre. Despite the hand-brake having been applied, the car having waited for its owner to disappear, decided it would rather like to do some exploring. It travelled down the slope in a remarkably straight line, avoiding the newer, shinier cars parked on either side, and ran straight into the side of the Centre! Although the exterior wall and one of the display cases inside were buckled the new TV survived by a distance of about 18 inches. Within a few days a line of barriers had been erected to ensure that, in future, only runaway cars would be buckled.

Having got over this shock we stood back to admire our work and were very pleased with the results. We have created a more informative and colourful Centre which we hope will serve a number of purposes including something to look at before a meeting starts, the provision of an interesting break from lengthy meetings and an alternative to doodling while in meetings. More seriously, visitors on Dstl business will have the opportunity to discover another aspect of Porton Down and others coming to see the wildlife and archaeology have examples of what can be seen introduced to them on arrival. In future it is hoped that it will also become an educational facility for local schoolchildren.

We plan to rotate the exhibits on a seasonal basis in order to maintain a live and relevant content and to try to avoid the static, dry undertones of the past.



New Dstl Conservation Centre © Stuart Corbett



White admiral butterfly © Stuart Corbett

Talking of seasonal exhibits with static, dry undertones it is, once again time for our annual report from Porton Down's local bobby. It gives me one nanojoule of pleasure to introduce "Sweeper of the Yard".

'Praise indeed from the Conversation Officer (I must remember to look out for them nanojewels, what with the wife's birthday coming up).

Anyway, I am here, once again, to report on the various misdeeds and strange goings on at the Dstl Conversation Group. Consulting my notebook I see that we had a visit from a high-ranking naval person in July. As usual, the said Group let slip that something unusual was happening so I bent my ear in their direction. Apparently he is a venerable old sort, the white admiral, and used to live in Thorneydown Wood on the site. He was scared away 30 years ago when foresters removed honeysuckle from the wood. The Conversation Officer had noted honeysuckle growing again in the past three or four years and, for some reason, he reckoned this might bring the white admiral back (perhaps he uses it to flavour his rum). On July 10th I heard him say he had glimpsed the white admiral and was taking his camera to the woods to photograph him. I decided to follow incognito to make sure that the old sailor was in safe hands. It only took a couple of minutes for the Conversation Officer to give the game away by pointing his camera

and gasping "*gone for 30 years but now he's back!!!*". I couldn't see him from my vantage point inside a hollow tree so decided to confiscate his camera back at base. This I did but, imagine my disappointment, when all I downloaded was a lot of photos of a black and white butterfly. Makes you wonder, doesn't it?

Here's something to make you giggle. The Conversation Group spends days in the woods sawing down trees and then watching them grow again. Can you believe that? When I saw a tree down, it stays down, know what I mean? This bunch of enthusiasts must be using magic!!! Now two young men are coming most days to saw more down and they are beginning to change the face of some woodland at Porton Down. They told me they hope to make a living from it. I told them don't be so silly, get yourselves proper jobs. It's funny though, where they have taken the trees down I have noticed a lot of primroses and violets growing and there seems to be a lot more butterflies. More magic, I suppose.

Now, when you've been a copper as long as me you get to know the lingo of the more iffy members of society. So, when I heard the Conversation Officer chatting to his side-kick Charlie "The Weedwiper" Hobbs about weed growing on the range my pupils dilated. So that's what he smokes in those roll-ups. I followed the pair onto the range

where huge amounts of a yellow-flowered plant was growing. Both of them appeared very agitated, worried in case others would see them, and I heard them talk about there being "*too much*" and needing to "*chop it down 'cos it was strong enough to knock a horse over*". Well, purely in the cause of public duty you understand, I decided I must know what the effects of the 'weed' would be. I tasted it, smoked it, I even tried to snort it but all I got was inflamed nostrils and a tummy ache. It's a new one on me. ... ragwort they called it. If I see it there again next year I will cut it all down and feed it to my neighbours pony. That'll learn 'em!!!

Talking of such matters there is nothing as useful to a copper as a good grass. I call mine Yorkshire Fog because he comes from oop north. He tells me the Conversation Officer is drawing up plans for an invasion. Until now he and his motley band of desperados have been marauding the range at Porton Down with sporadic forays onto the farmland. Luckily for Dstl I am now on the case (though I don't like to admit it I am, as someone once told me, at the cutting edge of our farces). According to Yorkshire Fog they plan to spread their weird ways into the built area of the site. Propaganda sheets, beckoning the feeble-minded to join them, will be posted on their own webpages (I did warn the powers that be of the dangers of computers, calculators and other battery-powered indulgences years ago but I could see that they were already finding it too addictive to let go). A push to recruit more active members is anticipated and I will have my work cut out to keep track of all of their strange goings-on. Already my spies are telling me of nocturnal gatherings with bats and rituals involving pickling beetles and spiders. All of this in areas where normal folk work!! I will let you know next year if they have any success.

On that worrying note I will leave you to count your blessings that I am here, otherwise things could really suffer.

Evenin' all.

Stuart Corbett
Dstl Conservation Officer



EAST YORKSHIRE Defence School of Transport Leconfield Carrs

2008 proved to be another busy year for the Defence School of Transport (DST) Leconfield Carrs Conservation Group, especially during June and July.

On the 4th June, Dr David Chesmore and I ran a moth light. He told me that his moth surveys elsewhere had yielded fairly low numbers this season, so he was reasonably pleased with the 15 species recorded on the night.

On the 23rd June, committee member Jon Trail from the Yorkshire Wildlife Trust, successfully relocated over 100 smooth newts from an Emergency Water Supply (EWS), to a new purpose built pond. The newts had to be moved urgently to make way for a new Headquarters building for 110 Squadron RLC, who were in the process of relocating to Leconfield. Most of the water was carefully removed by Allan Maskell and Peter Crowhurst, with filters to prevent injury to the newts. Then Jon and I sifted them out of the remaining water, which had a high silt suspension. It was very quiet at the bottom of the EWS, and because of this we made a discovery, that the newts squeaked when they came up for air. Using this knowledge we were able to rapidly speed up the process of catching the newts.



Removal of smooth newts from an Emergency Water Supply © Alan Bakewell

On the 28th of June, I was delighted along with Chris Sandbach and Phil Allen, to watch Jim James of the Hawk and Owl Trust successfully ring four young barn owls ranging from five to eight weeks old at our new Owl House. All were very healthy and happy to hiss at us, but the real highlight was that both Chris and I had taken our daughters Emma and Ellie along, and they were delighted to be able to hold the owl chicks for a few seconds.



Jim James from the Hawk and Owl Trust with one of the young barn owls © Alan Bakewell

Over the 9th and 10th of July, DST hosted the 2008 MOD Conservation Group Chairman's Forum. This event included a superb presentation on the amazing variety of moths by Dr David Chesmore and a great opportunity to try out one of our new Leaf Trails.

Later in the year on the 7th October, Colonel Paul Brook Commandant of the DST, Allan Maskell, Mick Bassett and I on behalf of the Conservation Group, made the journey to London to collect the Sanctuary Award for best Environmental Project and Silver Otter for the Leaf Trails project with three nature trails, accompanied by virtual walks. We were presented with the award by Kevan Jones MP, the then newly appointed Under Secretary of State and Minister for Veterans, accompanied by Vice Admiral Tim Laurence, Chief Executive of Defence Estates.

On our return we managed to gather most of the Leconfield Carrs Conservation Group, and those assisting with our project together, for a small celebration.



The Group with their Silver Otter and Environmental Project Winner Awards © Terry Cavender & Paul Knapp

Alan Bakewell MCMI,
Conservation Group Member

NORTH YORKSHIRE Catterick



Despite one of the wettest years on record and snow cover not seen for more than a decade, environmental activities continue to thrive at Catterick with staff and volunteers engaged in a wide ranging programme of conservation projects.

An essential and comprehensive survey of 63 ponds, conducted by Martin Hammond, a local specialist, produced a range of interesting species several of which are on the UKBAP or Red Data Book priority species lists. As well as water voles and great-crested newts the survey found the rare mud snail *Omphiscola glabra* at several locations, 75 species of water beetle, 28 species of water bugs, scarce diving beetles, dragonflies and damselflies. Marsh stitchwort, another UKBAP species was found growing in one of the pools and the bulrush wainscot moth was recorded as breeding successfully. The report is extremely thorough and the range of species very encouraging.



Donacia versicolorea © Dr Roger Key

On Bellerby Moor the walling project to re-establish the old boundary across the moor is nearing completion. Funded by the REES fund the results are impressive and restore character and an historic identity to the heather clad moorland.

The signage for the Permissive Footpath between Hudswell and Downholme has finally been erected which is a major achievement. Graham Newcombe our Senior Estate

Surveyor deserves great credit for the speed with which this important source of public information has been provided.

Battle Hill Range near Barnard Castle has been the focus of considerable woodland work and extensive pond repairs. A mix of tree species attractive to black grouse has been planted providing additional food and shelter which it is hoped will encourage more of these attractive birds to use the range.

Foxglove Covert

At Foxglove Covert, visitors to the Reserve have exceeded 15,000 for the first time. One visitor, Lady Margaret Houghton, wife of the Vice Chief of the Defence Staff braved the snowy conditions on a sunny winter's day to cut the ribbon and open the sluice to the new wetlands funded by the Esmée Fairbairn Foundation and The Dulverton Trust. The area, although quite raw in appearance after the excavation work, provides 2.2km of wetland margins and is already attracting flocks of lapwings, ducks and herons to the emergent vegetation.

More than 1ha of Sitka spruce have been cleared by hand on the reserve and these have been replaced by a mix of native trees funded by The Tree Council. An extensive winter management programme has taken place with some assistance given by the Army Foundation College students from Harrogate involved with the Duke of Edinburgh's Award Scheme. New pathways through the woods have been created and glades have been cleared to accommodate the depleted number of bees and butterflies suffering from two very wet summers.

Finally, substantial progress has been made restoring relict ancient hedgerows to their former glory and the boundaries these features create are once again establishing wildlife corridors across the landscape of the range and training areas. Our thanks go to all the unsung local heroes who over the years have contributed so freely of their knowledge and expertise and whose interest and dedication keep the conservation flag flying in the Yorkshire Dales.

Maj (Retd) Tony Crease, Group Chairman



Lady Margaret Houghton cutting the ribbon © Cpl Ian Forsyth

DEFENCE ESTATES CONTACTS

PROPERTY DIRECTORATE

The Property 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.

Defence Estates Property Directorate

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DEFENCE ESTATES ENVIRONMENTAL ADVISORY SERVICE

The Environmental Advisory Service (EAS) provides professional ecological, archaeological and planning support to the MOD. EAS acts as a focal point for all environmental needs and enquiries across the Defence Estate providing a dedicated team of professional experts in a variety of environmental disciplines.

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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.

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Common lizard on Salisbury Plain © Iain Perkins



MINISTRY OF DEFENCE