

SANCTUARY

THE MINISTRY OF DEFENCE SUSTAINABILITY MAGAZINE

40TH ANNIVERSARY EDITION

Number 44 • 2015

THE ROOTS OF SUSTAINABLE MOD

Looking back over the past
four decades of Sanctuary

CONSERVATION GROUPS

A view from the North

30 YEARS OF SAVING THE STONE-CURLEW

How the Defence estate
supports the UK population



SANCTUARY

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Sanctuary is an annual publication about sustainable development in the Ministry of Defence (MOD), and the sustainable management of the natural and built assets across the Defence estate. It illustrates how the MOD is undertaking its responsibility for stewardship of the estate in the UK and overseas. 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.

Sanctuary is produced for the MOD by the Defence Infrastructure Organisation.

Sanctuary has been printed by the kind sponsorship of the Industry Partners below:

Welcome by **Jonathan Slater** Director General Head Office and Commissioning Services

It gives me great pleasure to welcome you to the 2015 edition of Sanctuary Magazine which showcases some of the great sustainability work taking place across the MOD to benefit the Defence estate. The magazine also celebrates its 40th anniversary this year and you'll see many examples of past projects and long-standing partnerships in this edition that demonstrates the commitment and variety of activities supported on the Defence estate.

Whilst we look back it is also an opportunity to look forward to the future of sustainability within the MOD. This year sees the launch of the new Sustainable MOD Strategy 2015-2025 which provides the direction to address risks to our business and capabilities, to enable us to be more efficient, resilient and adaptable to the future.

We must act on our key issues such as climate resilience, to lessen risk to our business; and we must evolve our business to be ready for the future by challenging and improving our working environments and systems. I am confident that by acting to make our resource use sustainable, and evolving our business to be resilient, we can better support a modern military and the communities that live, work and train on and around our estate.

The awards are a time to celebrate the people and projects which are strengthening our focus on enduring stewardship and I would like to offer my congratulations to each of the Sanctuary



Award winners and runners up, who once again have shown their dedication to improving the sustainability of the estate.

As always the Sanctuary Award judges have chosen some fantastic winners this year. I am very pleased to see that the Silver Otter trophy has been awarded to the Digging Warhorse project which has brought military heritage to life for so many people, including school children who were able to really get involved in the project and make it their own. This project is especially poignant as we commemorate the Centenary of WWI.

We are honoured to have His Royal Highness The Prince of Wales contribute a foreword to this 40th anniversary edition.

I hope you enjoy reading this year's magazine.



Kelda



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CLARENCE HOUSE

I am delighted, once again, to be given the opportunity to contribute to this fortieth anniversary edition of the Ministry of Defence 'Sanctuary' Magazine. This publication reflects my long term interest and support for conservation issues and the importance of recognising sustainable delivery across the M.O.D. through the Sanctuary Awards.

'Sanctuary' highlights the commitment of the M.O.D., its partners, contractors and conservation groups in providing a durable and well-managed estate for our military personnel to live, work and train upon. It also demonstrates why the M.O.D. estate is held in such high regard for its conservation, heritage and stewardship values. Integrating environmental commitments, military activity and the visiting public is hugely challenging and I am reassured to see that sustainability continues to take such a high priority within the Ministry of Defence. At a local level, for instance, this is demonstrated daily on the Dartmoor Training Area through the introduction of an Integrated Rural Management Plan and close co-operation with Statutory bodies, the National Park Authority, local farmers and the M.O.D. conservation Group.

This anniversary edition takes a retrospective look at sustainability within the Ministry of Defence. It runs from the appointment of the first Conservation Officer in 1973, and his legacy of establishing conservation groups, to the many collaborative projects which enhance and preserve biodiversity and heritage on the estate.

Since I last wrote for this magazine in 1996, a huge amount has been achieved by the Ministry of Defence and its partners to improve its commitment to environmental management. Most notable was the introduction of the Environmental Support and Compliance Team, which employed specialist advisors to implement long-lasting policy. This team has had tremendous success, as demonstrated in Spring 2010 when the M.O.D.'s Sites of Special Scientific Interest Improvement Programme hit its target of getting more than 95% of the M.O.D.'s sites in England into 'favourable' or 'unfavourable recovering' condition, and has continued to meet all further targets in Scotland, Wales and Northern Ireland. All this has been from a baseline of only 37% in 2001. This achievement was due to an enormous combined effort from M.O.D. staff, contractors, tenants and statutory nature conservation bodies working together to deliver what few believed was possible when the programme was first conceived.

Despite the hard work that has already taken place and the improvements that have been achieved, the sustainable M.O.D. Strategy 2015-25 is a key indication of the Ministry of Defence's on-going environmental and sustainability commitments which I hope will continue to be showcased in future editions of this publication.

The Sanctuary Award Board

THE SANCTUARY AWARD BOARD FOR 2015 WAS MADE UP OF:

Finance and Military Capability (FMC): **Jane Hallett**, Assistant Head Estates Policy. **Pippa Morrison**, Sustainable MOD Policy.

Defence Infrastructure Organisation (DIO): **Alan Mayes**, Deputy Head of ABP. **Richard Brooks**, Principal Environmental Advisor at ES&C.

EXTERNAL JUDGES:

Martin Baxter, Executive Director of Policy at the Institute of Environmental Management & Assessment (IEMA). **Marcus Yeo**, Managing Director of the Joint Nature Conservation Council (JNCC)

The Sanctuary Awards

The Ministry of Defence (MOD) prestigious Sanctuary Awards recognises and encourages group and individual efforts that benefit sustainable development, energy saving measures, wildlife, archaeology, environmental improvement or community awareness of conservation on or within land and property that the MOD owns or uses in the UK or overseas.

The 2015 Awards were divided into five categories: Environmental Project, Heritage Project, Sustainability Project, Energy Project and Individual Achievement. The winners of each category were considered for two further awards.

The coveted Silver Otter is awarded to Conservation Groups or individuals, MOD personnel or MOD-led projects. The Sustainable Business Award is awarded to more commercial projects who have achieved a particular success in ensuring sustainable solutions that deliver against the commitment to the armed forces by enabling them to live, train and work.

HERITAGE PROJECT AWARD WINNER

SILVER OTTER WINNER

Operation Nightingale, Digging War Horse

This exciting project explored the important role horses played during World War I through an archaeological dig of the lost Larkhill Horse Isolation Hospital within the Stonehenge World Heritage Site. Art and literature were also key elements to the project.

Digging War Horse aimed to act as an exemplar in commemoration of the Great War in drawing together disparate communities, providing education opportunities, and working to build relationships. The project also formed another element of the ongoing Operation Nightingale programme with wounded veterans from various conflicts assisting Phase 2 recruits, local volunteers and school children with the work.

The project took a huge amount of programming enabling WWI gun teams to be on site, to ensure the programme fitted the curriculum for schools and events facilitated. The team secured external revenue to support the project including money



A find from the war horse excavation, a button from the tunic of a WWI New Zealander © Harvey Mills

from the Heritage Lottery Fund. Much of the work was undertaken by unpaid volunteers and project staff at weekends and evenings.

This comprehensive, well organised project achieved a great deal inspiring people about their surroundings, local heritage and importance of military history. Over

350 school children took part through the excavation, puppetry workshops, reading 'War Horse' and much more. The project has also been cited by UNESCO as exemplar within the new World Heritage Site Management Plan, an achievement for everyone involved. **Read more about the project on page 12.**

SUSTAINABILITY PROJECT AWARD **WINNER**

**SUSTAINABLE
BUSINESS AWARD
WINNER**

ADSL – Promoting Sustainability through their Supply Chain



HWS Site Services Manager presenting a Waste Roadshow for service personnel on the Garrison © Aspire

Aspire Defence Services Limited (ADSL) provides the Total Facilities Management element of Project Allenby/Connaught, a 35 year contract and the largest infrastructure PFI let by the MOD, covering four Army garrisons on Salisbury Plain and in Aldershot. ADSL is committed to sustainable

business and has demonstrated this in many ways, including a strong commitment to supporting and building sustainability throughout the supply chain in line with sustainability objectives. These objectives, provide a framework for a supply chain assessment and were put into action with the renewal of

the waste contract in 2014 when work began with Hills Waste Services (HWS) to achieve zero waste to landfill.

Careful planning ensures that opportunities to recycle and dispose of waste correctly are consistent across all garrisons. Non-recyclable waste is taken away to generate electricity and a handheld PDA system enables HWS drivers to report access and contamination issues.

This very successful project has achieved large increases in recycling and power extraction resulting in a 100% diversion from landfill. ADSL's partnership approach, engagement and education with supply chain partners and MOD customers have without doubt helped to achieve the projects aims.

SUSTAINABILITY PROJECT AWARD **RUNNER UP**

Dstl Incinerator Heat Recovery Project Team

At Porton Down the heavy rainfall of December 2012 – January 2013 presented a significant challenge to the Dstl's Incinerator Resilience arrangements. When rain water seeped into the waste streams arising from the plant and associated bunded areas the water became contaminated and could not be discharged. To better understand the nature of effluent

collected, the team undertook sampling to fully characterise any pollutant composition and concentration over time.

A technical report looking at solutions concluded that the infrastructure needed to discharge the water would be quite costly and not the best environmental solution. Subsequently

the team researched technologies to allow the site to 'contain and reuse' water and at the same time meet all conditions of the Environment Agency permit.

The dedicated team were determined to find a solution that was economic, sustainable and which offered the best environmental protection performance. This solution came in the form of flexible double skinned tanks which are affordable and easily deployed.

The tanks can be filled with excess water during abnormal operating conditions which can then be reused instead of drawing on fresh supplies. The solution represents acquisition/ installation cost savings of £100ks with significant savings to be made in years to come over the life of the tanks.



Flexible tank deployed © Dstl

INDIVIDUAL ACHIEVEMENT AWARD **WINNER - MIKE JELF**

Mike has been Chairman of the Imber Conservation Group for eleven years and in that time has led the group with enthusiasm and drive

Mike has given a huge amount of his time and energy to ensure the group contributes benefits for conservation on the Salisbury Plain through ecological surveys, preservation of ancient monuments through scrub management and assisting organisations such as Natural England in management projects to name just a few. Mike's motivation has had a huge impact on the Conservation Group and its members.

The way Mike has brought new methods of disseminating information to the group through newsletters, the website and the well-attended AGM is highly commendable and just shows

how dedicated Mike is to the success of the group.

He has organised training for members in order that they can accomplish works useful for DIO. He looks for experts in their field to join who bring added value and supports post graduate projects. This has been a long-standing commitment from Mike who never shows himself to be anything other than passionate about the Plain, and hugely enthusiastic about the various subjects which make up its wonderful environmental diversity.

Mike retires this year and the Sanctuary Team wishes him the very



Mike Jelf with an armful of barn owls © ICG

best for the future and hopes his association with all things Imber and Salisbury Plain will continue. **Read more on Page 72.**

INDIVIDUAL ACHIEVEMENT AWARD **RUNNER UP - DALE WYATT**

Dale Wyatt has been the Treadlightly Ambassador to Salisbury Plain since the summer of 2009

The Treadlightly Trust is a Charity with the following Objective: "Treadlightly sets out to protect motorised recreational access opportunities through education, partnership working and conservation initiatives." Since 2009 the MOD has been running Project UBIQUE. The project aims to resolve the many access problems experienced on Salisbury Plain Training Area (SPTA – the largest training area in the UK) and seeks to achieve: Clarity, Certainty and Consistency and a better rights of way network.

Dale has demonstrated both initiative and innovation by: providing and leading a team of volunteers to install, replace or repair rights of way signs, by using his volunteers to report illegal off road activity seen on SPTA or appearing on social media.

His liaison and collaborative working with a variety of organisations has been essential to protect the integrity of the Plain whilst enabling safe use for recreational activities.

Dale's successful signage work carried out with the support of volunteers and the invaluable reputation enhancements attributable to his efforts are also highly commendable.



Dale (centre) and volunteers putting up new signage © Treadlightly

ENVIRONMENTAL PROJECT AWARD **WINNER**

Senne Environmental Working Group

The Environmental Working Group – Nature and Military in the Senne Training Area (Germany) has recently celebrated its 30th Anniversary. Its aim is to conserve the variety of habitats within the training area and protect the rich diversity of wildlife and rare species that live in the Senne.

The working group was formed in the 1980s when there was very limited information on nature in the Senne and the initiative sparked an era of close cooperation between environmentalists, the British Army, local and federal authorities that allowed for a systematic mapping of habitats and wildlife never achieved before. This essential base line work helped underpin what is now a well managed area for wildlife; it saw the introduction of conservation grazing by a rare-breed sheep flock and

became an innovative blueprint for similar projects here in the UK.

Volunteer specialists, such as botanists and ornithologists, dedicate their time and expertise to monitoring and advising the group on measures to conserve and enhance nature on the site.

The Senne Biological Station organises ten educational excursions to the training area each year in the form of guided nature walks and bus tours. An exhibition in the local town earlier this year highlighted the nature of the Senne and gave much credit to the co-operative effort between the British and Germans for the high quality management of the estate.

The group has not only looked after the nature of the Senne but also



Rare breed sheep on Senne © M Laabs

successfully cultivated many positive relationships through collaborative working, not only with the military in Senne but with government, external organisations and volunteer specialists. **Read more on page 42.**

ENVIRONMENTAL PROJECT AWARD **RUNNER UP**

Elstead Common Bridleway Improvement Project



Shallow swales created along bridleway © Landmarc

Elstead Common in Surrey, in the South East Region of the National Training Estate is an important training feature for many soldiers and is also a popular location for walkers, cyclists

and horse riders. Not only that, the Common is part of a designated site known for its important wet and dry heath habitats. Unfortunately a section of bridleway, which is also

an important firebreak, had become increasingly prone to flooding over recent years making it impassable by foot, horse and vehicle. This presented significant challenges for military training, public access and access for emergency vehicles needing to attend heath fires.

The Award Board was greatly impressed with the innovation and best practise demonstrated through the use of a traditional, low cost and low impact technique to improve the bridleway.

The joint benefits to biodiversity, flood relief and access are highly commendable. The project has enabled a wide range of users, adequate access to the area, whilst ensuring no negative impacts on the SSSI; this has clearly been achieved through strong collaborative working.

ENERGY PROJECT AWARD **WINNER****Devonport Naval Base and the Waste Combined Heat and Power Project Team**

This large scale project delivered a brand new highly efficient waste facility which will serve South West Devon, Plymouth, Torbay and the MOD for 25 years plus.

Through implementing the waste hierarchy it succeeded in diverting South West Devon's and the Naval Base's residual waste from landfill, allowing the site to comply with Government policy as well as generate green electricity and heat. This in turn reduced the site's CO₂ emissions in accordance with European and Government targets.

A seven year process to adapt the site to the local waste plan through bidding, planning and judicial reviews could not have been achieved without a committed team,

comprising of staff from MOD, DIO and Babcock along with support from local council staff and various Government Departments/Agencies. Around 300 other staff including managers, contractors, planners, builders, engineers, H&S environmental scientists and numerous other trades also supported the project.

Financial savings of 20% were achieved for the Naval Base on their energy costs as well as security of energy supply for the 25 years of the contract. This makes the Dockyard more competitive and sustainable. Carbon savings overall are around 72,000 tonnes per year of CO₂ equivalent – including the impacts of reduced waste miles, reduced fossil fuel consumption and an end to landfill.



MV's operations team oversee fully automated control system at the Devonport Energy from Waste CHP Facility © MVV Environment Devonport Ltd

Financial savings for the partner councils of £675m on their waste management costs compared to landfill, with part of this saving achieved through the energy supply agreement with MOD/Babcock. The project has also attracted PFI credits of £177m over the life of the contract.

HERITAGE PROJECT AWARD **RUNNER UP****The Royal Green Jackets (Rifles) Museum**

The Royal Green Jackets Museum achieved its aim of enhancing and bringing to the fore the importance of the Battle of Waterloo through an extensive, interactive programme. The exhibition was officially opened by the Duke of Wellington in March 2015.

The dedicated team inspire others through a new permanent exhibition which has a great deal to offer visitors and encourages learning in different ways through audio visual experiences, displays and the innovatively restored diorama.

An outreach programme for schools and the local community was developed and teachers have been assisting in the development of teaching materials. The Museum successfully secured funding for the project both through the

Heritage Lottery Fund and through wider fundraising, which is a great achievement. Trained volunteers gave up their time to ensure the exhibition, talks and seminars were a success.

The project has enhanced the reputation of the Museum among the public, and visitor numbers are up 49% on the same time last year. The project was nominated by the MOD Army Heritage Branch.



The newly restored diorama and medals © The Royal Green Jackets Museum

The roots of a sustainable MOD

The 1971-73 Nugent Committee looked into the necessity and management of Defence land holdings. It recognised the importance of military land for supporting wildlife and heritage and recommended that the MOD should do more to reduce environmental impacts of its activities.

Looking back over the past four decades of Sanctuary provides an insight into the origins of sustainability in the Ministry of Defence. It also tracks 40 years of the changing approach to achieve sustainable use, with environmental protection in balance with development and socioeconomic needs; and for the MOD Defence needs.

The origins to our approach can be found in 1973. Prior to this, habitats and wildlife were managed, but often as an incidental result of the main function of the land, and because of the enthusiasm of amateur conservationists. The 1971-73 Nugent Committee looked into the necessity and management of Defence land holdings. It recognised the importance of military land for supporting wildlife and heritage and recommended that the MOD should do more to reduce environmental impacts of its activities

(especially noise, 'eyesores' and unexploded ordnance); and to actively manage wildlife, heritage and the increasing demands for public access on the Defence estate. The first MOD Conservation Officer appointed in 1973 was tasked with forming links between MOD land managers and civilian organisations, and co-ordinating conservation activities.

MOD conservation groups were formed to liaise between MOD and the external organisations, develop conservation management plans, and implement practical measures. These were formed with a core of academic and amateur naturalists, archaeologists and members of the Service branches of the Ornithological Society and the British Deer Society.

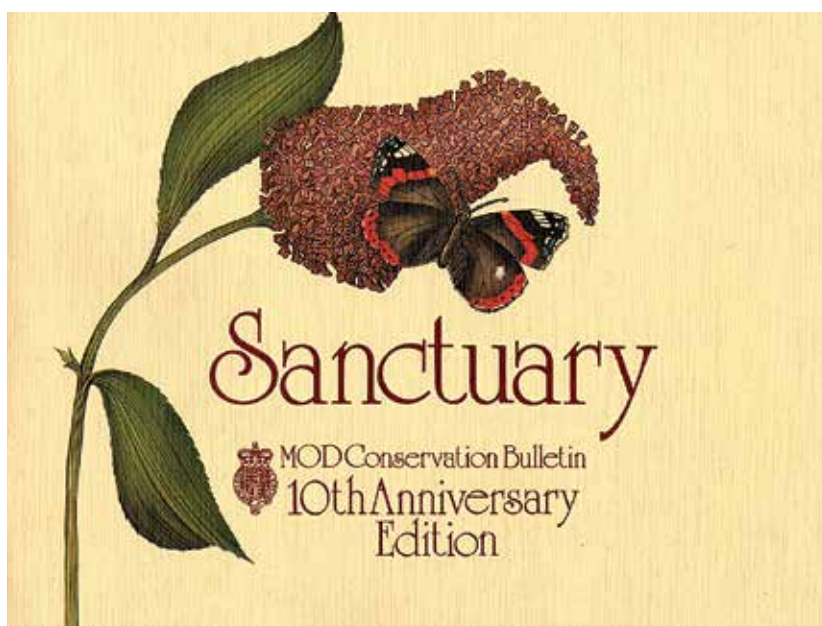
Thirty-five groups had been set up within two years and work started on a newsletter. The first edition



First editions of Sanctuary were illustrated by Jean Clayden, wife of the first MOD Conservation Officer, Lt Col C N Clayden © Crown

of Sanctuary was issued in January 1975 and ran to 300 copies, with the aim of providing the conservation groups and interested societies with a roundup of conservation activities across the estate, and addressing the issues identified in the Nugent Report. The distribution steadily increased to 25,000 at its peak in 2004 when it was sent to a range of MPs, conservation organisations and members of the public, until in 2011 when publishing also moved online.

The forty-four editions of Sanctuary provide a record of the responses to environmental issues of the time and how the MOD has contributed; such as in 1978, when Sanctuary reported on the conservation group at Pendine helping the clean-up following the oil spill from the Cristos Bitas; or the amendment of byelaws to take account of metal detectors and the protection of archaeology in 1982 (it is never a good idea to go digging up metal items on MOD sites!). It also shows some of the more unusual issues or requests, including a request in 1977 from the Scottish Office for wood from the MOD estate in Scotland to re-roof the great hall of Stirling Castle; how Royal Navy divers, along with the Egyptian Navy, helped recover the Gateway of



10th Anniversary Edition of Sanctuary Conservation Bulletin © Crown



Having a sustainable MOD estate enables our troops to train © Crown

Diocletian and the Temple of Augustus monuments from the island of Philae, which had been submerged since the construction of the Aswan Dam; or when the MOD banned the use of any whale products from being used in Defence equipment.

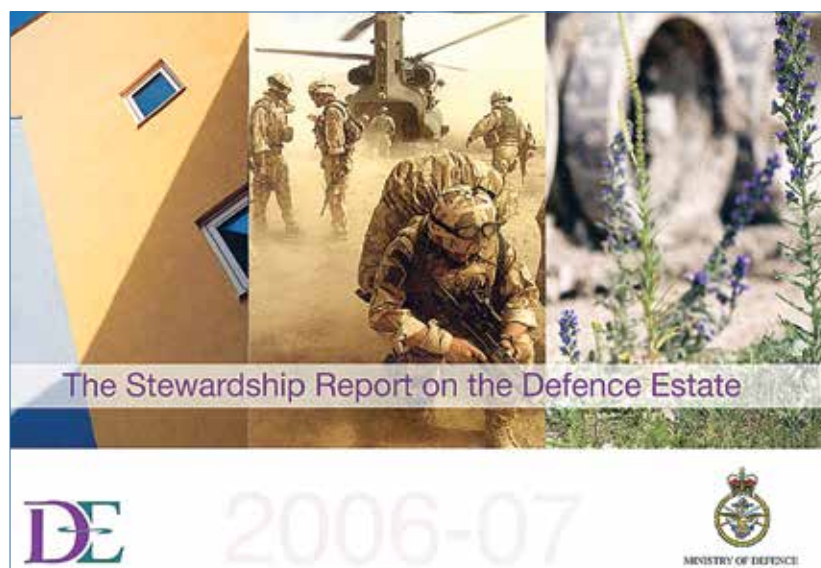
By 1983, two thirds of the Defence estate had been surveyed and catalogued for its wildlife and archaeology, involving over 4,000 volunteer members of 179 conservation groups. Site environmental dossiers were developed to improve understanding of the environmental value of the estate and support management. By 1993, 37 Sites of Special Scientific Interest had been designated across the Defence estate, (there are currently 173), and Sanctuary editions regularly described the identification of archaeological features not recorded anywhere else, or highlighted species that were thought to have been lost.

Sanctuary also shows the contribution of the MOD and the Defence estate towards environmental and conservation research. The 1987 edition reported how we were supporting research

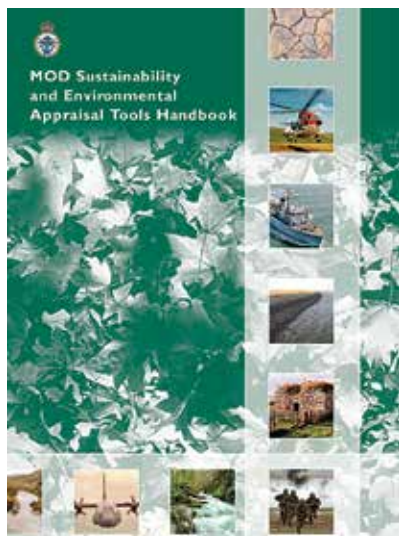
trials into resistant varieties of elm to find replacements for those lost to Dutch elm disease, or research into the population dynamics of Sika deer on Lulworth Ranges in 2004.

During the 1990s, increasing legislation and policy commitments meant that the MOD could not rely solely on the voluntary efforts of conservation groups, and needed to improve how it embedded environmental management within the department.

This led to the employment of full time specialists to extend the work of the conservation groups, and in 2000 a team of environmental specialists were formed to support recommendations from the Strategic Defence Review. So a permanent internal MOD specialist team became available to advise and support MOD plans, projects and activities, and the conservation groups; the content of Sanctuary increasingly addressed wider sustainability issues.



The Stewardship Report on the Defence Estate explained the activities and recorded progress made towards achieving the targets set out in the Estate Strategy - In Trust & On Trust. © Crown



2002 Handbook for Sustainability and the Environment provides MOD with its first sustainability appraisal tool. 2015 version now available © Crown

As the concept of sustainability has evolved, so did Sanctuary from the origins of traditional nature conservation and environmental management to incorporate the social and economic pillars of sustainability; an understanding that a sustainable MOD is about long term planning and prudent use of our resources and assets.

This has been reflected in the increasing number of sustainability articles, including the challenges created by climate change in 2005 and 2008. The 2006 edition reported how integrated

land management allows us to ensure sustainable military training in places like Dartmoor, including public access; and positive social impacts, such as the article on the disabled ramblers at Castlemartin in 2007, and kitchen gardens at Blandford Camp in 2010. More recently, Sanctuary has reported on activities in support of the Greening Government Commitments, and the work of industry partners in the stewardship of the estate and sustainable procurement.

From the first MOD Conservation officer, the MOD's approach has been with the premise that sustainability and Defence are not incompatible; and 40 years of Sanctuary has shown not just that they are compatible but that when managed, are mutually beneficial. The purpose of the MOD is national defence, and managing social, economic and environmental issues and opportunities is an integral part of sustaining Defence business.

To build on the ongoing stewardship of the estate, the new Sustainable MOD Strategy 2015-2025 sets out our priorities for the next few years. There will be an additional focus on reducing our reliance on fossil fuels; adapting to the effects of climate change; increasing the sustainability of our acquisition and infrastructure systems; improving the efficiency of our energy

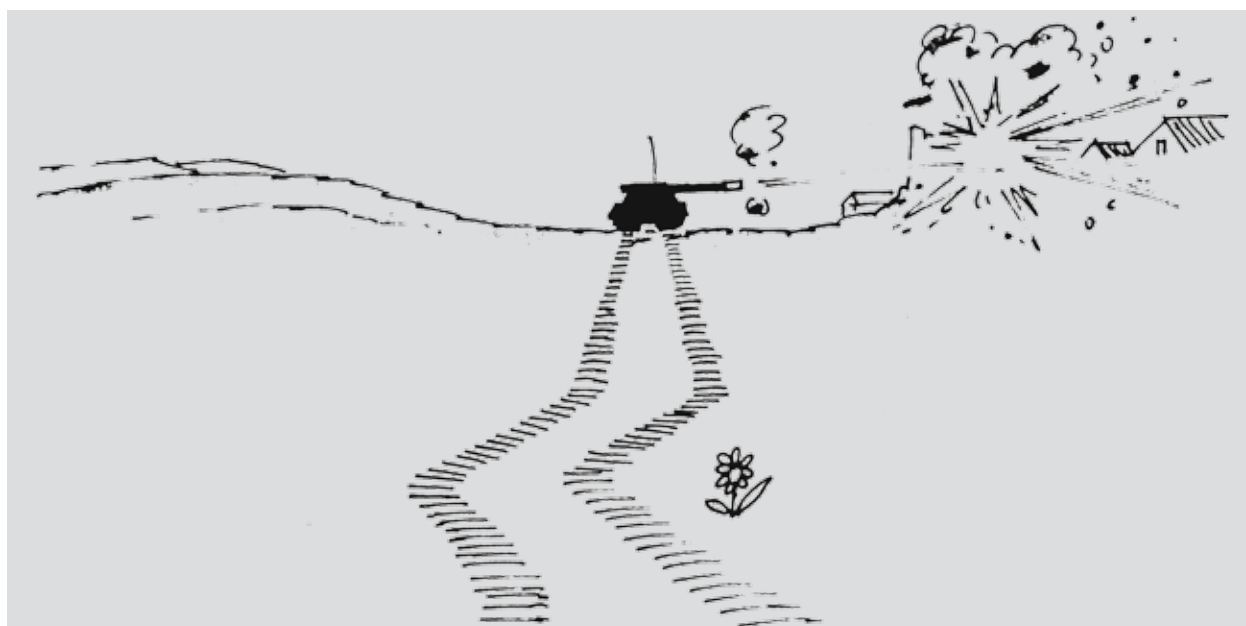


The MOD Heritage Report © Crown

and water use and the management of waste; and using information and communications technology to enhance Defence working environments and capabilities.

Sanctuary was initially titled to highlight the haven that the Defence estate provided to wildlife, but as this, and 43 other editions show, sustainability in the MOD is much, much more than that.

Pippa Morrison
Sustainable MOD Team
FMC Cap



1981 – cartoon of MOD flora preservation by Mr David Ricks

SUSTAINABLE MOD TIMELINE

- 1973** MOD Conservation Officer appointed as a new role in MOD and establishment of MOD Conservation Groups begins to assist MOD in its environmental and conservation management on sites.
- 1975** Sanctuary Magazine published for the first time as a newsletter.
- 1987** "Our Common Future", the Brundtland Commission's report defines sustainable development as "development which meets the needs of the present without compromising the ability of future generations to meet their own needs".
- 1991** Sanctuary Awards established.
- 1992** The Earth Summit, the UN Conference on Environment and Development is held in Rio de Janeiro.
- 1994** UK publishes first national sustainable development strategy, making the UK one of the first countries to produce a sustainable development strategy in response to the call made at the Rio Earth Summit.
- 1995** RN's first Environmental Protection Policy and Safety and Environmental Management System developed.
- 1999** A Better Quality of Life is published, setting out government proposals to deliver sustainable development.
- 2000** "In Trust and On Trust", the strategy for the Defence estate is published.
- 2000** Framework for Sustainable Development on the Government estate – first targets published.
- 2002** MOD's Appraisal Handbook for Sustainability and the Environment is published provides MOD with its first sustainability appraisal tool.
- 2002** World Summit on Sustainable Development (WSSD) takes place in Johannesburg.
- 2002** MOD's first Sustainable Development strategy is developed. An internal document only.
- 2004** Framework for Sustainable Development on the Government estate targets published, covering Energy, Waste, Estates Management, Sustainable Procurement, and Social Impacts.
- 2005** "Securing the Future" is published, providing a revised UK Government strategy for sustainable development, and a strategic framework was agreed by the UK Government and the devolved administrations.
- 2005** Sustainable Procurement Task Forces National Action Plan "Procuring the Future" published, includes tools such as the Flexible Framework and Prioritisation methodology.
- 2005** Sustainable Operations on the Government Estate targets published.
- 2005** MOD's first Sustainable Development Annual report published (2003-2004).
- 2006** "In Trust and On Trust", MOD's 2nd estate strategy is published.
- 2006** Government's Sustainable Procurement Action Plan published.
- 2007** MOD Sustainable Waste Management Strategy revised.
- 2008** Climate Change Act 2008 comes into force, and MOD Climate Change Strategy and Action Plan are published.
- 2008** MOD's Sustainable Development strategy is published.
- 2009** MOD Sustainability and Environmental Appraisal Tools Handbook is published, and updates guidance for sustainability appraisal across all MOD business, and expands to include other appraisal tools available.
- 2010** SOGE targets (2005-2010) met or exceeded by MOD for energy, carbon emissions from offices, carbon emissions from fleet, waste and recycling, water efficiency, and SSSIs.
- 2010** Prime Minister's 10% Carbon Target is set. MOD exceeds this target with a 14.8% reduction.
- 2010** MOD's Climate Impacts Risk Assessment Methodology (CIRAM) is developed to identify levels of risk, and mitigation measures for MOD to adapt to climate risks. A programme of assessments is begun.
- 2010** MOD Sustainable ICT Task Force launched to ensure that the Department is engaged on meeting the appropriate Green ICT targets.
- 2010** National Security Strategy/Strategic Defence Security Review published recognising climate change and resource security.
- 2010** MOD publishes its MOD Departmental Adaptation Plan for Climate Change, Waste Strategy, and Sustainable Procurement Strategy published including both equipment and estates commitments.
- 2010** Army Carbon footprint measurement project completed.
- 2011** Energy Invest to Save Programme begins, and Energy Awards established.
- 2011** Greening Government Commitments and Targets are published, providing revised commitments and targets for government, and MOD's strategy is updated to include them.
- 2011** MOD Sustainable ICT policy published (2011DIN06-08).
- 2011** Army Orders on the Organisation and Arrangements for the Management of Sustainable Development in Land Forces published by Commander Land Forces.
- 2012** Rio +20. Twenty years after the Earth Summit, the global community reconvenes in an effort to secure agreement on "greening" world economies through a range of smart measures for energy, and sustainable and fair use of resources.
- 2012** 100% of green electricity purchased for MOD infrastructure.
- 2012** MOD Energy Plan agreed by PUS and CDS. Target to reduce Armed Forces reliance on fossil fuels by 18% by 2020.
- 2013** Changes to governance and Sustainable MOD Steering Group established, a guide to deliver the sustainable MOD objectives.
- 2015** "Act and Evolve" - the Sustainable MOD Strategy is issued, to set out the priorities sustainability issues for MOD for the next few years.
- 2015** MOD's Sustainability and Environmental Appraisal Tools Handbook is updated and published.

WHAT NEXT?.....

Digging War Horse



Project team and from 'The Garrison' stand next to a WWI 18lb artillery piece © Harvey Mills

Within the shadows of the great prehistoric monument of Stonehenge lies an altogether less well-known site; a site which, even though it was only established one hundred years ago, has now all but disappeared. In 1914 at the start of the Great War, the 'Horse Isolation Hospital' was established at Fargo on Salisbury Plain. The site was only in place for a very short while before being superseded by a hospital for humans and only cryptic references to its presence lie within the historic records.

Larkhill played a vital role in the training of artillery and infantry during WWI but surprisingly little is known about how and where much of this training took place. During the War, huge numbers of horses and mules were required to not only pull the guns, but were also employed pulling horse drawn wagons and carrying supplies. The peak in relation to numbers of horses and mules employed was in 1917 when there were 869,931 recorded as working for the Army.

the Stonehenge environs but for this project was simply tasked to recover material which would relate to the hospital sites and the military presence. Seven local schools, Phase 2 recruits from Larkhill, local volunteers and participants from Operation Nightingale (using heritage for recovery post Operational Tours) all worked together on the dig.

The results were fascinating. Traces of the horse hospital were elusive, perhaps the structures were simply posts and thus fairly ephemeral and certainly something tricky to pick up with test-pits.

What did come to light that could be easily identified were a number of items that demonstrated the existence of the buildings that were once located there and to individuals that were based here. Whilst the structures had been comprehensively removed, a mass of material was uncovered demonstrating their existence, indicated by the presence of brick, roof covering and general building rubble. The in-situ remains of a drainage system were also uncovered. A mass of small artefacts



A Phase 2 recruit excavates the hospital area © Harvey Mills

The summer of 2014 saw the start of a community project to try to locate this hospital and to link in with local school studies of Michael Morpurgo's literary phenomenon 'War Horse'. With funding from the Heritage Lottery Fund and Wiltshire Council in place, a team began their mission of investigation.

Geophysical surveys by Wessex Archaeology and the Defence Academy on the ploughed farmland soon yielded tantalising traces of buildings, of service trenches and vestiges of WWI. This enabled the excavations to take place under the expert tutelage of renowned archaeologist Julian Richards. Julian has huge fieldwork experience in

linked to the military use of the area were also found. Amongst these smaller items were buttons and badges representing commonwealth nations, as well as units of the British Army. A small number of spent cartridge cases were also uncovered. From the markings on these, it is possible to ascertain that the area was in use prior to WWI and also during WWII.

A selection of American WWII cartridge cases was also found. These do not conclusively prove that American soldiers were based here, as the British Army also used American weapons. However, prior to D-Day in 1944 large numbers of American soldiers were known to have been based at and trained on Salisbury Plain. A variety of other artefacts were discovered, including part of an armoured vehicle periscope, the lid of a coke stove, the key fob to a NAAFI building and a selection of horse shoes of varying sizes.

After the dig – the school children went on to research the lives of the soldiers from this conflict in the cemeteries that surround the Plain, and also to write about the horses that had been there. Perhaps inspired by their finds, by reading 'War Horse' or by meeting serving and veteran soldiers they designed their own trench scenes, wrote moving poetry and in one case even build a war horse. The team were able to



Julian examining the children's findings © Harvey Mills

examine real artillery pieces from the Great War and to sample the 'delights' of recipes from this period.

The success of 'War Horse' also transferred to a film and to the National Theatre, and puppeteers trained by the latter visited a number of the schools involved in the MOD project to help them write their own shadow puppet stories based around their discoveries and their studies of WWI.

There is no better connection to the War than being able to physically find the traces left in the soil and being able to imagine the stories relating to an artefact. Through research, fieldwork and presentations, the team

gained a better understanding of the role of artillery in the Great War, of the role of horses, and recognised the importance of commemoration. Everyone was able to gain a tangible insight into the landscape and its population at the start of WWI through objects left behind. Most importantly perhaps, the project highlighted how essential the Plain has been to the military for a very long time and how all communities that live and work around this wonderful area can come together and remember.

Richard Osgood
Senior Archaeologist
Defence Infrastructure Organisation



Horse hospital findings © Harvey Mills



Children recreate their own War Horse shadow puppet stories © Harvey Mills

Attempting to save the Dartmoor ring ouzel



One of the few Dartmoor ring ouzels © Nick Baker

The ring ouzel, known as the upland blackbird, has experienced steep national declines over recent decades and is a high conservation priority. Since 2010, the RSPB, supported by a range of organisations (Devon Birds, Dartmoor National Park Authority, Natural England, MOD and SITA Trust) has monitored a population on Dartmoor, at the southern edge of the species' range. Studies have found that Dartmoor's ring ouzels have declined to a perilously low level, with just seven pairs recorded in 2013 and 2014. The birds have been observed abandoning historic nesting areas and becoming increasingly concentrated in the north west of the moor. A 2014 study concluded that the moorland owned by the MOD is now the most important area of Dartmoor for this species.

While other external factors such as climate change, migration or wintering conditions, may also be influencing the decline of Dartmoor's ring ouzels, these factors are out of our control and therefore the RSPB has focussed on possible issues at breeding sites.

The recent study importantly revealed that sites with greater breeding success were on very steep slopes, clad in deep, mature heather and bilberry, or

western gorse, and relatively inaccessible to humans and predators, with nests well concealed in vegetation. Such areas also provided safety for vulnerable fledglings, enabling adults to feed them under cover. By contrast, nest sites that lacked this vegetation cover tended to have higher failure rates.

It was also established that nest success on Dartmoor ranges between 1.5–4.2 fledged chicks per pair, with predation the main cause of nest failures. Where regularly used paths follow close to nest sites, for example along water courses or at popular tors, human disturbance adds to this

pressure, where the sitting female is more likely to flush regularly and often noisily from the nest, drawing the attention of predators.

The conservation strategy for ring ouzels on Dartmoor is therefore to increase vegetation cover at potential nest sites to try and increase breeding success. Interested parties have held discussions identifying where shrub cover could be increased. Land owned by the MOD includes both prime habitat and areas where vegetation cover could be increased and so has formed the first trial site for habitat management.

In November 2014, an MOD training exercise delivered fencing materials for local contractors to install two temporary fences, to exclude wintering livestock for five years. The fencing was funded by NE, RSPB and DB. It is hoped that these carefully sited grazing exclosures will increase vegetation height and density. The effectiveness of these exclosures will be monitored over the five years and with a view to establish similar management elsewhere on Dartmoor.

Helen Booker

Senior Conservation Officer
RSPB



Special delivery of fencing courtesy of the MOD © Fiona Freshney

New sustainable wind power for the Falkland Islands



New wind farm installation © Paul Wilson

The Falkland Islands are an archipelago in the South Atlantic Ocean, around 300 miles east of South America's southern Patagonian coast. At a latitude of about 52°S it sits just outside the Antarctic Circle. Up until 2007 the majority of electricity production was through the burning of fossil fuels, however, due to the location and climate, the high average wind speeds of 16 knots, which persist over the island were ripe for the harvesting of wind generated power.

The MOD has a range of units and personnel on the islands, largely centred on the Mount Pleasant Complex (MPC) which comprises Mount Pleasant Airfield and Mare Harbour, about 35 miles west of Stanley.

In 2007 British Forces South Atlantic Island (BFSAI) entered into discussions with the Falkland Island Government (FIG) regarding the potential construction of a wind farm to supplement MPC. The FIG Public Works Department (PWD) were already operating a successful wind farm consisting of six turbines at Sand Bay supplementing the Stanley Power Station. The FIG also managed a programme to assist homeowners living in Camp (anywhere not within

the confines of Stanley) often in remote and isolated areas within the Islands to install wind turbines on homesteads, improving electricity supply resilience and reducing reliance on diesel generators.

Following re-invigorated negotiations, a Memorandum of Understanding was signed in December 2012 by the Commander British Forces (CBF), the Chief Executive of the Falkland Islands Government and Defence Infrastructure Organisation (DIO). After agreement to site the wind farm near the Port at East Cove was reached, the PWD became responsible for the provision of three turbines and associated works up to the MPC fence line where DIO and their contractors became responsible for the remaining connection to the power station. DIO and PWD worked together to ensure compatibility of existing and planned future technologies and equipment and to assure the myriad of stakeholders within BFSAI who raised concerns (similar to the UK) e.g. interference with aircraft and ships equipment, and concerns about environmental impacts.

In December 2014 MPC fully commissioned the wind farm, which

is capable of providing in excess of 3 megawatts (mW) of power to supplement the MPC Power Station, and is the successful culmination of a localisation project that has achieved mutual benefits including:

- Demonstration of MOD's commitment to the Falklands and their determination for self sufficiency
- Reduced reliance on imported fossil fuels to the islands
- Reduced carbon footprint
- Promotion of renewable energies
- Supporting the local economy
- Improved environmental performance
- Creation of an income stream to the Falkland Island Government
- Reduced utilities costs for the MOD

Discussions are underway regarding the opportunity for extending the wind farm by an additional three turbines as a secondary phase after the performance of this supplementary power source has been evaluated.

Sarah Woffinden

Manager

Area Overseas (AUM)

DIO Energy, Utilities and Sustainability

Conservation groups and Sanctuary, the husband and wife who started it all



Longmoor Training Area © Jean Clayden

Like a lot of things, the importance of conservation in the MOD started from small acorns. After the Nugent report was published in 1973, it became necessary for the MOD to formally recognise its obligations to the environment and this mantle fell to Lt Col Christopher Norman Clayden, the MOD's first Conservation Officer.

Earlier this year the Sanctuary Team were privileged enough to interview Jean Clayden, the wife of Lt Colonel Norman Clayden. Jean kindly invited the team to her home to share in her memories of that time, what it was like supporting her husband in his new role and how she contributed to Sanctuary Magazine.

After many years of active duty in the Army, working at home and abroad, Norman and Jean thought it was the right time to settle down as they wanted to give their son a more stable upbringing. That is when the job of MOD Conservation Officer came up and Norman decided to apply. Jean explained that Norman did not think he would get the job and forgot all about it, and then one

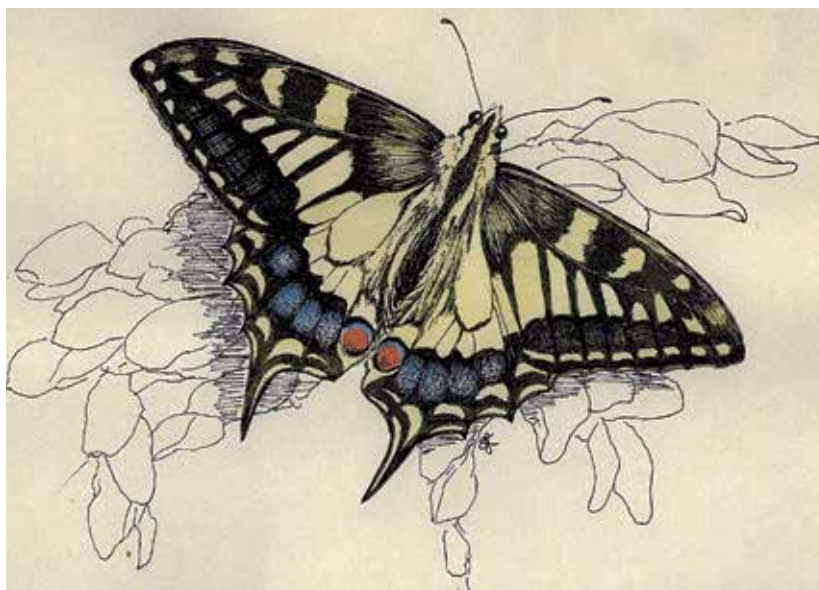
day he came to her and said with excitement, "I've got it!" He retired from his post at the Headquarters United Kingdom Land Forces in Wilton on Friday 30th June 1973 and started his job as Conservation Officer the following Monday.

From his small office in the Tolworth Tower in Surbiton, Norman and his one assistant, a chief clerk, set about

their mammoth task with no financial support and limited resources.

Norman had been an amateur naturalist throughout his military life; with a keen interest in birds he ran the Army Bird Watching Society for 20 years. Although he was well suited for the role of Conservation Officer and spoke 'the language' regarding birds and certain other wildlife, he spent a great deal of time researching areas where he was less knowledgeable, such as grassland ecology, entomology and even slugs as Jean recalled.

This was a quick learning curve, not only in the areas of British flora and fauna and its importance but the personalities of individual characters that made up the UK's Conservation lobby, naturalists, species specialists and archaeologists (both amateur and professional). These new recruits were certainly a breed he was unfamiliar with, wearing more relaxed uniforms of sandals and shorts, sporting long hair and beards (men only) and less receptive to taking orders; Norman had to find another way to win them over.



A beautifully illustrated swallowtail butterfly © Jean Clayden



A majestic black grouse © Jean Clayden

Norman obviously did something right as the first official conservation group formed at Longmoor/Bordon Training Area in 1974 with eight more groups forming shortly after. By 1975 there were 40 groups and after Norman's time in post 201 groups had been started.

Sanctuary magazine first took form in 1975 as a typed communication tool allowing conservation groups to keep up to date with news from around the country, as well as to feel part of the wider MOD conservation community. To enhance the readers experience Jean would regularly produce drawings for the magazine, which she promptly sent to the office for printing.

Jean was also appointed duty driver and accompanied Norman to meetings all over the country. On these trips, Jean would make good use of her time waiting for Norman by getting out her sketching kit. She would capture the scene writing notes on the back of each picture describing the place and why she was there. Jean read some of her notes aloud during the interview and it really brought the pictures to life. Jean still has her full collection of Sanctuary illustrations including a selection of coloured prints which she has generously contributed to this article.

There are now over 120 conservation groups working hard across the MOD and it all started with one man and his devoted wife by his side.

A recent review showed that these groups provide a vital forum for

stakeholder liaison and management, monitoring, providing data and advice that the MOD can use to inform adaptive management of the estate. A well functioning group adds significant value for money to MOD sites from stakeholder engagement on environmental issues and a resource supporting estate information through to communicating the good stewardship credentials of the MOD to the wider public. The last forty years of good will and dedicated stewardship of the estate is testament to their input.

Norman passed away on 28th December 2003 aged 82; there is a fitting obituary in the back of Sanctuary Magazine No 33 (2004). Jean is delighted to know that the work Norman accomplished became a blue print for stakeholder engagement in conservation across many of the other major landowners in the UK, which continues to inspire people today.

Iain Perkins and Hannah Mintram
Conservation Group Team
Defence Infrastructure Organisation



Jean kindly showing the team her fantastic paintings © Crown

MOD conservation groups

A view from the North



A member of SWAAG surveying prehistoric boundaries on Ellerton Moor, Catterick Training Area, with the impressive Swaledale landscape as a backdrop © Tim Laurie

‘CONSERVATION’: Preservation, protection or restoration of the natural environment and wildlife. Preservation and repair of archaeological, historical and cultural sites and artefacts.

‘GROUP’: A number of people that work together or share certain beliefs.

These Google dictionary definitions saved us a lot of time trying to think up what the MOD Conservation Groups actually do. They say it all...well almost all. If the definitions had specified geology, herpetology, entomology, palaeontology and any number of esoteric studies, not to mention the latest military training techniques, then the definitions would have been spot on.

To a fly on the wall, the arrangement of MOD conservation groups around the country would appear to be pretty much standardised. Meeting twice a year, the members assemble round a table and the Chair (often, but not always, the Commandant of the Training Area or Base) opens the meeting with introductions and a reading of the previous minutes. Following this, the various

representatives have their say in their particular area of expertise. It is a tried and tested, effective way of getting to know what’s been happening during the past six months. But, there is more to the groups than meets the eye.

Synergy is a curious concept: ‘the creation of the whole that is greater than the simple sum of its parts’ (thank you Google – again). Think ‘The Beatles’, ‘Manchester United Football Club’ and think MOD Conservation Groups. Because that is the chemistry that happens when a number of people that work together or share certain beliefs come around the table with a passion for conservation. When the Sanctuary editors asked us to put together some case studies of conservation groups in action, the problem was not one of a shortage of material but, to the contrary, how to trim down the information we had to hand.

An archaeological survey on Ellerton Moor/Juniper Rigg on Catterick Training Area undertaken in early 2015 has identified almost 60 archaeological monuments of prehistoric date. The survey was undertaken in the grip of

winter by conservation group stalwart Tim Laurie and a colleague in the Swaledale and Arkengarthdale Archaeology Group (SWAAG) and concentrated on an area of moorland where the heather had been burnt off to reveal numerous cairns, wall lines and probable burial monuments. This was a rare opportunity to observe and record archaeological features thought to be about 4000 years old, dating to the early Bronze Age. In addition to being located in the heart of the training area, the site is also within the Yorkshire Dales National Park, and the survey demonstrates how military training and stewardship of the historic environment can be undertaken in a spirit of cooperation between the military, external stakeholders and conservation group members. A comprehensive survey report has been handed over to the chairman and an illustrated lecture on the results of the survey was presented by Tim in the April 2015 meeting.

The region of Lancashire around Holcombe Moor near Bury is famous, amongst other things, for being in the cradle of the industrial revolution. Archaeological excavation on the training area by the Holcombe Moor Heritage Group (HMHG) focussed on a range of 18th/19th century cottages, which might originally have formed part of a mill. However, the discovery of an iron smelting site of medieval date below the floor layers of the cottages is causing a rethink about the origin of the region’s industrial heritage. Charcoal from the feature provided a radiocarbon date of between 1027–1182 AD and quantities of slag have revealed information about the nature of early iron processing.

In 2006, the Holcombe Moor Heritage Group was the proud recipient of the Silver Otter trophy – the prestigious

award for carrying out an important environmental project on the MOD estate. In the eight years or so since the award, the group has not rested on its laurels. In fact it is going from strength to strength; its members are represented on the Holcombe Moor conservation group and their work is helping to cement relations between the MOD and the local community.

Alongside the work that many conservation groups do to document the historic value of MOD land, a key focus of any meeting will usually involve activities to monitor and protect the wealth of biodiversity and environmental features within the military estate. With around 227,000ha of land owned directly plus a similar area used under various rights and agreements, the responsibilities and opportunities are considerable and the contributions of local volunteers and other stakeholders are an important component of how MOD manages some of the highest value wildlife habitats in the UK.

Barry Buddon, near Dundee, is a busy training area which gained national publicity when it hosted the target shooting elements of the recent Commonwealth Games. The conservation group led by Capt Harry Roy are an enthusiastic bunch with

decades of combined experience of the extensive dunes that surround the ranges, and each year the group focus on two major community involvement events in addition to their own interests on site. In April Barry Buddon hosted its big beach clean up in conjunction with Angus Council, bringing together local groups such as the Rotary Club to help clear tonnes of rubbish that gets washed up every year, and in August the annual nature day gave a range of local naturalist groups the chance to have extensive access to the site to record everything from birds to botany and moths to mammals in a mini bio-blitz that has been known to turn up a few surprises as well.

Conservation group members also contribute to some of the work that Defence Infrastructure Organisation (DIO) does to support military training, for example one upland site in Scotland where parachute drops are carried out as part of annual training exercises on an area that also happens to be designated a Special Protection Area due to the presence of breeding hen harriers. While the DIO Ecology Team deal with statutory assessments and consents and the military staff plan the exercise, ornithologist Geoff Sheppard from the West Freugh conservation group identifies the locations of harrier territories when they return from their

winter migration, liaises with the Exercise Planner to mark these areas with a 500m buffer zone as out of bounds, and continues to monitor the nests under licence until the end of the breeding season. This arrangement has worked well for a number of years now, and although monitoring shows the hen harrier numbers are declining in line with national trends, we are confident as a result of Geoff's consistent monitoring that any nest failures are not the result of military activity.

These are just a few examples from MOD conservation groups across the UK whose members can be as diverse as the sites they are involved with. Like any relationship a degree of give and take is involved, group members enjoy privileged levels of access to sites and the opportunity to be involved with unique conservation projects, and in return the MOD has continuity of local knowledge and involvement that helps support its activities and responsibilities for management. The system works well on the whole, and the input of our volunteers and other stakeholders is very much appreciated.

Phil Abramson

Archaeology Advisor

John Black

Ecologist North

Defence Infrastructure Organisation



Members of the HMHG excavating 18th/19th century cottages at Bottoms on the Holcombe Moor Training Area, near Bury, Lancashire © HMHG

Delivering drinkable water for Sennybridge Soldiers



The stream on X Range © Kelda

Sennybridge Training Area covers approximately 68m² of a vast upland of blanket bog and grass plateau just outside the Brecon Beacons National Park. It is the MOD's third largest training area in the UK. The training area is a key firing facility for infantry and artillery training and contains five Sites of Special Scientific Interest and three Special Areas of Conservation for its flora and fauna including the rare slender green feather moss, grassland fungi including more than 20 species of waxcap fungi, white clawed crayfish and otter.

Historically, drinking water has been supplied via bowsers filled at the main camp and driven up onto the ranges, but in 2011 Kelda Water Services Defence (KWSD) and Defence Infrastructure Organisation (DIO) embarked on a project to update this

system by providing potable water from boreholes located on the ranges. Water quality sampling and risk assessments concluded that the existing fifteen boreholes and one spring were not wholesome and the water was not fit for human consumption. Then in 2012 Army Environmental Health concluded that the existing borehole systems should not be used for any domestic purpose (washing and showering) due to the potential risk from waterborne bacterial infection. KWSD therefore worked with DIO with the support of Landmarc personnel to identify the seven best locations for new boreholes, determined by analysis of the water quality data and by considering the site operational requirements. DIO then commissioned KWSD to undertake a

study to assess the feasibility of delivering potable water for drinking and domestic purposes from these boreholes, taking into account the structural condition and age of the assets, water quality and yield, regulatory requirements and any potential sources of water contamination, for example cattle on the ranges.

Feasibility work was completed in the spring of 2014 and the capital work phase commenced in the autumn of the same year. Six new boreholes were drilled and one existing borehole was utilised. A new water treatment works was installed at each of the seven locations, including new chlorination units, UV disinfection and filtration systems; these new installations ensure that the water can now be used for drinking and washing. KWSD, the site contractors, Landmarc and DIO personnel liaised closely throughout the project, resulting in a successful outcome for all stakeholders. The new boreholes and water treatment systems represent a significant environmental benefit and a sustainable long term solution for provision of potable water to this remote site.

Sennybridge's Senior Training Safety Officer, Maj Ed Mahony, said: *"The works cost around £1m, but the value of having drinking water here is huge - not only for training soldiers, but for all the staff supporting the training effort across this vast geographical area. It greatly enhances training, reduces the cost and time of bringing water to the area and gives the site's users freely available drinking water and hot showers. Achieving this on the third largest UK training area is invaluable."*

Sarah Maiden
Environmental Manager
Kelda Water Services

Bog mosses find a new home at Warcop



Wooden dams installed to slow running water © Alistair Lockett

Sphagnum mosses, also known as bog mosses, are amazingly multi-coloured plants that form a protective carpet across a healthy peatland. They keep the peat wet, prevent it from eroding and they are vital for the accumulation of peat. As a healthy sphagnum covered peatland accumulates, it takes in and stores huge amounts of carbon, much more than any woodland of the same size. However, if a peatland has lost its vegetation for one reason or another, instead of taking in and storing carbon it releases it into the atmosphere which contributes to climate change. It is estimated that a hectare of bare peat releases 31 tonnes of CO₂ every year. This is equivalent to flying from London to Sydney, and back again, three times.

Peatlands provide many ecosystem benefits to both local and the wider population. Not only does a healthy peatland mitigate against climate change by taking in and storing carbon, it plays an important role in water quality and supply. For example, 70% of the UK's drinking water comes from the uplands. Peatlands are also nationally and internationally important for declining and globally threatened species including lapwing, curlew and golden plover.

Bare peat restoration began on Warcop Military Range in 2013, organised and funded by the North Pennines AONB Partnership (see article in Sanctuary 2013). This work will restore 25ha of bare and eroding peatland into a healthy and functioning peatland, with a good cover of sphagnum moss. Initial works included installing wooden dams along eroding channels, which slow running water, raise the water table adjacent to the channels and trap any peat that is being washed down the channel.

The second stage of this work involved moving large amounts of sphagnum moss from a donor site in Northumberland to its new home at Warcop. A project of this scale has

never been undertaken in the North Pennines before and 150 bags full of bog mosses were successfully collected and spread in the water channels at Warcop. The sphagnum will soak up excess water, hold water during the drier months and grow and expand to cover nearby areas of bare peat.

The bare peat areas will now be monitored for the next ten years and already there are positive signs of improvement. During a recent survey, vegetation cover has increased from an average of 10% to 18% over just one growing season. The hope is that this trend will continue and the area will be well on its way to becoming a healthy blanket bog after the project has finished.

Emma Taylor, Peatland Programme Field Officer said: *"Warcop is a huge upland site and we have only just scratched the surface of what could be done to restore these damaged peatlands. The MOD and Landmarc staff fully support the work and it is uplifting to see results after such a short space of time. We hope to continue to work in partnership with the MOD to restore other damaged areas of the fell as long as there is available funding."*

Alistair Lockett
Field Officer
North Pennines AONB Partnership



Sphagnum growth behind wooden dam, one year after it was transplanted © Emma Taylor

Unexploded Ordnance on the MOD estate **75 years of Royal Engineers Bomb Disposal**



Historic photograph of Unexploded Ordnance (UXO) activities from WWII © Central Press

Following the outbreak of World War II, the German Luftwaffe's bombs fell across the UK, often in vast quantities with a number failing to function as intended. Authority was given in May 1940 to establish the first Bomb Disposal formation, to counter the threat of unexploded ordnance detonating and killing people or damaging property and services.

By the end of June that year twenty five Royal Engineer Bomb Disposal (RE BD) sections had formed. Initially business had been slow but as the German bombing campaign grew another 109 RE BD sections were authorised. On 29th August 1940 the Luftwaffe started its offensive on London and the sections began working to, or beyond maximum capacity. In the 287 days between 21st September 1940 and 5th July 1941, some 24,108 bombs were made safe and removed by these brave men, who by 1945 statistically had a life expectancy of just 16 weeks. Following the end of WWII a large number of displaced personnel volunteered to work in the UK's first

Battle Area Clearance (BAC) teams. Their job primarily was to clear land which had been used as ranges for live ordnance training during the war, but some found themselves clearing the many sea defences from coastal beaches around the UK.

In 1973, following a number of command changes, HQ Bomb Disposal Unit RE was re-designated as 33 Engineer Regiment (EOD). It was rapidly recognised that one niche area of the Regiment was the BAC teams conducting explosive ordnance clearance (EOC). EOC is a deliberate activity to reduce or eliminate the

explosive ordnance hazard in a defined area. It combines systematic search techniques and EOD specialist skills, and can be carried out periodically to provide duty of care, or in response to a specific request or requirement. Consequently, the BAC teams were formally recognised as an integral part of the Regiment and evolved into the aptly titled Explosive Ordnance Clearance Group (EOC Gp).

Seventy-five years on from the formation of the first RE BD section, the EOC Gp currently consists of a HQ element and four sections, each comprising of two RE BD personnel and 17 civilian Explosive Ordnance Searchers, capable of carrying out a full clearance of all areas they have been tasked to search. Although sections are typically recruited regionally and assigned to their regional areas of the United Kingdom, they are able to deploy anywhere in the UK or on overseas tasks in support of a multitude of organisations; recent tasks have seen EOC Gp support requests from the Forestry Commission, the National Trust, the Welsh Assembly and Defence Infrastructure Organisation (DIO). The EOC Gp often finds itself on tasks supporting DIO, although the group remains ready to conduct any other tasks it is ordered to complete by 8 Engineer Brigade.



Explosive Ordnance Searchers from the EOC Gp working in the field © Crown



DIO EOC magnetometer array used to detect ferrous anomalies in the ground © Crown

DIO Explosive Ordnance Clearance

EOC Gp work closely with DIO's in-house EOC team who form part of Environment and Planning Support team. As well as being a focal point for tasking, the team also carries out geophysical surveys to identify the locations of potential ordnance, which are identified as areas of high ferrous content (anomalies) in the ground. This can help to reduce the time spent on a site by the EOC Gp as not all of the site needs to be walked over by the searchers, only selected points that have been identified from the geophysics results. DIO EOC staff will identify and mark the locations for investigation by the search team.

DIO EOC prepare Unexploded Ordnance Risk Assessments (UXORA's) for DIO sites, whether in disposal, to inform site redevelopment projects, understand MOD legacy issues on alienated land or to support use of the

SD Training Estate. DIO EOC staff investigate the ordnance history of the site and use this information to assess the risk to identified receptors, predominantly MOD staff, contractors or the general public. When assessing a site, the UXORA is often the first step which could then lead to further investigation using geophysics and/or clearance by a military EOC/EOD team.

Case Studies

The DIO EOC team have worked alongside the EOC Gp on many occasions; two examples are given in the case studies below. The Eastern Infrastructure Project delivered a 20km (approximately) stretch of reinforced roadway to protect Salisbury Plain from excessive erosion when military vehicles transit the area. The DIO EOC team scanned the majority of the route, marking the ferrous anomalies for investigation by the EOC Gp. Areas not scanned were cleared using EOC Gp's standard approach of 'search on

signal'. In one particular area a high density of UXO was discovered and this led to a request for further geophysical work to understand the extent of the affected area. The DIO EOC survey showed that the route crossed a former, previously unknown mortar impact area. The geophysical scan is shown below with the impact area clearly visible due to the high density of metallic response. The information provided by DIO EOC assisted the EOC Gp in their planning of the task and ensured timely completion in accordance with the construction schedule.

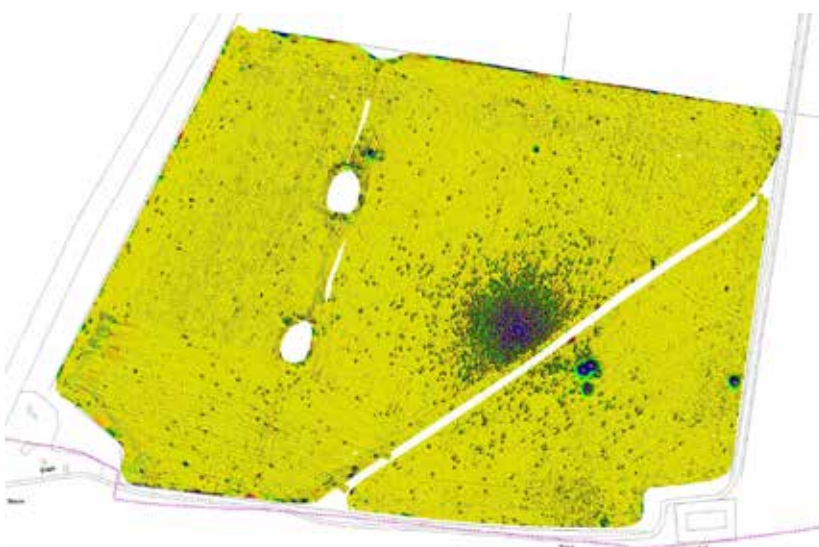


Mortars and Smiths Rounds recovered from Barton's Point, Isle of Sheppey © Crown

A joint task was completed at Barton's Point, Isle of Sheppey, the site of a WWII Home Guard mortar training area. This is alienated land and is now a camp site owned and operated by the local council. An emergency bomb disposal team was called to investigate the suspicious items found as a MACP (Military Aid to Civilian Powers) task. The team that attended the call reported a number of live ordnance items and a planned clearance then took place. DIO EOC completed a scan of the area and provided the EOC Gp with 1106 locations to investigate. 203 items of inert or expended ordnance were recovered from the site, predominantly mortars and Smiths Rounds, allowing it to return to use as a campsite.

Paul Burden

Principal
Explosive Ordnance Clearance
Defence Infrastructure Organisation



Magnetometer scan from Eastern Infrastructure Project at Upavon, showing historic mortar impact area © Crown

Landmarc target **zero**



LANDMARC Waste Sorting Station © Landmarc Support Services

Landmarc has installed waste sorting facilities on eight sites to separate any improperly disposed-of waste before it leaves the training estate.

With an average daily throughput of 9,000 servicemen and women, activity on the MOD defence training estate generates over 6,000 tonnes of waste per year. Without the correct waste management systems in place, this could potentially have a significant environmental impact.

Landmarc Support Services is working in partnership with the Defence Infrastructure Organisation (DIO) to implement a range of waste management initiatives, and has set an ambitious target of diverting 100% of all waste produced on the training estate away from landfill.

The challenges

There have been a number of challenges to overcome during the development and implementation of the waste management strategy. The rural and often remote locations of sites across the estate can make it very difficult to find local contractors that are able to collect and dispose of waste within the available budget.

In addition, there are currently a number of targets that must be adhered to, such as the Greening

years has fluctuated, but Landmarc is still endeavouring to reach the target. To help achieve this, Landmarc and DIO are exploring innovative ways of managing waste streams; first, by educating and encouraging employees and estate users to minimise the amount of waste generated, and second, to segregate and dispose of recyclable and other waste materials sustainably.

The types of waste produced across the training estate are very varied, and this itself poses a number of challenges; there are many waste categories, yet sometimes only small quantities of each. Therefore sourcing contractors who can streamline this process by collecting different types of waste simultaneously has been beneficial.

Government Commitment targets and the MOD Sustainable Development Action Plan that requires a minimum of 80% of construction waste to be diverted from landfill.

In 2013 Landmarc reported it had diverted 94% of its waste from landfill, up from 70% in 2012. The total percentage diverted in subsequent

What is more, there are other sensitive waste streams - for example, ammunition and pyrotechnic waste – that have to be disposed of appropriately to avoid contamination. It is crucial that waste types such as these are treated in the correct manner as contamination can result in serious repercussions for local communities; a recycling plant could be forced to close

Beach cleaning events play an important role in discouraging littering and adding value to local coastal communities



LANDMARC Lulworth beach clean © Landmarc Support Services

if ammunition gets into the waste stream. Landmarc therefore work closely with Ordnance, Munitions and Explosives (OME) Safety Officers to engage estate users on the serious issue of the correct disposal of ammunition and pyrotechnics.

Effective segregation and reuse

In order to separate any improperly disposed-of ammunition before it leaves the training estate, Landmarc has installed waste sorting facilities on eight sites including Barry Buddon, Otterburn, Stanford, Sennybridge, Lydd and Salisbury Plain. These have the added benefit of increasing the amount of waste we recycle, by segregating it safely and effectively prior to collection by our contractors. Waste types include paper, card, plastic, metals and waste wood that is untreated and non-hazardous.

In other areas, food waste has been reduced by ensuring that all ingredients are optimised to meet busy mealtime demands, without surplus cooked food being prepared. Demolition waste is also often re-used by Landmarc in construction and maintenance projects.

There is also a community focus when it comes to waste management, with Landmarc staff organising and taking part in litter picking and beach cleaning events. A recent collection at Lulworth saw the team clear around 200 bags of rubbish along six miles of UNESCO



LANDMARC demolition waste Nesscliff © Landmarc Support Services

Around 2,000 tonnes of demolition waste at Nesscliff was reused by Landmarc as road stone on the estate

World Heritage Jurassic Coast. This was mainly pieces of non-biodegradable plastic and discarded fishing equipment, which can endanger marine life as well as littering the beaches. Cleaning up the beach also discourages others from littering and adds value to the local area.

Case study: New tracks from old bunkers at Nesscliff: Many of the distinctive World War II bunkers on Nesscliff training area reached the end of their life in the last decade. Though the empty buildings were a well-used training feature they were structurally unsafe, posed a risk of falls from height and were costly to inspect and maintain. Approximately 2,000 tonnes of aggregate was generated from the first round of demolition, which was crushed and used by Landmarc as road stone on the estate. A second phase of demolition experimented with crushing a similar amount of rubble to a larger grade, a more efficient process which used less energy. The resulting crush is being used very successfully to improve safety and usability of training areas and was also used to create hardstanding areas for a mobile army hospital site at Nesscliff by Dutch engineers.

How we can work together

All stakeholders including DIO, Landmarc staff, estate users and waste disposal suppliers have a key part to play in applying the waste hierarchy

and continuing along the 'zero waste' journey. We must continue to work together to set challenging targets and strive to achieve our goal of preventing 100% of all waste from the training estate going to landfill.

Using clear plastic sacks, adhering to camp Standing Orders, putting waste in the appropriately labelled bins and continuing to find ways of reducing and reusing waste items are all small but vital actions that can make a big difference to what we can achieve together to ensure the best possible environmental outcome for our waste.

By working together, we can ensure the training estate remains environmentally sustainable for generations to come.

Camilla Timms
Sustainability Advisor
Landmarc Support Services



LANDMARC new tracks at Nesscliff © Landmarc Support Services



Forty years on Salisbury Plain, **how the battle to save archaeology was won**

At a basic level the commandant was faced with large areas that needed rest and repair, but the broader debate concerned the future - what could be done to prevent a repeat of this threat to both heritage and training?

In the mid 1970s, a start was made on compiling the Wiltshire Sites and Monuments Record (SMR). Salisbury Plain was a special problem, renowned for its heritage but difficult to access. By 1981 the SMR was complete, but still lacking detail for the Plain. Reports from conservation groups indicated damage to sites, and as County Archaeologist, I gathered more information by attending group meetings.

By 1982, the press took an interest, particularly in relation to the Romano-British settlement at Chisenbury Warren. This unprotected site was highly vulnerable to units hiding in the warren then dashing forward to ambush opposition forces. The headline 'tanks train on Roman village' focused the collective mind, resulting in a dialogue between MOD, English Heritage and Wiltshire Council.

What emerged was intriguing. First, no true record of archaeology on the Plain existed. Second, although some sites

were Scheduled Ancient Monuments (SAMs), many of the most outstanding features were not Scheduled. Third, the army had not been provided with a list of SAMs or guidance on protecting sites. MOD threw down the gauntlet - if archaeologists would define what was important it would do its best to implement safeguards.

The result was a massive survey in 1985, funded by English Heritage and subsequently by MOD. The resultant database and mapping recorded over 2200 sites, including around 600 prehistoric burial mounds. A bold decision to schedule over 500 sites was made.

The next step was to agree on measures of protection. MOD had for decades marked some sites with metal star-signs, and an extension of this technique which involved placing a ring of signs around the monument rather than a single star at its centre, proved valuable. The

real challenge was to protect clusters of earthworks covering substantial areas. These could include landscapes with many components and the term Archeological Site Group (ASG) was coined. A core consideration was to ensure that military training was not unduly inhibited, so management measures sought to guide units through these zones rather than impose exclusion. One group of archaeological earthworks was elevated to top status, labelled as Important and Fragile Sites (IFSs). They numbered seven and included some of the best preserved and rarest features found in the country. Only training on foot was permitted within them, and they are marked on the training area map as no-go areas.

These measures were introduced in the period 1986-1993, a challenge particularly for the commandant to appreciate the requirement and agree suggested measures. These might include not only signage but new tracks, closing old tracks, new fenced enclosures, plantations to block movement, part clearance of plantations to permit movement, whatever was needed to fulfill the management plans. It was in this period that English Nature (now Natural England) registered a vast zone with the status of Site of Special Scientific Interest (SSSI). Henceforth, management plans needed to accommodate nature conservation.

The combination of extreme wet weather and a huge exercise in the winter of 1993-4 threatened to destroy much that had been protected and the good working relations that had evolved. Huge areas of grassland had been reduced to mud; tracks degrading to a point that even armoured vehicles avoided them, cutting fresh routes alongside and generate a sea of devastation,



Surface damage caused by vehicle movement in wet conditions. © Wiltshire Council



A new stone track near the Bulford Ranges © Wiltshire Council

The first MOD archaeologist started in 1996, primarily to cover Salisbury Plain

inexorably shunting movement towards areas (and heritage) not previously disturbed. It took 36 hours for the exercise to pass through the wash-down!

At a basic level the commandant was faced with large areas that needed rest and repair, but the broader debate concerned the future - what could be done to prevent a repeat of this threat to both heritage and training? The concept of 'loading' was much discussed. Westdown Camp staff felt the rigorous assessment of the level of training (the loading) that each area could support was critical, with

groundwater levels dominating all. The Commandant would halt any exercise if ground conditions were poor.

Two further concepts were examined. It was apparent that investment in infrastructure had been poor. Vehicle movement occurred along old farm-tracks or routes generated by repeated exercises. The second and related observation was that much vehicle movement was 'administrative'; simply the need for a unit to get to an area assigned to it. This factor was exacerbated by the long narrow shape of the training area, and the need to minimise traffic through the villages

clustered at the edges. So serious was the problem that the MOD assigned five million pounds to set up a task force that would build a series of stone tracks which removed a mass of heavy vehicle activity from the grassland.

This was not a ban on free movement across the area, simply a measure that removed unwarranted erosion. This process was capped in 2000 by the construction of the Southern Range Road, moving traffic harmlessly across Salisbury Plain West.

As County Archaeologist I was privileged to have some involvement in these processes, convinced in hindsight that the bold decisions and commitment shown by a series of Commandants over the years is the reason that sites like Chisenbury Warren survive today. I recall an incident when a squadron of tracked vehicles broke through the wire at that site. Seeing the evidence HQ staff expressed deep concern but I reminded them that this was only the fourth such event in 15 years, surely a mark of success, not failure. I think they took my point.

Roy Canham MBE
County Archaeologist (Retd) and
Subgroup Leader
Imber Conservation Group



Chisenbury Warren Roman village, showing the network of new tracks designed to steer vehicles around the earthworks © Wiltshire Council

Making a buzz with the Ministry of Defence



Brown banded male humilis © Bumblebee Conservation Trust

Over the last 60-70 years the UK has lost over 97% of its ancient wild flower meadows. During and after the WWII we had the dig for victory campaign in which we needed to feed our population and troops, much of our common land was put into agriculture production and the government gave subsidies to increase the use of fertilisers and pesticides/insecticides. This dramatic loss of habitat has had a significant impact on many of our farm land species, such as our insect pollinators. For example, two of our



The first short haired bumblebee seen this year © Bumblebee Conservation Trust

bumblebee species have become extinct and a further seven are classed as rare and threatened. However, much of the remaining ancient wild flower meadows remain on MOD ranges such as Salisbury Plain. Many of these sites have never been ploughed or fertilised so the soil has not become damaged and retains a high level of floristic diversity.

Insect surveys on MOD land have demonstrated that many of these ranges retain a good diversity of bumblebees and other rare insects. The Bumblebee Conservation Trust (BCT) has been working with different ranges to survey and give advice on managing wild flower habitat for our bumblebees. In the south of Kent in Dungeness and Romney Marsh an exciting project is taking place to reintroduce one of the UK's extinct species, the short haired bumblebee. The short-haired bumblebee project was formed in 2009 by Natural England, RSPB, Hymettus and BCT. The aim of this project is to work with local farmers



Identification training walk on the ranges © Bumblebee Conservation Trust

and other land owners to restore and recreate wild flower habitat, to monitor wild flower areas for bumblebees and to reintroduce this extinct species from Sweden (where a good population still remains).

The Short Haired Bumblebee Reintroduction Project has been releasing queen bumblebees at Dungeness for the last four years. The aim of this is to encourage the species (which was declared extinct in the UK in 2000) to re-establish in the area. The release site is just a few kilometres from Lydd Ranges, and the

bumblebee team was able to visit the ranges in August 2015 to search for the short haired bumblebee, as well as other rare species. Lydd ranges has a range of interesting habitats from shingle to hay meadows, and the undisturbed nature of the site makes it an ideal spot for bumblebee hunting. Advice by the MOD has also been given to tenant farmers on managing wild flower meadows and a sensitive cutting regime of pathways has also been implemented by Landmarc.

To survey some of the ranges several members of the MOD team joined in for an afternoon of bumblebee identification training, and a walk around an area of the ranges which is being managed especially for pollinators. These hay meadows, full of flowering plants which attract bumblebees, were buzzing with rare species during the event. Several of the plants found in this type of habitat, such as red clover and tufted vetch, are an excellent source of pollen and nectar for long tongued bumblebee species. Three Biodiversity Action Plan species, the brown banded carder bumblebee, moss carder bumblebee and ruderal bumblebee were seen foraging in the fields, as well as several of our common species. This was a great result, and shows that the ranges are providing some ideal habitat for bumblebees. The team plan to revisit the ranges in future years to continue our search; hopefully next time we will also spot a short haired!

MOD partnership working in Wales with Sinead Lynch

The 'Pembrokeshire Bumblebee Path Project' began in 2009 and manages habitat along the Castlemartin Range Trail in Pembrokeshire, in partnership with the MOD, Pembrokeshire Coast National Park Authority and Landmarc. The aim is to provide more habitat for rare bumblebees found on the MOD's Castlemartin Range, and provide a great route for people to look for rare bumblebees. We developed a project leaflet, and installed four interpretation panels along the route. We now regularly monitor the habitat along the



Ruderal bumblebee one of the UK's BAP species found on the ID training walk
© Bumblebee Conservation Trust

route, and have found shrill carder bees on route too! The project won a MOD Sanctuary award.

We have also been working with the MOD to survey and provide habitat advice at RAF Brawdy near Solva in Pembrokeshire. The site contains ideal habitat of extensive areas of hay meadow and grassland.

South West partnership with Aoife O'Rourke

Conservation officer for the South West of England, Aoife O'Rourke, has been working with the MOD conservation volunteers since early 2014, when she took up post. This work has predominantly taken place on Salisbury Plain with Imber and Larkhill conservation groups, however she has also written management guidance for Porton Down.

In 2014, Aoife and colleague Richard Comont lead a very successful bumblebee identification workshop for the conservation volunteers and Natural England staff. The workshop

focused not only on the common species but also the numerous rarities that one is likely to come across on the plain. Since then, Aoife has helped volunteers to set up three beewalk transects on the plain, in a bid to record and monitor bumblebee population changes in this unique landscape.

Nikki Gammans, Gemma Baron, Sinead Lynch and Aoife O'Rourke
Bumblebee Conservation Trust



Moss bumblebee © Bumblebee Conservation Trust

CarillionAmey joins forces to enhance military communities

CarillionAmey (CA) provides support services on behalf of the Defence Infrastructure Organisation (DIO) to the MOD across the four UK Regional Prime Contracts and the National Housing Prime Contract. Prior to this, CA delivered the former Regional Prime Contract in the Central Region as CarillionEnterprise. It was also the previous supplier to the Housing Prime Contract under the guise of MODern Housing Solutions (MHS).

Outlined here is some of the significant investment made by MHS in providing a positive contribution to military communities and a look ahead to the new contracts and how this work will evolve to meet the changing needs of our military and their communities.

The Beginning

As MHS, CA always took its role in the military community seriously; although its core responsibility was to maintain and deliver improvements to the housing estate, there are many early examples of community based projects, with staff and suppliers going 'above and beyond' to improve service family environments. Typically, these were engineered on the back



RAF Benson allotments © Rosie Brown

of refurbishment and upgrade works using the leverage and enthusiasm of both MHS staff and suppliers.

However, it was not until 2011 that MHS's Community Programme really started to gather momentum. This drive arrived in the shape of a dedicated lead to manage a programme of play parks and community based projects. Enter Rosie Brown who was able to identify worthy projects for MHS to support.

Community Needs

Using the benefit of Rosie's excellent military network, MHS was able to engage with the service community to understand what needed to be done. For the first time MHS was able to develop a genuine customer based Community Needs Plan rather than identifying and delivering projects which it thought would be valued.

Engaging Staff

Whilst a significant number of MHS staff had been involved in early community projects, in 2011, with a dedicated lead and sustained campaigns to encourage participation, wider enthusiasm started to spread and engagement numbers grew significantly. At the end of 2013, half of MHS staff (approximately

200), had taken part in a community project in the previous 12 months. In 2014, a busy year spent delivering an unexpectedly high volume of project work and preparing for the Next Generation Estate Contracts (NGEC), MHS came within a whisker of matching that performance.

Engaging Suppliers

MHS's engagement of its staff tells only part of the success story. The significant support from its supply chain, many of whom gave time, labour and materials and in some cases, finance, ensured that ideas could be realised.

The Projects

Undoubtedly, there are too many individual projects to mention in this article but arguably some do stand out. Here, is just a snap shot of community projects MHS were able to support.

Didcot Kitchen Gardens

By engaging the BBC2 Gardeners World team, providing labour, materials, funding and effective liaison, a stunning cut flower and vegetable garden was created at a time when 11 Explosive Ordnance Regiment (EOD) needed their families to feel particularly valued.



Fantastic flowers at Didcot © Rosie Brown

RAF Benson Allotments

By providing advice, guidance, labour and funding RAF Benson was able to create its desired allotments in the heart of the station.

RMB Chivenor Memorial Garden

By providing funding, horticultural expertise, plants, shrubs and labour RMB Chivenor were helped to realise their plans for a memorial garden and benefitted from a bespoke silverware memorial piece for their mess.

SSAFA Norton House Flat

By funding in its entirety a new self-contained flat and play equipment for injured Service personnel and their families at the SSAFA Norton House at Headley Court.



SSAFA flat © Rosie Brown

Play Park Refurbishments

Although MOD play parks are maintained and improved through funding from DIO, housing improvements often take priority. However, with the assistance of the Royal Society for the Prevention of Accidents, play park refurbishment was prioritised and funding secured through the Armed Forces Covenant LIBOR fund. Local MHS work parties also made some significant additional improvements to the MOD play park estate, which DIO has adopted as part of their future maintenance programme.

Publicising Successes

In 2012 'Joining Forces', the MHS dedicated community work quarterly newsletter was launched to give positive publicity to all ongoing projects and to encourage garrisons,



Chivenor memorial garden © Rosie Brown

stations, units and bases to request help from MHS for their proposed community needs.

Awards

MHS's early community efforts were part of the reason behind its recognition as the FM Magazine Sustainable Business of the Year Award in 2010. By the end of 2013 with further evidence and the monumental growth in staff engagement, MHS was able to secure the Carillion Services MD Award for Community Sustainability, beating off more than 100 other contracts in the process. In 2014 the London Regional team were recognised for a productive year in the community when they received a Highly Commended in the Carillion Chief Executive Awards.

What lies ahead?

CA, working in partnership with DIO, remains committed to making a real difference to the communities it serves. Building on our previous good work, CA will empower its staff and suppliers to find worthwhile projects across the estates it manages. Separate to its Service community work, CA encourages all staff to do more to become volunteers. Using a paid leave policy, staff will be able to support worthwhile projects, causes and charities where they live. In turn CA hopes that this will widen their awareness and skills, helping them not only in their day jobs but with their Service Community Projects.

Seaton Price

CarillionAmey Head of Sustainability



Didcot play park © Rosie Brown

Demolitions + Amphibians = Population Explosion! **At DM Kineton**



Great crested newt © Crown

Defence Munitions Kineton is located in Warwickshire. The MOD estate is 2,500 acres in area with 13 miles of arterial road, 19 miles of railway and with a 24/7 service if necessary. The Head of Establishment has a responsibility for approximately 900 people on site or within the immediate area and it is also home to a large population of great crested newt (GCN).

After decades of use, the demolition ground, run by Defence EOD Munitions School (DEMS), an area used for controlled explosions (referred to as demolitions) and training, was covered with craters. Access was becoming constrained by the water filled craters, which had become colonised by aquatic vegetation and surrounded by tussocky unmanaged grassland. With no space remaining to undertake the demolitions without encroaching on the safety buffer zone, it was time to fill in the craters and restore the nice flat demolition area.

However, over decades of use, the demolition training had inadvertently created an ideal habitat for amphibians as the 70 plus craters had become small vegetation filled ponds suitable for amphibians to lay their eggs. The small and sometimes ephemeral

nature of these ponds restricted fish from colonising, which reduced the level of predation upon the amphibian larvae. How could any self-respecting amphibian resist? The ideal habitat created by the demolitions literally resulted in a population explosion.

As the demolition ground cannot be relocated due to the required safety buffer zone, the amphibians needed to be translocated to allow a safe demolition area to be restored. Middlemarch Environmental Ltd, the consultancy arm of our local conservation charity Warwickshire Wildlife Trust was called in to survey the ponds and to determine how the amphibians could be relocated.

In recent years GCN have significantly declined across Europe, and now Britain supports a large population which are protected under European law. Like many other amphibian species worldwide, smooth newt, common frog and common toad have also suffered declines in recent years either due to habitat loss and fragmentation or through disease. They are legally protected against the



New habitat creation by the Royal Engineers © Steve Edwards

use of all indiscriminate means of capture and killing. The common toad is also listed as a Species of Principal Importance for Nature Conservation in England.

To replace the loss of the breeding ponds, terrestrial foraging and hibernation areas, two existing large ponds were restored, three large ponds and new tussocky bunds and hibernacula were created. The new terrestrial foraging bunds, seeded with wildflower species, is a third larger than the terrestrial foraging ground lost within the demolition area. The creation of new and the restored ponds will contribute to the local Biodiversity Action Plans for both newts and ponds. One target for the local Biodiversity Action Plan for ponds is to restore 142 degraded pond sites by 2026, and this project has contributed two ponds within one year.

During the project, exclusion fencing, pitfall traps and refugia were installed to enable the ecologists to catch all of the GCN and other amphibians before the works began. The population of GCN present on site required a minimum of 60 days trapping under Natural England guidelines before the area could be considered clear of amphibians. During the trapping period a total of 131 GCN, 50 smooth newts, 4 frogs and 323 toads were caught and moved to suitable habitat away from the remediation area. To ensure that the amphibians do not



Restored pond © Steve Edwards

return to the demolition area, permanent exclusion fencing was installed, preventing the amphibians from colonising any new craters which will be formed as the normal operations continue.

To facilitate the works the Royal Engineers were called in from Bicester to undertake the habitat creation and ecological enhancements whilst restoring the demolition area for operations and training. The work

was conducted over four phases with Phase 1 seeing a total of 3,320m³ of spoil being removed having dug down to the deepest point of 2m, weighing in at 4,824 tonnes which then had to be relocated on site until reused for landscaping. Phase 2 saw the excavation of the new ponds. Phase 3 was to restore the demolition ground and Phase 4 is to maintain the demolition ground to ensure the GCN do not return to the impact area. By March 2015, the plant works were completed and the demolition ground handed back to DEMS Trg Regt fully operational, with a new purpose built habitat for the newts to thrive in.

All in all, this project took over two years to complete successfully, with the involvement of many stakeholders. These included the on-site DM Kineton personnel, DEMS personnel, the Royal Engineers, CarillionAmey (Regional Prime Contractor) and Middlemarch Ltd.

Steve Edwards
Sustainability Development Officer
DM Kineton



Common toad © Crown

Managing the historic environment on the Defence estate in Wales



Brownslade barrow skeleton excavation © Crown

The UK Defence estate is enormously rich in historic and natural environment assets. Shaped by the activities of past generations, the people of Wales have inherited a unique and constantly encountered historic environment that contributes to a sense of place and helps to define Wales as a nation. The importance and added value of this heritage continues to be recognised, managed and appreciated by the Ministry of Defence.

As of 2014 the UK Defence estate comprised 228,000ha of land and foreshore and the MOD held rights over a further 204,900ha. In total this represents 1.8% of the UK land mass. Approximately 19,070ha of this land is located in Wales.

Around a third of the total estate is classed as 'built' and includes airfields, bases, offices, facilities and accommodation. Those sites that have been occupied for a long duration usually possess a strong and important military heritage identity. The remainder comprises of 'rural' estate and includes ranges

and training areas. Typically this is undeveloped land that has not been subjected to intensive agricultural improvement. Consequently, the survival, diversity and extent of the known archaeological remains is of enhanced archaeological significance and value.

The Defence estate in Wales collectively preserves many thousands of individual historic environment assets. Individual elements on their own may seem insignificant, but collectively they are of great

significance. Only a small number of ancient monuments (37) and historic buildings (7) are legally protected; Cadw, the Welsh Government's historic environment service's designation programme will increase this number over time.

A key difference between historic and natural environment concerns is that archaeological remains are a finite and non-renewable resource, which in many cases are highly fragile and vulnerable to damage and destruction. Unlike many aspects of the natural environment, archaeological sites cannot recover; once they have been destroyed, the archaeological information has gone and cannot be retrieved or re-constituted.

The typical archaeological site types of traditional archaeology on the Defence estate such as Bronze Age round barrows and Iron Age hillforts tend to be incredibly well preserved. The 2004 Sanctuary Award winning excavation at Brownslade Barrow, Castlemartin revealed exceptional funerary and agricultural evidence. Protection from development is one reason for this occurrence, but of greater importance are the significant efforts undertaken by the MOD to proactively monitor and manage these monuments.



Sennybridge Star protecting an Iron Age hill fort © Pete Telfer

Preservation strategies include the identification of heritage assets on military maps, the erection of 'no-dig' signs (the instantly recognisable star signs) and cyclical condition monitoring visits. The exclusion of fragile archaeological sites from military training is featured in standing orders for ranges and training areas, and briefings to military users specifically mention the location and fragility of heritage. Routine management tasks such as bracken control on earthwork monuments are identified within site Integrated Rural Management Plans. Other issues are quickly identified and business cases for conservation works are developed to secure funding and clearances. This overall approach has been highly beneficial for Welsh heritage.



Roman coin – Caerwent © Crown

These traditional archaeological sites are not necessarily restricted to the larger, more rural ranges; the enigmatic Roman building at Whitewall Brake in Caerwent Training Area is curiously co-located within the densely built up network of industrial buildings that comprised the former Royal Naval Propellant Factory. Even during WWII the value of heritage was identified and protected, perhaps a sense sharpened through fear of what might be lost in the near future. A MOD excavation by Operation Nightingale is defining the character of this monument in a measured manner, respectful of the monument's scheduled status.

While routine civilian development and improvement activities may have been arrested on the Defence estate, military activities have imposed their own rich and varied archaeological evidence in the form of buildings,

structures and the carefully constructed and managed use of space, for example impact and danger areas.

Locating military training – with its emphasis on digging-in, the use of heavy machinery and impacts from munitions – in areas of high archaeological sensitivity may seem counter-productive and destined for catastrophic failure. While rare accidents and misunderstandings inevitably happen, in general the robust, proactive and careful management of military activities in Wales has ensured that historic environment assets are successfully protected from unnecessary destruction and ill-considered change.

Central to this success was the establishment of the conservation groups during the 1970s. A number thrive in Wales with active memberships and work programmes. Such fora are incredibly useful opportunities for informed and respectful dialogue between the MOD, Statutory Bodies and other interested parties. Proposals can be discussed, issues raised, evidence identified and cognisant decisions made.

The future holds many challenges for the Defence estate. Defence needs continue to evolve with the Defence requirements of the national interest and there is greater pressure to work within a physically smaller footprint. The ongoing disposal programme and the requirements to upgrade existing

and create new facilities means that heritage concerns need to be an early and central consideration and that appropriate actions (always comprehensive archaeological recording, and sometimes designation) are put in place.

The historic environment assets on the Defence estate, whether of national, regional or local importance, must continue to be proactively managed. However, change and decay are inevitable and preservation of everything is impossible. The aim should not be to preserve everything in aspic, but rather to ensure that change is managed in a sustainable way. The historic environment is an asset and not a barrier to change; this rich cultural inheritance is a vehicle for regeneration, sustainable development and for fostering local military character and distinctiveness.

The MOD, as a significant landowner, manager and curator of important historic places, has a key role to play in continuing to ensure that the impact of change on heritage values is recognised and managed responsibly. Informed and appropriate decision making will continue to ensure that the heritage values of the historic environment in Wales are carried forward for future generations, military and civilian, to enjoy.

Jonathan Berry

Senior Inspector of Ancient Monuments and Archaeology
Cadw, Welsh Government



WWI trenches – Penally Training Area ATE Pembroke © Wessex Archaeology

Reflections at Foxglove



A view over the lake from the hides. 75 kingfishers have been caught here © Foxglove

The volunteer pool is enormous with some 60 people turning out on a 'worky-day'; over 35,000hrs of volunteer time have been committed over the past three years, which costed out at just £5 per hour would equate to £175,000 of work.

With the recent 'Festival of Nature' successfully behind us and the curtain down on the hundreds of visitors who enjoyed the experience, Foxglove returns to its tranquil, leafy state couched between the Garrison and the Training Area at Catterick. Birds are heavily in moult, dragonflies are starting to emerge, and with the prospect perhaps of some warmer weather, the peaceful mid-summer ambience creates a tangible atmosphere across the reserve. Dexter cattle quietly munch their way through the wetland vegetation and reed warblers squabble within the phragmites; water voles 'plop' hurriedly and disappear under the water. These are the scenes that greet the myriad of people from all walks of life that frequent this unique MOD reserve.

Hidden away behind the wire Foxglove is a byword today within the local community. Consistency has been key, and with assistance from a wide ranging group of supporters

locally and nationally, the site has developed and thrives.

It was the late Colonel James Baker, Head of MOD Conservation, who supported the idea of this military reserve back in the late 90s, and his vision to have a Defence conservation asset at the heart of this large, mixed conurbation was certainly appropriate. Few of those individuals who have passed through the gates would disagree.



Adults and children take part in a natural history based mixed-media art session © Foxglove

The 'never a dull moment' adage is forever true on the reserve where a significant list of species has been identified by visiting professionals and knowledgeable enthusiasts alike. The volunteer pool is enormous with some 60 people turning out on a 'worky-day'; over 35,000hrs of volunteer time have been committed over the past three years, which costed out at just £5 per hour would equate to £175,000 of work. The impact on the habitat is quite amazing, and as examples large swathes of conifers planted in the 1950s have been taken out and replaced with native mixes, and hectares of willow carr have been coppiced and pollarded in rotational blocks.

Education continues to play a prominent part in the activity schedule with more than 25,000 school children from as far away as York, Scarborough, Leeds and Durham taking part in tailor-made educational visits. Classes have included dissecting owl pellets, building bug houses and other interesting topics related to the species recorded on the site. Work experience opportunities for many local youngsters have been provided, and more than 1600 local Community Groups have taken advantage of the four miles of pathways and boardwalks that are open to all.

Information Technology at Foxglove has had to move with the times and on the back of our excellent web site, which receives thousands of hits every

Table 1

SPECIES	TOTAL
Buzzard	410
Kestrel	1089
Lapwing	1700
Tawny Owl	686
Wren	2251
Pied Flycatcher	2115
Willow Warbler	5973
Chaffinch	9662
Greenfinch	8526
Lesser Redpoll	2105

Examples of totals of new birds ringed in and around Foxglove Covert LNR



An 'all female' team of ringers processing the birds caught in the mist nets © Foxglove

week, the reserve has succumbed to Facebook and Twitter – both with hundreds of followers. People nationally and internationally follow the blog – some of whom have never been to Foxglove!

Bird ringing and the study of bird migration through the British Trust for

Ornithology is synonymous with the reserve and the agri-environmental agreement we have with Natural England. The oldest marsh tit ever recorded was recently re-caught at Foxglove aged almost 11 years, and we have also ringed and re-trapped the oldest garden warbler ever recorded in the UK at just over 10 years old.

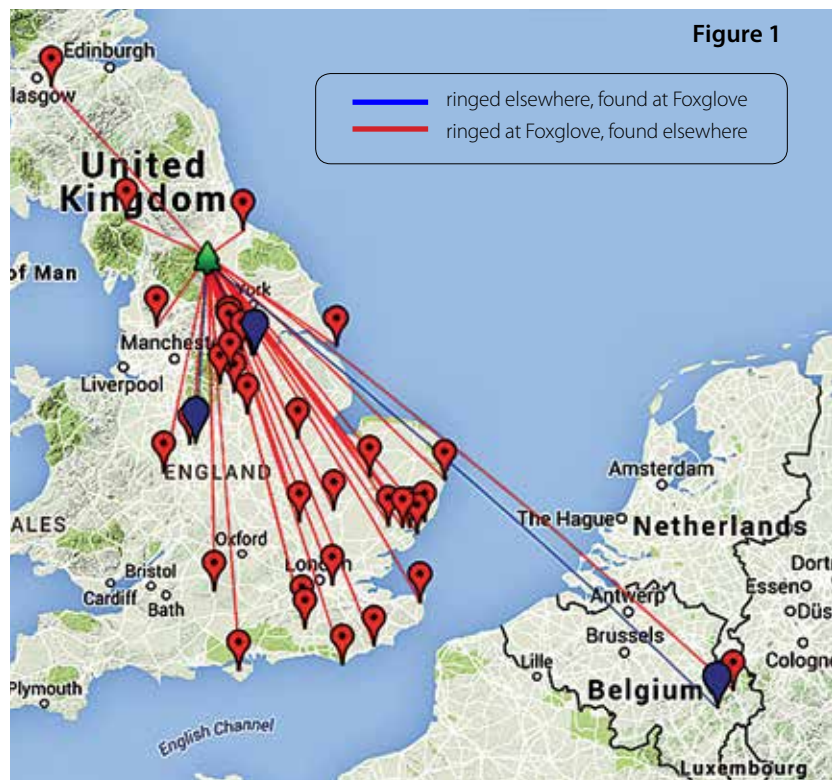


Figure 1

Lesser redpoll recoveries to and from Catterick showing the wide dispersal of this species © Foxglove



A blackcock with a necklace collar and a radio transmitter attached. This bird was translocated from Wolsingham, County Durham, to Coverdale in November 2013. It has been breeding on Feldon ranges throughout 2015 © John Hayden

Altogether 145,000 new birds have been ringed in Foxglove and on the local training area; more than 204,000 have been processed. The Constant Effort Site (CES) programme has just concluded its 23rd year and no compulsory visit days have ever been missed which is remarkable. The data accrued on bird phenology at Foxglove exceeds that of any other CES site in the UK. Examples of the totals of species ringed can be seen in Table 1. The detailed recoveries we receive are really informative and the movements to and from Catterick of lesser redpoll recoveries alone can be seen in the map, Figure 1.

Foxglove is in the Flagship Pond scheme and is considered to have

one of the best 100 wetlands in the country. Species like the mud snail *Omphiscola glabra*, marsh stitchwort and pillwort, water vole, great crested newts and marsh cinquefoil, all flourish in the pools which are fed by pipe from an underground aquifer. In just the last month a prominent Freshwater Habitats consultant has described Foxglove as having the greatest density of water voles he has ever come across; he was also astonished by the number of great crested newt tadpoles found as part of his survey. Another visiting specialist from Hampshire stated the wetland would qualify for the top ten in the country, not the top 100! The

county botanical recorder, a member of the Military Conservation Group, who has completed several surveys in the past month, confirmed that Foxglove has the highest number of plant species recorded on one site, anywhere in the entire vice county.

This is a nature reserve for people. The biodiversity increases every year, but only as a result of the hard work, management, foresight and determination of a team of like-minded individuals who nurture the benefits and tackle the challenges. The reserve fulfils a multitude of roles and the MOD should be proud of the wide ranging goodwill and mutually shared benefits enjoyed by the stakeholders, 660,000 visitors, and the 2500 species that have shared this special place.

Foxglove Covert Local Nature Reserve is a Defence Infrastructure Organisation site. It forms part of the Service Delivery Training component in the North of England Region and is managed by a team of volunteers. Activities cover all of the Training Area as well as the reserve, and several of the reserve enthusiasts are also members of the Catterick Training Area Conservation Group.

Major (Retd) AJ Crease, late SCOTS DG
Deputy Commander - Executive Officer
DIO Service Delivery - Training North



Ratty enjoying the fruit provided by the Foxglove volunteers © Danielle Nichol

Tanks for the memories, removing redundant fuel infrastructure

The defence of the realm is often the driver of technological advance in disciplines far removed from the provision of platforms to launch projectiles, or of defensive systems to resist such attacks. Much has been written about historic armoured fighting vehicles, the 1914 originals being code named Water Carriers for Mesopotamia, with all later vehicles being referred to as tanks.

Underpinning the generations of vehicles lies an essential, but largely unnoticed network of pipes, valves and tanks, to store and load the various fuels needed, which have steadily evolved as steam power has been replaced; by petrol, by diesel, and piston engines given way to jets and turbines. Massive fuel infrastructure has become redundant, thrown dead and decommissioned to the standards of the time.

It is quite rare for such derelict fuel infrastructure to result in a sudden release of fuel, this being mainly the preserve of active apparatus due to the volumes and pressures involved, and the multitude of operations involving the coupling of hoses.

However, when infrastructure remains unused nature and entropy

are quick to move in, and once robust underground tanks and pipes succumb to rusting, pinholes appear, and slow, chronic contamination of soils and groundwater may result.

In 2011 DIO carried out a Fuel Infrastructure Asset Assessment which identified 612 redundant fuel assets, and a requirement to identify and remove these from environmentally sensitive locations using contractors, overseen by specialists from DIO's Safety, Engineering & Environment (SEE) teams.

In 2014 the redundant RAF and USAF fuel infrastructure at the MDPGA Wethersfield MOD Police training school was the focus of the programme.

The redundant infrastructure comprised 30 underground and 15 above ground storage tanks, dating from the 1960s and 1980s, with a combined storage capacity of 2,658,860ltrs.

The Estate Management East team at Wyton supported by DIO SEE ELM, commissioned contractors to carry out the tank remediation and demolition works.

The contents of the tanks had the potential to result in significant

ground and groundwater contamination, should they have been allowed to escape to the environment. 2,134,000ltrs of oil contaminated water was cleaned and discharged to sewer, 29,000ltrs of diesel oil and 750ltrs of petrol were recovered for re-distillation.

All of the tanks and pipes were excavated and cut up for scrap metal. No items were recovered for reuse by the MOD, due to their age and poor condition. The resulting excavations were filled with recycled crushed concrete, and topped off to ground level with clean rock and soil.

The MDPGA Wethersfield site now has the dual benefits of large clear, clean areas that it can reuse, and a significantly lowered environmental risk.

DIO SEE ELM are currently assisting DIO SD Training in the removal of redundant storage tanks and pipelines from the former RAF Sculthorpe site in Norfolk, of a total capacity of 3.5 million litres.

Chris Burson

Senior Environmental Manager

Stuart Lipscomb

Technical Manager SD TFM

Defence Infrastructure Organisation



Going... © Crown



Going... © Crown



Gone... © Crown

MOD supports the native British black honey bee

Prior to the 1950s the British black honey bee *Apis mellifera mellifera* (Amm) was common throughout the UK having been here since the last Ice Age. For many hundreds of years this bee has been used almost exclusively by the British beekeeper. That was until the indigenous population of Amm was almost completely wiped out by Isle of Wight disease in the late 1940s and most recently by the varroa mite, which was imported into southern UK in 1992.

However, throughout the UK a few isolated pockets of almost pure Amm still exist, those we know of are in Scotland, in Northumberland, on the Isle of Man, in North and West Wales and in Cornwall.

These colonies of black bees are, generally, looked after by beekeepers, as in truth, wild or feral colonies of bees no longer exist, having been wiped-out by the varroa mite.

In Cornwall and Devon, BipCo (Bee Improvement for Cornwall) and B4 (Bring Back Black Bees) have been carrying out DNA analysis to identify whether the British black bee still exists, and its whereabouts in each county. Interestingly this analysis has shown that yes, Amm is still present



Cornish black honey bees returning to the hive after a day foraging on the ranges © Nick Bentham-Green

and what is more, there is a unique Cornish version or 'deme' of Amm. Also, that there is a significant percentage (approx. 40-50%) of Amm in many honey bees throughout the UK, and by careful selection (i.e. breeding) that percentage can be increased over a relatively short period of time (a few years).

Amongst the many challenges facing the British black honey bee, one of the greatest is hybridisation and, for the bee breeder, how to keep the genetic line as pure as possible. This is made all the more difficult because many beekeepers import bees from abroad;

in fact, last year between 12-15,000 queen bees were imported.

So in an effort to ensure our native Amms breed true, the breeding must be carried out at isolated sites.

With that in mind, through the auspices of the Anthony Conservation Group, the Commandant for SW ranges, Lt Col Andy Westcott was asked if an area at Tregantle Fort could be used as a site for breeding Cornish black honey bees. The answer was yes, and a subsequent recce, carried out by Defence Infrastructure Organisation, Landmarc and BipCo proved that the butts at the end of a disused range would be an ideal spot.

The bees were moved onto site last year, and the ranges at Tregantle have indeed proved most successful. It is hoped this year to build on that success, and if possible to expand the project onto more MOD sites in the future, which provide one of the key criteria to breeding pure strains of bee – isolation.

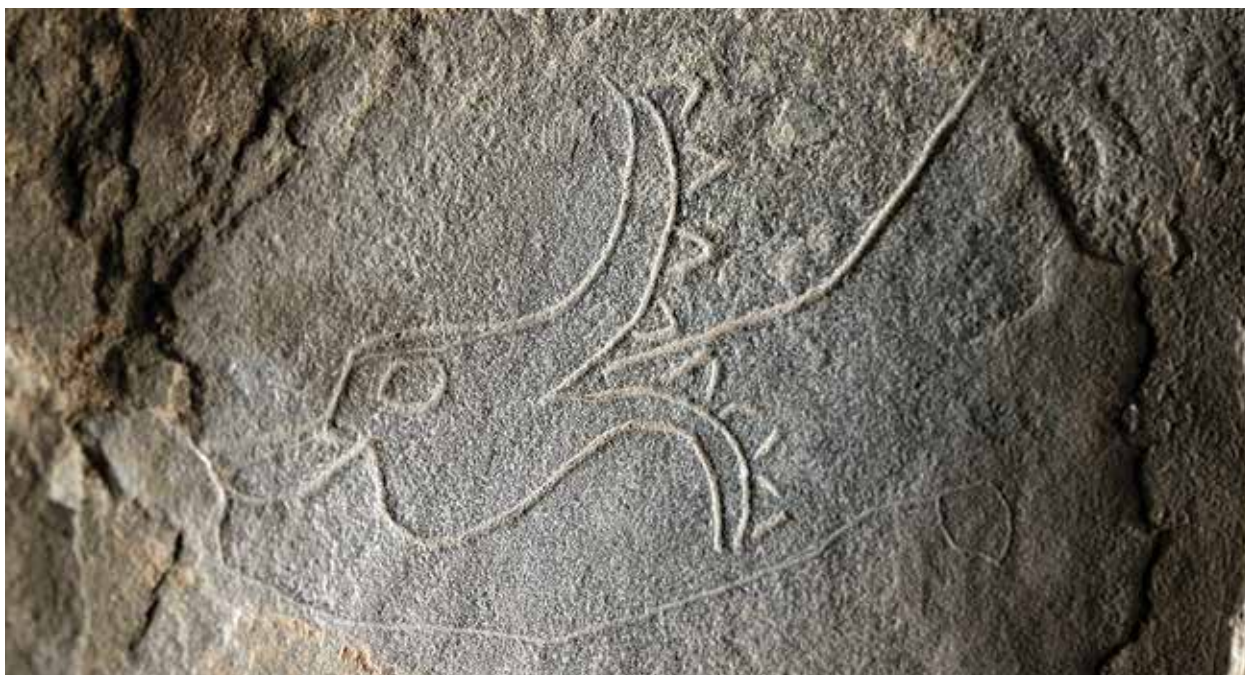
Nick Bentham-Green

Chairman of BipCo and member of Anthony Conservation Group



The author and beekeeper John Chadwick outside Tregantle Fort © Nick Bentham-Green

Animal carvings from Torrs Cave



The 'sea monster'. The head is only 3cm wide, probably engraved with a sharp tool © Dumfries and Galloway Museums Service

The coast of Dumfries and Galloway is riddled with caves. One of the most intriguing of these is Torrs Cave which lies on the Dundrennan Training Range, within Kirkcudbright Training Area.

The historical and archaeological significance of Torrs Cave was first noted in the 1790s when high stone walls at the mouth of the cave could still be seen. These structures and occupation layers within the cave itself were excavated in the 1930s and finds suggested occupation from the Iron Age to the 18th century.

In 1977 a German cave and mine explorer found two small carvings at the very end of the cave. One was of a stag and the other of some sort of sea monster. He realised that they were potentially important, cut them from the cave wall and took them to the Stewartry Museum in Kirkcudbright for identification. They were subsequently sent to Glasgow Museum where archaeologist Jack Scott reported the stag carving as possibly of Iron Age date and the monster as Scandinavian in style, possibly dating back to the 9th or 10th century.

The cave was revisited in 2014 to assess its archaeological significance and see if any other carvings could be found. The cave is just over 20m long. The impressive entrance is 6m high and some 4m wide and the prehistoric and medieval walls uncovered during the excavations in the 1930s can still be seen. Beyond the entrance is a large chamber, with intact archaeological deposits, which leads to a narrow rift about 1.5m wide. It is at the end of this rift, close to the cave floor, that the carvings were found in the 1970s. Unfortunately, and despite a careful search, no other carvings were located. But both walls at the end of the cave were found to be covered in 19th century graffiti – the earliest dated name is 1800. Investigation of the cave was made more interesting by the presence of a large colony of European cave spiders *Meta menardi* and, in winter, hibernating herald moths *Scoliopteryx libatrix*.

A number of experts have been consulted about the carvings and opinions differ. There seems to be general agreement that the stag could be later prehistoric, probably Iron Age.

This fits with the evidence from the excavations which show that the cave was used in the first and second centuries AD. The monster carving is proving more contentious. Some have agreed with the original suggestion of a 9th or 10th century date and seen similarities with dragon heads on Viking-period sculpture in northern England. Others think a later medieval date is more likely and a few have suggested that both carvings may be 19th century graffiti.

So the panel is still out on the date or dates of these carvings. What we do know however is that engravings of this type are exceedingly rare and make Torrs Cave a unique site within the wider MOD estate. The carvings remain in the good care of the Stewartry Museum.

John Pickin

Former curator Stranraer Museum and member of the West Freugh Conservation Group

David Devereux

Former curator Stewartry Museum

Cooperation between Nations Conservation of the Senne Training Area



The extensive heathland habitat on the Senne in bloom © Dr Gerhard Lakmann

The Senne Training Area is a beautiful landscape of woodland and sandy heath with such a rich variety of species that it is considered to be one of the most important areas for nature conservation in northern Germany.

The Senne was formed as a result of glacial action in the last two Ice Ages depositing huge quantities of low nutrient, acidic sand that was consequently modelled by wind and rain into inland dunes and brook valleys. This made for attractive countryside full of wildlife.

Although human activity and livestock helped create a heathland, the poor quality of soil meant that the Senne was not particularly suitable for either settlement or farming, which was the main reason why the area was chosen for military training in 1892.

At the end of World War II, the Senne Training Area was taken over from the Wehrmacht for ongoing military use by the British Army of the Rhine. In the mid-1950s, with the formation of the Bundeswehr, increasing numbers of troops were using the training area, which was expanded and re-configured with new field-firing ranges, roads and infrastructure for tracked vehicles. Before this time, not much consideration was given to the protection of the environment, but concerns were beginning to arise about soil erosion, water quality and damage being caused to forests and heath.

In the late 1950s, the Land Maintenance Team (LMT) was formed with the principle aim of protecting open areas of the training area from erosion and forest succession. Although the team were employees

of the German Federal Government, they were funded and tasked by the British Forces, so this marks the beginning of a co-operative relationship in estate management that persists to this day. In 1965, the LMT was joined by the Engineer



The Pasque flower © Dr Gerhard Lakmann

Plant Detachment under Range Control to support the maintenance of range infrastructure.

The succeeding decades saw the ongoing development of the training area as it adapted to new weapons systems during the Cold War. This coincided with an increasing public awareness of environmental issues, with Germany in the vanguard, including greater scrutiny of land and its management. It was recognised that information on nature in the Senne was rather sparse in comparison with other areas due to restrictions on access to a military site.

1984 saw the foundation of the Environmental Working Group – Nature and Military in the Senne Training Area. Its mission was to conserve the variety of habitats and protect the rich diversity of wildlife and rare species that live in the Senne. The initiative sparked the ongoing era of close co-operation between environmentalists, the British Forces, local and federal authorities that allowed for a systematic mapping of habitats and wildlife, which had not been previously achieved. All types of fauna and flora were examined, along with the monitoring of heath, grassland, woods and streams. Practical conservation measures to assist endangered species were also implemented, such as erecting nestboxes and fenced enclosures for rare plants, such as the pasque flower.

In 1987, a flock of rare-breed sheep were introduced to the area by the Senne Biological Station to undertake conservation grazing as a more traditional and aesthetic complement to the main effort of preserving heathland by the tractors and machinery of the LMT.

In the early 1990s, the Haustenbeck Tower, which stands out proudly above the forests as an icon of the Senne, was listed by the local authority, along with an old ruined church, that is testament to former communities which were removed when the training area was



Senne flock on the training area © Dr Gerhard Lakmann

enlarged in the 1930s. In the following few years, over 60 prehistoric tumuli that had been identified on the Senne and neighbouring Stapel Training Area were also listed as protected and ancient monuments.

The European Union Habitats Directive created the ecological network known as Natura 2000 designed to conserve threatened and endangered species of birds, other animals, plants and habitats. As the majority of the Senne Training Area is designated a Fauna, Flora and Habitat site, which is equivalent in Germany to a Site of Special Scientific Interest, this lead to the requirement for a Natura 2000 Area Specific Arrangement. The

agreement was produced and jointly signed in May 2009 between the State of North Rhine Westphalia, the Federal Republic of Germany and was acknowledged by the British Forces in Germany. The responsibility for implementing Natura 2000 on the Senne falls to the Federal Forestry Department, who formed a working group, which again includes the British Forces, other German authorities and local ecologists. In this case, an environmental contractor has also been employed to undertake nature and habitat mapping with the aim of producing a comprehensive Natura 2000 management plan for the Senne, based within the context of ongoing military use.



Haustenbeck Tower © Dr Gerd Lakemann

The Senne Training Area remains a fine countryside of woods, grassland and heather, teeming with deer and other wildlife that has been preserved largely as a result of its use as a working, military environment. The British Forces are planning to leave Germany by 2020, which means some uncertainty about the future of the area that will have to be decided by the German authorities and local people. However, we can be justly proud of the excellent cooperation between nations that has led to the conservation of such a wonderful place.

Mark F Johnson MSc
Land Management Services Germany
Defence Infrastructure Organisation

Conserving the bridleway at Elstead Common



Flooded bridleway in desperate need of repair © Landmarc Support Services

Landmarc Support Services has worked closely with the Defence Infrastructure Organisation and Natural England on a project to restore an old flooded bridleway and track on Elstead Common, making it a usable resource for both military training and the local community, whilst preserving and enhancing the protected habitats of a diverse range of wildlife.

Elstead Common in Surrey, in the South East Region of the defence training estate, is an important training feature for soldiers practising logistics and minor infantry manoeuvre exercises. It is also a popular location for walkers, cyclists and horse riders from the surrounding villages, and part of a Site of Special Scientific Interest, a Special Protection Area and next to a Ramsar wetland on Thursley National Nature Reserve.

A section of the bridleway had become increasingly prone to flooding over recent years, with parts more or less permanently under water. This caused the area to deteriorate to such an extent that it was impassable on foot, by horse or by vehicle, presenting significant challenges for military training, public

access and access by the emergency services to respond to heath fires, which are common in the area.

The solution was to raise the level of the track and introduce a prominent camber to enhance drainage. This was achieved using the old traditional method of excavating and re-using the existing green sand from alongside the bridleway to create holding banks and ditches.

The excavated sand was then compacted in layers to form a strong base, raising the bridleway by some 6ft in the worst areas. Rather than just

creating a linear ditch to provide the drainage solution, the material was harvested by constructing a series of linked shallow swales or ponds alongside the bridleway. These will slow down the water flow into local streams and rivers and deliver an additional structural diversity to the heathland mosaic that will benefit wildlife. South facing banks attract basking reptiles like the sand lizard, smooth snake and adder as well as feeding birds such as the dartford warbler, wood lark and stonechat and over 20 species of breeding dragonflies and damselflies. A hibernacula has also been created from the rotting wood covered with soil to provide a safe place for hibernating reptiles, amphibians and other wildlife.

By adopting old fashioned engineering methods to manage the water flow, using natural earth and sods, the project has delivered a sustainable, value for money solution with minimal impact on the environment. The swales also provide an important conservation feature, where local schools, community groups, Wildlife Trusts and families can bring children to safely study the local wildlife.

Robert Hodson

Rural Manager, South East
Landmarc Support Services



The restored bridleway and track provides year round access for all users © Landmarc Support Services

Enhancing biodiversity to the Shoeburyness sea walls



Flower-rich grassland on Foulness Island, excellent forage for bumblebees © Tim Gardiner

Sea walls (vegetated earth embankments) are engineered structures for the defence of coastal land from tidal flooding. They have strong linear characteristics and there are over 2000km of sea wall in England. They include a range of habitats: landward and seaward slopes; a landward berm/folding; borrowdyke (from where clay was dug for sea wall construction); and often abut salt marsh (seaward side). Sea walls are excellent habitats for a range of scarce species such as the brown-banded carder-bee *Bombus humilis*, sea barley *Hordeum marinum* and shrubby sea-blite *Suaeda vera*, all species found along the 30km of sea wall which protect the MOD's Shoeburyness Range (Foulness Island) in Essex.

On the Shoeburyness Range there has been a recent focus on increasing the biodiversity value of grassy sea wall embankments, as part of a large scheme to improve the engineered condition of the flood

defences. During the planning of the improvements to the condition of the sea walls (such as replacing cracked concrete revetment protecting the seaward face), it became apparent that enhancements could also be made to their biodiversity value in liaison with Natural England (the sea walls are within the Foulness Site of Special Scientific Interest) and ecological consultants (notably Christian Whiting of CH2M Hill).

To ascertain the focus of the management regimes, botanical and invertebrate surveys have been undertaken in recent years, revealing a diversity of wildflowers e.g. large numbers of pyramidal orchids *Anacamptis pyramidalis*, along with previously mentioned scarce species. Based on the results of these surveys mowing regimes are to be targeted at specific sections of sea wall to ensure that these species and many others flourish. The grassland cutting regimes by QinetiQ's ground maintenance

team will involve a mixture of early and late cutting; the latter likely to be favourable for the late-nesting brown-banded carder-bee which requires wildflowers for nectar and pollen throughout August and September.

On the seaward face of the flood defences where the scarce shrubby sea-blite may be affected by repairs to the concrete revetment, biodiversity terraces will be built to conserve this upper salt marsh species. The terraces will be planted with sea-blite to offset losses due to works.

More information on sea walls and their biodiversity interest can be found in the recently published Sea Wall Biodiversity Handbook (by Tim Gardiner, Rob Pilcher and Max Wade). The Handbook is available from ANGEASTFRB@environment-agency.gov.uk.

Tim Gardiner
Biodiversity Officer
Environment Agency
Emma England
QinetiQ Ecology Assistant
MOD Shoeburyness Range



Pyramidal orchids © Tim Gardiner

The pride of the Clyde



The Garelochhead estate looking north to the mountains of Argyll © Crown

Situated on the confluence of Loch Long, Gare Loch and the River Clyde the defence landholding is regarded by many as one of the premier sites for wildlife in central Scotland.

The Garelochhead conservation group comprises of four establishments, HMNB Clyde, RNAD Coulport, DM Glen Douglas and Garelochhead Army Training Centre. They all have their own character and range of habitats. The well worn cliché of ‘Scotland in miniature’ can truly be attributed to such an impressive range of environments. From Munro sized mountains, (hills over 3,000ft), through moorland, extensive native woodland to active industrial sites on the shores of deep sea lochs, these habitats play host to many of northern Britain’s classic species. The following is an introduction to each site, covering the species for which they have become synonymous.

HMNB Clyde is the home of the nation’s submarine fleet. A former Victorian estate, it still has the remnants of its policy woodlands. It has changed a great deal since those days and the high security infrastructure which dominates the landscape protects not only the naval assets but colonies of breeding sea birds. One of the highest densities of nesting eider *Somateria mollissima* in the UK can be found here.

A remarkable sight amongst the naval base machinery, the birds nest in the most unlikely of places, from flower planters, sea defences to busy car parks. The first eider was recorded on the Clyde in 1904 and created considerable excitement within natural history societies, especially one of our nation’s oldest, Glasgow Natural History Society.

Most if not all of central Scotland’s natural history societies have visited the establishment to enjoy the 200 plus pairs of nesting eiders and other species in the naval base. With a name that belies its concerning conservation status, common gull *Larus canus* have taken to nesting too, in ever increasing numbers. Ordinarily nesting around isolated lochs and reservoirs in our higher hills, the birds have found a predator free environment within HMNB Clyde. Proactive pest control has reduced predation by the brown rat *Rattus norvegicus* in particular and is



A female eider incubating a Faslane nest site © John Simpson

thought to be the main reason for the birds colonising and exploiting the site. A nest with three eggs will invariably produce a nest with three young. Whilst a conservation success story, the birds can come into conflict with on-going strategic commitments and pragmatic, imaginative solutions need to be found. One such solution and only employed if all other options have been exhausted, is a collaborative initiative to move, under licence from Scottish Natural Heritage (SNH) any nest that might be damaged by necessary naval operations. With incubators supplied by Glasgow University and care facilities delivered by Hessilhead Wildlife Trust, a local wildlife rescue and rehabilitation centre, the birds are in good hands. This process is managed by the Royal Navy’s environmental health department and monitored by the MOD Police. With a supporting cast of black guillemot *Cepphus grylle*, Eurasian oystercatcher *Haematopus ostralegus* and ringed plover *Charadrius hiaticula* the base is a real contradiction in terms and fascinating for visiting ornithologists.

The closely associated RNAD Coulport is the storage and process facility for the nation’s strategic nuclear deterrent. Rising from sea level, its important hilltop heather habitat provides nesting for some of our most threatened species, particularly hen harrier *Circus cyaneus*. Coulport has become one of the only regular breeding sites for this species throughout central Scotland. The MOD Police are pivotal in protecting the 2-3 pairs which breed annually. Each year, the fledglings are ringed and some chicks are fitted with satellite trackers to monitor their movements.

The results have been startling and form the basis for conservation and law enforcement strategies for a heavily persecuted raptor. A partnership project with Forestry Commission Scotland (FCS), the RSPB and the Scottish Raptor Study Group (SRSBG) has been at the forefront of research with this wonderful and enigmatic species.



A hen harrier chick, Holly, gets its satellite tag fitted © John Simpson

In natural history, the picture is always changing. Pine marten *Martes martes*, a once rare and seldom observed mammal is becoming increasingly common. Stories abound of their impertinent raids on depot dustbins and escapes across the car parks making off with their ill gotten gains to nearby woodlands. Otters *Lutra lutra* have also been seen more often as they move through the establishment waterways and Loch Long shoreline. The large explosives handling jetty juts out into the deep murky depths of the loch and through July, August and September when the feeding is at its richest, it would not be uncommon to see minke *Balaenoptera acutorostrata* and occasionally humpback whale *Megaptera novaeangliae*, bottle nosed dolphin *Tursiops truncatus*, harbour porpoise *Phocoena phocoena* and basking shark *Cetorhinus maximus*.

By far the largest of the establishments is the Garelochhead Army Training Centre and has the most extensive range of habitats within the Clyde group. One factor stands out and underpins the success of the area for wildlife, stability. Very little has changed over the years and this has benefitted several species of conservation concern. Taking just one small part of the training complex as an example, this small area plays host to breeding hen harrier *Circus cyaneus*, regionally important populations of skylark *Alauda arvensis*, black grouse *Lyrurus tetrix*, short eared owl *Asio flammeus*, common cuckoo *Cuculus canorus* and Eurasian curlew *Numenius arquata*.

Long term monitoring of the area has shown that most of these amber or red listed species are holding their own or even bucking the downward trend they are facing in other parts of the UK.

An iconic mammal that is under real threat is the Scottish wildcat *Felis sylvestris grampia*. With the help of the Scottish Wildcat Association camera traps have been placed in a number of promising locations to try and capture images of this most elusive of species. There have been a number of reliable sightings and this is a project that will surely bear fruit in the years to come.

Under the chairmanship of Ricky Mackenzie the head of establishment and supported by his colleagues at Landmarc, a more focused and proactive conservation group has been established.

DM Glen Douglas nestles within the hills and glens of west Loch Lomond. A Nato munitions depot, it too has some wonderful wildlife. This establishment has undergone the greatest change and has seen some remarkable species take up residence. An icon of our



A young fledging short eared owl © John Simpson

mountain and upland environment, golden eagle *Aquila chrysaetos* would have been a rare visitor in years past. Known to have bred close to the depot in 1963, the birds returned in 2011 and have bred successfully since. They are watched over by the MOD Police and local raptor study workers with each chick fitted with a satellite tracker to monitor its progress. The wanderings of these young eagles have been fascinating for all and what is emerging is that the defence landholding is becoming increasingly important for young eagles from all over western Scotland. With no adult territories in the lower Lomond hills, the area is something of a 'nursery' for younger birds.

A little creative thinking helps a great deal, with deer carcasses picked up after road collisions and placed out on the hill, nothing is wasted and seen by the eagles through the hard winter months.

With the use of trail cameras, the leg rings for individual eagles attending the baiting sites can be obtained. The data so far shows the movements, behaviours and interactions with other predators and the resulting dataset feeds directly into local and national conservation plans.

The depot is a wonderful example of woodland regeneration. The spartan sheep walk that surrounds Glen Douglas is in stark contrast to the birch and alder scrub that proliferates. A true mosaic of native woodland and plants now carpet the depot. Here too pine martens are making an appearance and have been joined by red squirrels *Sciurus vulgaris*. The population is small but growing and combined with otter, red, roe and fallow deer, DM Glen Douglas is the local hotspot for mammal watching.

Overall, it is a wonderful area with too many people to mention playing their part in conserving, monitoring and protecting a remarkable landscape.

John Simpson
Garelochhead Conservation Group

Waterloo 200, Memorials of the Battle on the MOD estate



The imposing cannon that stand outside Old College that were used at the Battle of Waterloo © Crown

The 18th June 2015 marks the 200th anniversary of the Battle of Waterloo, a decisive battle which finally resulted in the end of Napoleon as a threat to Europe. After his defeat, he was exiled to St Helena where he died in 1821.

During the Napoleonic Wars there was a massive mobilisation of soldiers and sailors, and it is estimated that across Europe 18,000,000 men were mobilised, with 1,000,000 from Britain. Scattered around the MOD estate there are still remnants of one of the world's most famous battles.

Sandhurst

During the Napoleonic Wars it became increasingly obvious that whilst there were some talented officers, there were many which fell below the grade.

Officer cadets had been trained at Great Marlow, but it was decided that a purpose built site was needed and in 1808 Sandhurst was finally approved. In the initial stages a number of buildings were constructed, the most impressive is now Old College which was designed by Thomas Wyatt. In 1812 the Junior Department moved from Great Marlow into Sandhurst, but the site was unfinished so the cadets and teachers had to live on a noisy and busy building site for several years. At the time new restrictions were brought in and only candidates over 4ft 9in (145cm) tall and thirteen years old or over could apply. Outside Old College there are a couple of imposing cannon that were used at the Battle of Waterloo, which are an impressive and permanent reminder of the Battle and

the role of the original buildings at Sandhurst.

Hougoumont Farm

Even on the Salisbury Plain training estate, which was first bought by the Army over 80 years after the Battle of Waterloo, there is a reminder of the Battle. During the 17th and 18th centuries a substantial farm grew up at Collingbourne Ducis and in 1774 it was bought by the Marquis of Ailesbury. The Marquis's sons were in the army and both died at Waterloo, so the Marquis named his farms Hougoumont and Mount Orleans after the Belgian farms on either side of the battlefield.

The Wellington Memorial

After the Battle, Wellington was feted around Europe, being given gifts and honours. One of the finest monuments to Wellington is the equestrian statue now at Aldershot on MOD land. Wellington sits on his famous horse Copenhagen. It is 30ft high and 26ft long and weighed 40 tonnes and much of the bronze used in the statue is from melted down French guns captured at Waterloo. It was originally located on Wellington Arch on Hyde Park Corner, but, partly because it obscured Queen Victoria's view from



Chatham French War Memorial © Brian Simpson



The Wellington Memorial in Aldershot © Crown

Buckingham Palace, it was moved after the Duke's death to Aldershot. It was re-erected in 1885 and stands proudly near the Royal Garrison Church.

The Renovation of the Chatham French War Memorial

One of the more unusual remnants of the Napoleonic Wars is the war memorial in Chatham to the French prisoners of war. There were many Napoleonic French prisoner of war camps across England and the majority of prisoners were kept in over-crowded naval hulks which were floating prisons on the Medway, Portsmouth Harbour and other coastal inlets and harbours.

The Chatham memorial was originally located on St Mary's Island and marked the spot of the burial place of the French prisoners of war who died on the disease-ridden prison hulks in Short Reach near Chatham. The bodies were buried on the marsh land now called St Mary's Island.

By the 1850s the Admiralty wished to expand Chatham naval base so St Mary's Island and the accompanying marsh were bought. The bodies of the French prisoners were moved to a new

cemetery and the present memorial was built to mark the burial spot. However, the interred and memorial were moved again in 1904 as the naval base continued to expand. It was reported that 521 skulls and remains were re-buried in 29 boxes in the Royal Naval barracks site, with a further 362 remains being re-interred in 1991.

By 2013 the memorial had suffered the ravages of time and it was carefully conserved as a permanent reminder of the French prisoners of war who had died in the Chatham area. A conservation team was formed to repair the Grade II listed memorial including Canterbury Cathedral stone masons, Medway Council Senior Conservation Planning officer Matt Newton, and Defence Infrastructure Organisation staff from Shorncliffe, Brian Simpson (LMS) and Debbie Norris (SD TFM) and liaising with Mark Woodley and David Taylor of Pride. The project was completed in time for the annual ceremony in November, which was attended by the French Naval Attaché.

Modern Commemorations

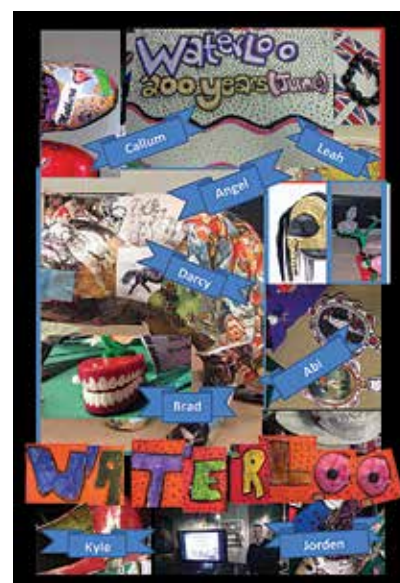
Two nominations based on the Battle of Waterloo were submitted for Sanctuary awards. The first was a new

permanent exhibition by the Royal Green Jackets (Rifles) Museum in Winchester, which included a magnificent diorama of the battle. The new exhibition and facilities was opened by the current Duke of Wellington and has increased the museum's outreach programme, and created a learning space which is used by schools and the local community.

The second nomination was an innovative event which involved eight teenagers using craft materials to bring to life the many different themes in the battle. The students, who are outside mainstream school but within the 'Learning for Life Wales' Program, were given their own display case to fill with their own individual models. 'The Firing Line Museum of the Welsh Soldier' contained the display which encouraged the students to bring their own skills and ideas to the project, not only making their own, but also to allow them to try new things outside of the school environment and reducing some of the barriers that they face in their everyday lives. The project has not only benefited the students, but also the Museum and the wider community.

Chris Daniell

Senior Historic Buildings Advisor
Defence Infrastructure Organisation



Poster exhibiting the eight teenagers individual models, as part of 'Learning for Life Wales' Program © Cardiff Castle Museum

Looking back at public access on the military estate



Castlemartin provides world class opportunities for climbing, an increasingly popular sport © Lynne Houlston

Enjoying the great outdoors is a fundamental part of many peoples lives, but when it comes to access and recreation on the defence estate there are two opposing trains of thought: as one of the largest landowners and a government department we should lead by example, seeking to provide access to the public where possible and the primary purpose of the estate is to provide land for military training. Public access provision has the potential to be dangerous and disrupt training.

The DIO Access and Recreation Team (ART) aim to achieve balance between these two viewpoints. Access projects

carried out have been successful because at their core there have been a collection of key stakeholders working together to provide the best possible outcome.

Outdoor recreation is very much a modern concept. Historically the paths and lanes of the countryside were an essential element of the rural community, offering passage to work, friends and family. The rapid development of the motor vehicle has ensured the rural footpaths, bridleways and byways, the public rights of way, now serve a very different purpose. They are gateways to the countryside.

Walking as a pastime began to emerge in the 19th century with numerous walking clubs being formed. Increasing industrialisation was having an impact on city workers who sought to escape the confines of the urban environment to explore their local countryside. With increasing numbers of people venturing outdoors it became apparent that numerous beautiful areas were inaccessible and out of bounds to the general public.

In protest mass trespasses were organised, most famously at Kinder Scout in the Peak District. A clear public statement, the Government recognised that legislation change was needed, prompting the writing and passing of the National Parks and Access to the Countryside Act 1949.

The 1949 Act established National Parks and public rights of way (PROW) were legally defined and designated across England and Wales. It cannot be stressed enough that this in itself was a big achievement; the first significant step in the creation of public access. The Act solidified public access rights across the UK and recognised areas of land that would act as national flagships for natural history, geology and landscape quality. As a consequence the MOD, alongside all other landowners, is obliged to ensure PROW are clear and useable.

Since the passing of NPAC byelaws have been written to manage sites to enable military training. In addition to creating a safe place through PROW closure during live firing, some estate byelaws also increase public access during appropriate times. Positive relationships with local councils ease PROW management through joint working and, where practicable, create improvements.

As the role of the car increased and outdoor recreation continued to rise there was increasing demand for more countryside. In 1970 the Defence Lands Committee were appointed to review the holding of land in the UK for defence purposes, with a view to make recommendations to the Secretary of State for Defence as to what changes could be made to improve access for public recreation and amenity. The Nugent report was published. It is arguable that the content was ahead of its time.

The new millennium brought legislation that potentially had serious implications for the MOD. The Countryside and Rights of Way Act (CROW) 2000 offered greater freedom of public access on foot to mountain, moorland, heath and down in England and Wales.

Extensive consultation between DIO, Countryside Agency, stakeholders and user groups, as well as effective use of CROW legislation ensured the MOD estate was protected accordingly. Areas of land, unsuitable for unfettered public access were excluded from designation. Work with Ordnance Survey saw the creation of a new mapping symbol informing people of where managed access was available, thus identifying military restrictions that may apply.

As the CROW Act was rolling out the Lands Reform (Scotland) Act 2003 was taking shape, fundamentally changing public access and recreation in Scotland. Under the new legislation each local and national park authority was given the duty to draw up a plan of core paths in their area - 'core paths' form the basic framework of key local routes and are generally the most popular paths. Of greater significance was the granting of a public right to exercise responsible recreational access rights over most land and inland water in Scotland, at any time of day or night.

Liaison between DIO and Scottish National Heritage ensured the

inclusion of specific military lands guidance in the Scottish Outdoor Access Code, clearly defining MOD land as countryside that had to be treated differently. ART sought to protect sensitive locations by presenting the MOD's interests in the Core Path Planning Process where regional Access Authorities sought to designate paths across MOD land. Public information panels were also designed for the Scottish Estate highlighting to visitors site byelaws, boundaries and marked trails.

The passing of CROW and LR(S)A were catalysts for a ground breaking step by the MOD in 2006 and a resurfacing of those views voiced by the Nugent report of 1973. This was the adoption of a policy presumption in favour of public access wherever it is compatible with

operational and military training uses, public safety, security, conservation and the interests of tenants.

This was a commitment by the MOD to actively strike the balance between the two afore mentioned arguments. The military will fulfil its training objectives and in turn, where practicably possible, managed public access will be delivered.

This policy adoption would come at a challenging time. Traditional pastimes such as walking and horse riding are ever present, but thanks to new technology the countryside is witnessing a rapid rise in new and evolving activities. These include mountain biking and off-road driving, climbing and kayaking, and more recently, longboarding and



Visitors to the training estate in Scotland can take advantage of the information panels to inform their visit © Crown

FEATURES

canyoning. To support the new policy direction and to face the new challenges of outdoor recreation ART adopted the mantra of certainty, clarity and consistency.

Certainty ensures public access and recreation is recognised as an integral part of MOD estate management. Open access and linear routes must be managed, maintained and made available when possible, to fulfil policy. The public need to be certain where and when access is allowed, but equally the military need to be aware of where and when the public are likely to be on the estate.

Clarity refers to information provision. It must be clear to any visitor where access is acceptable.

Consistency recognises that people enjoy access across our estate and not just on one site. We need to ensure that access delivery and information is as consistent as possible across the whole of our UK estate.

Access as a consequence of legislation is an obligation, but the MOD has strived to go further. Throughout the last ten years ART has worked with a wide range of internal and external bodies to



Grand opening of the Sealand multi-user trail in 2013 © Andrew Pratt

deliver projects outside the confines of legislation.

Projects such as the Kirkcudbright path network, the Sealand cycleway and the Castlemartin Range Trail, all seen in previous issues of Sanctuary, are fine examples of where this approach has been successfully adopted. Provision of marked linear routes remains an important tool in ensuring the public can be confident they are where they should be. Multi-user trails are in place, balancing military and public use on site. Information and awareness raising continues to be fundamental. ART work closely with the DIO

Communications team and SD Training to further the suite of public access information with new leaflets, online resources and on site panels.

Overall it is nationally recognised that Defence Estate provides excellent opportunities for the public to take in some of the most beautiful, remote and unspoilt parts of the UK. With careful management of the many demands on the Estate, these access opportunities will continue to be made available to the public.

James Nevitt

Senior Access and Recreation Team
Defence Infrastructure Organisation



Volunteers erect essential signs across Salisbury Plain © Dale Wyatt

MOD saves with the new TRIAD system

The TRIAD charging system is one way that large industrial users of electricity can reduce their energy charges by reducing consumption over peak periods.

Broken down into its components, an electricity bill is a combination of all attributable costs relative to consumption, not just units consumed, but environmental initiatives, network maintenance, and other such expenses incurred through delivery.

During the winter months, November to February, electricity suppliers operate a TRIAD system to calculate the appropriate network maintenance charges to be levied on large energy consumers. TRIAD, or TRI-Annual Demand, is a process of selecting the three half-hours of peak electricity demand. These three snapshots (which must be separated by at least ten days) are then averaged, and multiplied by a tariff charge ranging between £15 to £40 (depending upon location). The result of this equation is the annual network charge.

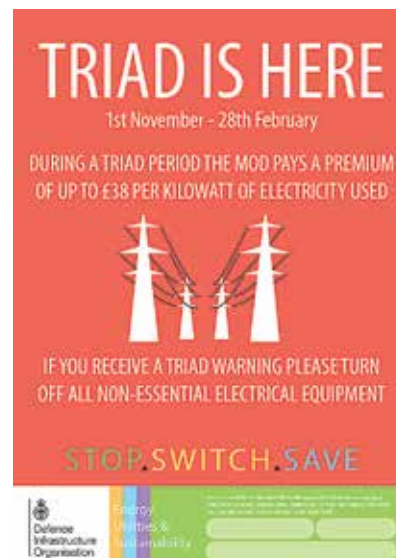
Applying such a substantial tariff grossly exaggerates the cost of consumption during TRIAD, and even boiling a 2kw kettle for two minutes can add £4.68 to the overall charge.

These charges should not however be seen as detrimental. Encouraging

a reduction in peak demand is the environmentally-friendly alternative to expanding the electricity infrastructure to facilitate greater consumption.

The Energy, Utilities, and Sustainability (EUS) team - part of Service Delivery within the Defence Infrastructure Organisation (DIO), used a TRIAD warning service provided by EDF, to pilot the first estate wide TRIAD campaign during FY14/15. Alerts were issued across the MOD estate whenever a TRIAD period was anticipated. On average 15–20 TRIAD alerts can be issued per season – as it is not possible to determine the three actual peak periods until after the TRIAD season has concluded.

Prior to the campaign, TRIAD focal points across the MOD estate identified appropriate actions to follow at their sites once alerted - such as closing off certain rooms, and switching to standby generators. Advice was also distributed from EUS, such as switching off printers, unnecessary lighting, and unused computers. Even equipment left on standby can generate a notable charge during TRIAD.



Promotional campaign material © Crown

Of all participating sites JFC Stirling Lines in Hereford achieved the highest percentage savings (53pc), and Air Command site RAF Coningsby in Lincolnshire achieved the highest financial savings (£31k) for the three TRIAD alerts. For their achievements both sites have been rewarded financially to reinvest in development at their discretion.

On average the MOD pays £4,000,000 in annual TRIAD charges, and the campaign which ran from November 2014 to February 2015, resulted in savings of £164,000. We cannot remove TRIAD charges completely, but we can do more to reduce them. This was the first estate wide attempt to reduce TRIAD charges, and next year with lessons learned, collaboratively we aim to achieve more.

For more information on TRIAD, including a full league table of results and energy reduction initiatives, please email: DIOSDEUS-PMO@mod.uk

Aaron Brown

Energy Utilities and Sustainability Team
Defence Infrastructure Organisation

KETTLE	TV	PRINTER	WASHING MACHINE
			
£4.68	£9.10	£18.20	£31.20

A guide to raise awareness of TRIAD charges © Crown

30 years of saving stone-curlews



Stone-curlew © David Kjaer

Stone-curlews are very shy and secretive birds, and nest on extensive open habitats of heath and grassland, so it is no surprise that military sites have been their sanctuary.

Stone-curlew nest in no more than a shallow scrape on the ground and lay two hen-sized speckled eggs. Eight military sites support between 40-45% of the UK stone-curlew population, and have played a crucial role in saving this beguiling bird from near extinction in the UK.

Historically stone-curlews would have nested directly on grass heaths, downland or fallowed land where the vegetation was closely cropped by rabbits and sheep or sparse from cultivation. The species declined at least from the 1930s when agricultural intensification resulted in crops and trees being planted on grass heaths and downland. Consequently, stone-curlews had to nest more readily on land prepared for spring crops, where nests were inadvertently destroyed by machinery, and the population fell from perhaps 1000-2000 pairs in the post war period to around 150 pairs in the mid 1980s.

Because of the loss of suitable breeding sites and the threat to nests on cultivated land, special nesting plots were developed as part of the wider conservation management. The MOD has prepared these as part of their Sites of Special Scientific Interest (SSSI) programmes while agri-environment schemes have supported these measures on private farmland. Here birds can nest without risk of nest loss from agricultural management.

The loss of extensive semi-natural grassland happened across the breeding range of the stone-curlew, but on many of the MOD sites this grassland remained. These areas were considered so important for a range of species that many of them have been given formal designated status as protected areas under National and European legislation.

In 1985, a partnership between landowners and conservationists began, which has turned around the

fortunes of these 'goggle eyed plovers'. For 30 years, RSPB field workers have been locating nests and marking them so they can be avoided by machinery, and where necessary, carefully lifting clutches of chicks out of harm's way and returning them after operations have finished – what we call 'interventions'. This partnership includes working with the MOD to ensure that all of the land it manages is in optimum condition for stone-curlews: creating new plots, carrying out plot management during the breeding season, integrating with military training, and encouraging grazing for foraging stone-curlews near their nests.

As a result of these successful conservation measures, the stone-curlew population increased back to around 350 pairs nationally, and in 2009 stone-curlews were officially downgraded from Red to Amber conservation concern, in the revised Population Status of Birds in the UK.

The Stanford Training Area (STANTA) is situated in the 'Brecks' on the border of Norfolk and Suffolk. The Stanford Training Area SSSI is approximately 4,500ha and contains approximately half of the remaining grass heath habitat within the Brecks. Hard grazing and physical disturbance are an essential part of grass heath management, as this provides the short turf and bare ground which priority Breck species, including stone-curlew, require.

Since 2000 the MOD have managed 17 specially created plots to create this bare ground habitat, however, from 2015 onwards, an additional 110 plots will be created and managed to increase the extent of this important habitat.

It is anticipated that this work will benefit up to 454 priority invertebrate species, which will be closely monitored by a PhD project. It is still early days, but stone-curlew have

colonised a new plot on part of the site that has not held a breeding pair for over 30 years. Beyond the grass heath, the MODs tenants also manage 25 stone-curlew plots on arable land under agri-environment schemes.

Salisbury Plain including Porton Down in Wiltshire holds the core of the Wessex stone-curlew population and is the largest remaining tract of chalk grassland in North-west Europe, at around 44,000ha. The grassland on Salisbury Plain is generally too long for stone-curlews to nest directly on the downland, but instead they use the 50 or so plots created and managed by the MOD. Porton Down still has a large population of rabbits which keep the downland cropped very short, and here, there are still some downland breeding stone-curlew. Both sites are designated as Special Protection Areas for stone-curlew and other protected species including hobby, quail and wintering hen harriers.

At all MOD sites it is largely the lower levels of public access and disturbance that has maintained their suitability for stone-curlews. Therefore, any birdwatchers wishing to see stone-curlews are directed to the Norfolk Wildlife Trust's site at Weeting Heath in the Brecks, RSPB Minsmere on the Suffolk Coast, and RSPB Winterbourne Down in Wiltshire. All these sites have dedicated stone-curlew viewing areas, and arrange popular tours of autumn roosts.

Volunteers have been instrumental in delivering stone-curlew conservation across the UK, with members from the STANTA and Salisbury Plain conservation groups contributing sightings to the RSPB. Some of the volunteers play an integral role in supporting the project.

Colour ringing of chicks has aided research and stone-curlews have

become a very well studied species. PhD research by Ali Johnston has shown that without the interventions on cropped land, the population would once again decline by 4% per year, but securing more semi-natural grassland habitat could make stone-curlews sustainable without intervention. Research has also revealed that stone-curlews are very sensitive to all forms of disturbance, but particularly from dog walkers within 500m of nest sites. Stone-curlews are declining elsewhere in Europe, and climate change projections show the UK will become more important for them.

This knowledge gives us the tools needed to plan for a sustainable UK population, and military sites remain a large part of the long term UK strategy for this species.

Emily Field

RSPB Project Manager for the EU LIFE+ Project 'Securing the future of the Stone-curlew in the UK'

Nick Tomalin

Project Manager
RSPB Wessex Stone-curlew

Rob Hawkes

RSPB Heathland Project Officer for the Brecks Stone-curlew Project

In 1985, a partnership between landowners and conservationists began, which has turned around the fortunes of these 'goggle eyed plovers'



Stone-curlew chick © RSPB



One of the Wessex plots © RSPB

Lendlease brings Georgian buildings back to life at **Woolwich Artillery Barracks**



The longest Georgian façade in Europe, gets a facelift © Lendlease

In 2010, Lendlease was commissioned by the Defence Infrastructure Organisation (DIO) to manage the £13m refurbishment programme of the Grade II* listed Sergeants' and Officers' Messes at the Royal Artillery Barracks in Woolwich.

English Heritage, now known as Historic England, and Greenwich Council's Conservation Officer were consulted at an early stage to agree the materials and methodology of repair to be used in the restoration of these 18th century buildings. A very good working relationship was developed with the key heritage bodies during the refurbishment, which ensured the project was allowed to progress with minimal intervention.

The project fell into two phases; the first phase involved the refurbishment of the Sergeants' Mess, which was completed in 2012. Phase two works, which involved works on the Officers' Mess, started in 2013 and were completed this year; the formal handover was achieved on the 1st July 2015.

Lendlease was appointed as the principle contractor, responsible for delivering all aspects of the project. The primary task was the refurbishment of four interconnecting buildings which form the Sergeants' Mess on the east and four more buildings on the west that make up the Officers' Mess. Together; the Sergeants' Mess and Officers' Mess

form what is believed to be the longest Georgian façade in Europe. Lendlease was also contracted to carry out work on the existing married quarters accommodation, 9a West and 10a East Kings Troop building, which dates to 1787.

The refurbishment of the buildings included full repairs to all existing timber floors and roofs; all roofs were recovered with new slates chosen to match the existing ones. During this stage of the program, temporary scaffold roofs were constructed over the whole building to allow all roof finishes to be removed and the structure surveyed and repaired. This part of the project was integral to safeguarding internal areas and the entire structure from the risk of water ingress at a later date. These were the largest span scaffold roofs ever used in the UK.

A full soft strip of all existing finishes and ceilings was required to allow floor and wall surveys to be completed by the structural engineer, who provided repair details for all works. Temporary support was also required to allow replacement of floor and roof timbers and forming new door openings through the existing structural walls.



Repairs to weather vane tower © Lendlease



The weather vane tower restored to its former beauty © Lendlease



The restored George III Coat of Arms © Lendlease

One of the major challenges on the project was the urgent stabilisation of the weather vane tower. On inspection, the existing structural timber frame was found to be rotten and needed to be supported. As a result, a scaffold frame was designed to provide the temporary support and the structural engineer designed a steel frame to provide a permanent solution.

The timber structure had serious rot and beetle infestation, which meant that several of the main members had to be removed or spliced. The priority was to avoid interference with the structural stability of the tower, so each member was methodically removed and supported. Several of the main members had to be individually cut and fitted onto a steel cradle built around the existing timber structure.

This was followed by the installation of timber diagonal struts between the main posts and the careful emplacement of all new timbers, so as not to interfere with the structural stability of the tower.

Meanwhile, work to repair rotten ends to the existing roof trusses that supported the decorative ceiling to the Officers' Mess required meticulous planning to ensure the ceiling below was not disturbed. This involved constructing a temporary unit beam above the existing timber roof to support each five-ton truss. Four of the trusses were individually replaced, with each one cut back to solid timber and steel rods inserted. Treatment was completed by ensuring the permanent shutters (form work) were installed around threaded steel rods and the void filled with a special resin.

Lendlease worked with architects, structural and civil engineers as well as services consultants; HLM, Aecom/URS and Hulley & Kirkwood respectively. The internal works to the roof repairs and slating happened simultaneously and key to this was the careful coordination of contractors to ensure safe working was maintained.

The brief also involved restoration works to the façade, including the repair of the existing Roman plaster cornices on the south elevation and the George III Coat of Arms, figures and mouldings on the central triumphal arch. Re-gilding the Coat of Arms necessitated ongoing liaison with the DIO clerk of works and Royal Scribe to guarantee accuracy.

The delivery of the Woolwich Sergeants' and Officers' Mess refurbishment was achieved on time and within budget. The successful delivery of the project was due to effective cooperation between the project delivery team, subcontractors and their client, DIO. The handover, which took place in July this year, marked the end of building at Woolwich through the Single Living Accommodation Module (SLAM) programme. It has been a privilege to deliver more than 662 bed spaces in Woolwich for the UK's service personnel.

Mark Norton
Project Manager
Woolwich Royal Artillery Barracks



The impressive Georgian façade restored © Lendlease

New Environmental Centre for Cyprus



The new Environment Centre now open to visitors © Thomas Hadjikiakou

In November last year a state-of-the-art environmental centre was officially opened in Cyprus thanks to collaboration between Defence Infrastructure Organisation, the Sovereign Base Area, the Ministry of Education and Culture, and the Akrotiri community.

The Centre, which was designed and built in a year by Interserve Defence Limited (IDL) embraces some of the most innovative and environmentally friendly building concepts, including a photovoltaic system on the roof which provides approximately 50% of its energy requirements.

The Centre operates in a framework of cooperation between the Sovereign Base Areas, the Ministry of Education and Culture, and Akrotiri Community. The primary purpose of the Centre is to promote the unique environmental and cultural significance of Akrotiri Peninsula through environmental programmes and exhibits.

The Centre welcomes local schools, groups, individuals and families, and more than 10,000 school children are participating in the educational programmes every year; this number

is expected to increase. The Centre has an exhibits room, laboratory, a room for presentations and conferences, a library, a bird observation area, botanical trail, playground and other ancillary facilities. As well as this fully equipped building, activities can be held outside on the field. All facilities are suitable for people with impaired mobility and entrance is free.

Visitors can learn a great deal from the surrounding area which includes the wetland system of Akrotiri Salt Lake and Akrotiri Marsh, the latter of which is designated as a wetland of international importance under the Ramsar Convention and is now one of only two Ramsar sites of the island. A large part of the Peninsula has been designated as a Special Protection Area for Birds and is a candidate Special Area of Conservation for habitats and flora and fauna species as part of the provisions of the NATURA 2000 Network.

The area also boasts 27 natural habitat types (22 terrestrial and 5 marine) and 800 plant species, many of which are endemic or rare for Cyprus have been recorded. Approximately 300 bird species have also been recorded on the Peninsula; some are resident birds, while others

are breeding migratory species. There are 20,000 flamingos which overwinter in the area each year.

Akrotiri beaches are some of the few nesting sites on the island for loggerhead and green turtles, which are endangered Mediterranean species. Important species of mammals have also been recorded such as seals, dolphins and bats as well as a variety of invertebrate species.

During the opening, Maj Gen Cripwell said: *"This is confirmation that we now have the best facilities to enable further constructive collaboration of the many separate organisations involved in presenting the outstanding environmental importance of the Akrotiri Peninsula and other important features of the SBAs and beyond."*

"The centre is a unique shared facility, whereby teachers and children from the Republic of Cyprus will join others from the SBA and those in the Akrotiri community, to participate in environmental education programmes and research."

Environmental Department
DIO Cyprus and SBAA

50 Years of the Royal Air Force Ornithological Society – RAFOS



1976 Masirah Island © Dave Bodley

RAFOS is a volunteer organisation celebrating its 50th year in 2015. It is and has been part of the broader RAF community of clubs and societies, existing to promote an interest in birds among members of the RAF and associated civilians. RAFOS members are keen conservationists and bird watchers, most of whom are serving or have served in the Royal Air Force.

RAFOS has run a variety of field trips each year, both at home and abroad,



Jungle ringing in bamboo forest © Dave Bodley

covering locations as varied as uninhabited islands in the Outer Hebrides to the Far East over the years. Many of these trips involved survey work and bird ringing, while others are just social birding outings but they are all fantastic opportunities to improve knowledge, pass on experiences and simply enjoy and appreciate the natural history around us.

The atmosphere on these trips has always reflected the typical comradeship of the RAF with much humour as well as serious birding, and this is a key aspect that continues today.

While birding is a very pleasant hobby, it has also provided very important assistance for other scientific organisations by carrying out surveys and data gathering for the British Trust for Ornithology (BTO), the RSPB, local Wildlife Trusts, Birdlife International and some of its worldwide partners, such as Birdlife Cyprus. RAFOS surveys made a significant, and much acclaimed, contribution to the recent BTO Atlas of British Birds, a highly important project

that identified bird population changes to inform the management of resources to aid the national conservation effort. RAFOS has also been used in important tasks for the MOD, such as carrying out the requisite raptor species surveys before and after the Akrotiri Aerial Farm completion in Cyprus.

Numbers in the RAF have declined since 1965 and RAFOS has suffered from a reduced membership. The Society is therefore looking for new members from those currently serving in the RAF, their partners, veterans, and MOD civil servants. RAFOS is especially keen to increase its serving membership; those with an interest in conservation and our 'feathered friends'; and people who will add to our knowledge base. Novices are equally welcome as there is a vast wealth of experience within the group and members are just waiting to pass this on. We need your help for RAFOS to continue for another 50 years.



1967 Malaysia bird photography and recording © Dave Bodley

For further information please visit the RAFOS website at www.rafos.org.uk or find the 'Royal Air Force Ornithological Society' group on Facebook and Twitter (@RAFOSBirding).

FS Scott Drinkel
RAFOS Publicity Member

Bizarre buildings: Seeking out the quirky, unusual and downright weird



King Henry VIII's wine cellar underneath MOD main building, London © Crown

Hidden across the Ministry of Defence (MOD) estate are some wonderful and often quirky buildings, each with a story of its own to tell. Presently, the MOD has in its care 824 listed buildings and 768 scheduled monuments; each one is an important part of the UK's heritage, and some are unique.

Some of these buildings were designed as ground-breaking solutions to specific Defence requirements. During the Second World War, airfields, particularly those in the south and east of England, were provided with a suite of defences to repel attacking enemy aircraft and to prevent airfield capture. Pickett-Hamilton Forts were an ingenious invention, unique to airfields, designed to be lowered to ground level to allow movement of aircraft and raised in the event of an attack. The most common two-man design was raised by a hand-operated hydraulic jack. Our listed example at Worthy Down is the rarer four-man counter-balance type and one of only twelve installed nationally. The installation of these pillboxes was given top

priority, with Churchill himself interested in the work.

Older examples of defensive structures can be found on Otterburn training estate. Bastle houses (from the French *bastille*, meaning castle), built between 1550 and 1650, were fortified farmhouses. They are found along the Anglo-Scottish border, in areas formerly plagued by border reivers (raiders). Bastle houses were characterised by security features to resist raids; with thick stone walls, reinforced doors and minimal windows on the first floor. The ground floor was reserved for valuable animals, and the living quarters on the first floor were only reachable by ladder, which could be pulled up from the inside.

Other listed buildings celebrate the bravery of the armed forces, some in unusual circumstances. A listed memorial drinking fountain in Aldershot commemorates the heroic final action of Captain Beresford and is located close to where he died, which was, at that time, opposite the officers'

stables at Albuhera Barracks. The dedication reads: 'Near this spot on the 30th May 1910 Captain Charles Claudius De La Poer Beresford Royal Engineers was killed in a brave attempt to stop a runaway horse'. The listed robber's stone on Salisbury Plain memorialises



Listed memorial drinking fountain in Aldershot © Crown



The turret of a Pickett-Hamilton Fort, a type of retractable pillbox, restored at RAF Honington © Honington Herald

the far more ignoble death of highwayman Benjamin Colclough during his attempted escape from the scene of the crime in 1839.

Less than five miles away, also on Salisbury Plain, is the uninhabited village of Imber with its listed 13th century church of St. Giles. The civilian population was evicted a week before Christmas 1943 in order to provide a realistic urban training environment for American troops preparing for the D-Day landings in Normandy. At the end of the war, villagers were not allowed to return to their homes as the area continued in use as a military training area. Today, the village buildings, the pub, manor houses and cottages, are little more than shells,

but the church, with its medieval wall-paintings, survives.

In London, beneath the MOD's main building, is an extraordinary historical survivor; Henry VIII's wine cellar. It is one of the few remaining parts of Whitehall Palace, the main royal residence in London from 1530 until it was destroyed by a fire in 1698. Larger than the Vatican and Versailles, it was the largest palace in Europe and covered over 93,000m² between the river and Green Park. The original plans for the MOD building (built between 1938 and 1959, originally to house the Air Ministry and the Board of Trade) would have meant the destruction of the cellar, but Mary, queen consort of George V, requested

that it be saved and a promise was made in parliament to retain it. The cellar could not be dismantled because the Tudor brick was too soft, so to preserve it when works commenced, the whole structure was encased in steel and concrete and relocated 3m west and 6m lower.

Elsewhere, interesting Defence structures include dragon's teeth fortifications, the underground network at Corsham built for Churchill's government in case of invasion, as well as buildings with no obvious military connections; the grandstand at Tweseldown racecourse, an Edinburgh dovecote, a Cornish ice house, and the nation's most infrequently used railway station.

Following the Royal Family's purchase of Osborne House on the Isle of Wight in 1845, the Royal Victoria Station was built in the Royal Navy's Clarence Yard for the exclusive use of the Queen. For the next fifty years, Victoria arrived here for her annual summer holiday at Osborne, and a red carpet was laid from the train to the Royal Yacht. The station was last used following Victoria's death at Osborne House in 1901, when her coffin was brought to the mainland.

The MOD's historic estate is very diverse, providing a fascinating backdrop to the work of the department in the 21st century. Who knows which of our recent buildings will be considered of national significance and worthy of listing in future?

Katie Derrett

Historic Buildings Advisor
Defence Infrastructure Organisation



Queen Victoria's Railway Station, Clarence Yard, in c.1900 © 1998-2006 Disused Stations



The robbers stone © Crown

AT THIS SPOT

Mr. DEAN, of Imber was Attacked and Robbed by Four Highwaymen, in the evening of Octr. 21st. 1839. After a spirited pursuit of three hours one of the Felons BENJAMIN COLCLOUGH fell dead on Chitterne Down. THOMAS SAUNDERS, GEORGE WATERS, & RICHARD HARRIS, were eventually Captured, and were convicted at the ensuing Quarter Sessions at Devizes, and Transported for the term of Fifteen Years.

This Monument is erected by Public Subscription as a warning to those who presumptuously think to escape the punishment God has threatened against Theives and Robbers.

50 years of Naval Bird Control Heritage



Petty Officers Careless and Fraser with their duty peregrine falcons at RNAS Lossiemouth, 1965 – 1972. The first two naval falconers to be trained under the guidance of Mr Phillip Glasier, a professional falconer © Crown

As we celebrate 40 years of Sanctuary Magazine we also celebrate 50 years of a remarkable story that linked the ancient art of falconry with the protection of a new technology, that of the jet engine and the modern era of nature conservation.

Towards the end of World War II the jet engine started to become a reality. By 1965 the relatively slow propeller driven fighters and bombers had been replaced by the fast jet. The jet technology had taken the art of flying beyond that at which wild birds could evade modern aircraft.

Many airfields were and remain attractive habitats for a range of wildlife and especially birds. In a modern intensively managed countryside the low intensity management of an airfield can provide a good source of food and relatively safe area to roost for many species.

As the navy investigated the use of using birds of prey, especially peregrine falcons, to scare birds from the airfield, Sir Peter Scott who was not only the founder of the now Wildfowl and Wetlands Trust but also deeply involved in the wider international conservation movement heard about this use of peregrines.

He thought there would be an opportunity to somehow set up a conservation programme to tackle the major decline of this species across the northern hemisphere.

Sir Peter Scott, who had also been a naval officer, made early contact with Captain Brown; the RNAS Yeovilton bird control archive holds many fascinating details and insights from their correspondence into the early infancy of this science.

Sir Peter's initial letter to Captain Brown in 1969 included the paragraph: 'We see

the possibility that the use of falcons for keeping birds away from airfields might stimulate substantial efforts to breed hawks in captivity and perhaps also engender a more reasonable attitude to their survival in the wild state'

The issue of modern aircraft hitting birds especially gulls on take-off was exercising the minds of the RNAS at Lossiemouth.

Captain Brown wrote in response: *'The Naval Air Station at Lossiemouth had a particularly large seagull population because the airfield lies virtually a few hundred yards from the coastline and also in this area of low temperatures the concrete runways are normally always 4°C warmer than the surrounding natural terrain and so are attractive as a roosting place. The birds are then in a position to meet jet aircraft, whose rapid acceleration and lack of ahead noise (because they are taking off into wind) catches the birds unaware and they rise too late and find themselves perfect targets for the enormously powerful vacuum cleaners, which jet engines virtually are.'*

And went on to say 'Pre-1965 we averaged four bird strikes a month (usually on take-off, but occasionally on landing) at an average cost of



RNAS Yeovilton bird control vehicle and methods © Crown



Peregrine falcon chicks, 11 days old © Crown

£25,000 in repairs. Since introducing the falcons we have not had a single jet aircraft birdstrike on the airfield so have saved almost £1¼m for an outlay of a few hundred (each falcon costs about £50 to purchase).

At that time the RNAS had sourced their falcons from British Military Units stationed in the middle-east. However this was an unreliable source of birds and the limitation on supply meant that this experiment could not be rolled out to other stations.

At the start of the experiment the 'gulls, rooks and (other) crows' which were the main concern were thought to be a problem 'which had to be lived with'. Most airfields have a bird population and in the main this is of fairly small proportions. The incidence of birdstrikes was correspondingly low and hence aircraft operators resigned themselves to replacing expensive bits of airframe and engines rather than removing the birds. However the success of the use of falcons to scare birds was proven to be a very effectively solution.

Other methods to scare birds were tried but nothing was as effective as using the falcons. However there was still the need to use alternatives for night flights and Verex cartridges fired at random timings was successful.

Importantly the work of the unit was accompanied by structured scientifically based bird counts that demonstrated the success of the trials. *"The object being to provide both a graphic record of Lossiemouth's bird population and an indication of the effectiveness of this latest method of bird-scaring".*

By early summer 1967 the unit had ceased to be on trial and was established on a permanent basis.

In 1972 the Bird Control Unit (BCU) moved to its present location at RNAS Yeovilton and began operating using similar methods, bird distress tapes, pyrotechnics, shotguns and the most effective – falcons. In 1975 the operation was extended to RNAS Culdrose in Cornwall. This resulted in birdstrike reductions at both air stations.

Three years after Sir Peter had raised the issue the unit decided to breed its own falcons, thus avoiding the need to take birds from the wild or importing them from abroad. The breeding programme has now become so successful that all the falcons used for bird control operations at Yeovilton and Culdrose are domestic bred at RNAS Yeovilton. These techniques were later used extensively in the United States to repopulate the peregrine populations that had been devastated by the use of DDT. The Peregrine Fund in the US later went on to breed a wide range of endangered birds of prey.

Today's Royal Navy Bird Control Units, with its combined programme of pyrotechnics and other mechanical acoustic devices and its trained team of peregrine falcons and bird control falconers, is a vital part of FLIGHT SAFETY.

Success at RNAS Yeovilton can be measured by the fact that the average annual bird strike rate on the airfield is 0.6 or approximately one every two years, which equates to one bird strike every 90,000 airfield aircraft movements.

This issue of lowering the bird strike risk remains high on the agenda. The costs involved in replacing aircraft and damaged engines on modern aircraft flown has become prohibitively expensive so other approaches have to be integrated into lowering bird strike risk. The approach used is largely based around the 'long-grass policy' that aims to make airfields less attractive in the first place to birds by making the food resources unavailable to them. However there can be high costs involved in re-seeding whole airfields with specially bred strains of grass and maintenance costs remain high. How much better to continue with the ancient art of falconry and how much more interesting.

Brian Bird

Fleet Bird Control Advisor
(Falconry Historian)

Nat Cole

Airfield Bird Control Falconer

Ascension Island - Wideawake Airfield receives a sustainable upgrade



A section of the upgraded Wideawake Runway © Stewart Guy

The Wideawake Runway in Ascension Island is jointly operated between the United States Air Force (USAF) and MOD with the maintenance split between the two parties. The areas of MOD responsibility which include the taxiway, shoulders and AGL lighting all required an upgrade this Financial Year.

Due to historical support for the US Space Shuttle Programme, the Wideawake Runway is approximately 3000m long, an initial review of the project identified that 6000 tonnes of aggregate and associated material would be required to undertake this task. Not an issue when based in the UK but Ascension is half way on an 8000 mile supply route to the Falklands. If all this material was to be shipped down it would result in no further supplies reaching the Falklands for three months; the real life impact of this would be, no bananas, no maintenance work and no post for three months!

At this point it was decided to investigate if there was a sufficient

supply of material from the local environment. It was identified that the USAF Quarry was the source of much of the material that was used to build the RAF Base in Ascension 30 years previously and could be used for the Wideawake Runway upgrade. Once this material was confirmed as suitable, the next challenge was deciding how to get VERY large equipment off a boat, on and off a barge and into situ with a swell of about a metre and a crane that had a maximum lift load of 20 tonnes. Easy, disassemble all the kit in the UK, ship it down and then reassemble in Ascension!

Once the material had been sourced and some initial (large) pot holes in the track to the quarry had been filled in, the requirement for works was undertaken. The end result was an operational taxiway that meets the requirements of two Air Forces' achieving 99.99% of waste diverted from Landfill and a Reuse/Recycling figure of 99.85% of the 6,026 tonnes of waste generated! Some of the ways this was achieved in the remote location included:

- 15.5 tonnes of metal waste (empty barrels) were cleaned, crushed and sent back to the UK for recycling
- All of the plastic water bottles (approx 0.5 tonne) were returned to the UK for re-use and therefore not formally classed as waste
- 142 former AGL fittings were retained for use as spares at Mount Pleasant Air Base in the Falklands since the model is now unavailable
- 6,000 tonnes of planings were re-used on the airfield (1,000 tonne), repairing the quarry haul road (1,000 tonne) and surfacing in the USAF base (4,000 tonne)
- 200 wooden pallets were given to AIG (approx 4 tonnes) for the November 5th Bonfire

All with no impact on the Falklands resupply ship and the Austral Christmas mail!

Nicolas Andrews-Gauvain
Environmental Advisor Overseas
Defence Infrastructure Organisation

Fighting food waste at Ministry of Defence sites



Breakfast is served at the Imber Diner © Crown

WRAP is a UK charity helping businesses and individuals reduce waste, develop sustainable products and use resources in an efficient way. WRAP launched the Hospitality and Food Service Agreement (HaFSA) in 2012; a voluntary agreement to support the sector to further reduce waste and encourage more recycling.

As a supporter of HaFSA, the MOD (through the Defence Infrastructure Organisation (DIO) and Finance Military Capability (FMC)) is working in collaboration with WRAP at five MOD sites with their suppliers to identify how food waste can be reduced. The results of the work will be used to inform and further develop MOD waste management delivery plans.

WRAP's research in 2012, suggested that changes could be made to the way food is managed to reduce the amount of waste produced. To examine this further and in support of HaFSA an MOD specific study was conducted with its customers, consumers and each supplier; Aramark, Compass Group, Elior, ISS

Defence and Sodexo to examine ways to reduce food waste.

The MOD catering providers measured and monitored the food waste produced over a four week period. The different areas measured were:

- Spoilage: food that has expired or been damaged
- Preparation: food waste produced during preparation (e.g. egg shells, vegetable peelings)
- Plate: uneaten food that has returned from the customer
- Over production: excess food uneaten after service and cannot be re-served

This starting point defined and established a baseline against which progress could be measured. Next, the reasons why food was being wasted was reviewed and ways in which it could be reduced were identified.

While there is much good practice already happening to reduce food waste, such as those listed below, the project identified opportunities to

make further efficiencies. These will be shared with other sites and tailored to specific site operations.

- Where practical some messes operate a booking in system which reduces over production
- Due to good stock rotation and precise ordering the study found that spoilage was reduced
- Some sites use satisfaction forms for customers to provide feedback which is taken into account when menu planning

By working together we have identified the main areas for action, and developed a 'Reducing food waste at Ministry of Defence sites' guide which is currently being made available to all caterers at UK sites. The guide explains the cost of food waste, ways to take action, and provides practical 'how to' information (including comprehensive checklists, waste tracking sheets and action plans) to help caterers tackle food waste.

Recommendations from the work will be incorporated within facilities management guidance at all UK MOD sites. This will include measuring and monitoring food waste - to continue to build our understanding of effective actions and improvements, and sharing the learnings across all our locations.

DIO is using the findings from this project to help inform its wider work programme to reduce waste, improve waste data and inform a behaviour strategy, so let the team know how you think the MOD can prevent more food waste.

Contact the DIO Waste Team via email at DIOSDEUS-WastePolicy@mod.uk

Sandra Stewart
Sustainable Estate Procurement Policy
FMC Capability Infrastructure

A tale of history, nature, conflict, and **500,000 trees**



Warcop – a success story of the Woodland Trust working with DfID to create a vast area of woodland © Jeremy Kalkowski

Crawling through the undergrowth it was hugely difficult for the soldier to see the enemy but the camouflage of the trees provided some comfort and protection as he advanced. In the eerie silence he looked up and for a moment he was able to take in the beauty of his surroundings as the rising sun's rays gradually made their way through the trees. He looked around and advanced, pushing through the broad leaves and branches of the oak and hazel and on through the silver birch. But then, as if from nowhere there came a shout and it was over, the army training session at Warcop was brought to a close.

This was, of course, not a real scenario but similar ones have been made available thanks to a unique partnership between the Defence

Infrastructure Organisation (DfID) and the Woodland Trust.

More than 500,000 trees have been planted at eight DfID sites including Warcop, Catterick, Prince William of Gloucester Barracks near Grantham, Bordon, Winterbourne Gunner, Wethersfield, Condor and Barry Buddon. During a blossoming five year partnership – that is the equivalent of 1000 football pitches. The new woodland will provide huge areas of valuable wildlife habitat but still provide the backdrop for essential military training.

To complement the new planting, DfID has joined one of the Woodland Trust's biggest ever campaigns – perhaps the most fitting – as it bids to create four new woods in its World

War I Centenary Woods across the UK, the first of which is Dreghorn amid the rolling Pentland hills near Edinburgh.

Serving soldiers from 2 Scots and 3 Rifles are leading the way by planting almost 50,000 native trees, working alongside Sea, Air and Army Cadets, as well as local people, including hundreds of school children.

Each year, as thoughts turn to remembrance, a special avenue of 50 wild service trees will provide a spectacular annual flash of red in the autumn and four acres of wildflowers, including poppies, will create a peaceful, beautiful place for commemoration and reflection.

This precious new wood will increase native woodland in Edinburgh City

by almost 10% and contribute to local biodiversity as well as provide a lasting tribute which will be enjoyed and valued by everyone.

Six thousand trees have already been planted including a special tribute of 216 trees unveiled on the anniversary of the Quintinshill rail disaster where Scottish men lost their lives on their way to Gallipoli.

The Partnership

Over the last four years the partnership has created 444ha of new native woodland, enhancing biodiversity, engaging local military and civilian communities and providing a valuable training resource.

DIO is enabling the Woodland Trust to access huge swathes of land to help it achieve one of its main aims, to increase woodland cover across the UK.

The DIO forestry team are working on increasing the area of the woodland military training resource to provide realistic training environments for the UK's armed forces whilst enhancing the biodiversity of the MOD estate.

The Woodland Trust wishes to create a more resilient wooded landscape and by working in partnership with one of the largest landowners in the UK is able to achieve significant steps towards this. The Trust can also secure a wide range of funding sources to create woodland, so there is no financial cost to the MOD.

In total over 521,000 trees have been planted and hundreds of military personnel, school children and staff from funders have enjoyed planting trees together.

Karl Mitchell, the Woodland Trust's Director of Fundraising explains further: *"Our partnership with the DIO is hugely important. It is giving us brilliant access to improve the woodland environment across the UK and increase our woodland cover from the current 13% which is low compared to the rest of Europe's average of 42%. The partnership was not necessarily the most obvious connection but the results are fantastic."*

Warcop is a particularly interesting example of how the environment is benefitting. In 2010, the MOD joined forces with the Woodland Trust and the North Pennines Area of Outstanding Natural Beauty to create 160ha of new native woodland on the Warcop Training Area. With little existing woodland cover at Warcop, Head Forester Jeremy Kalkowski and Maj Tam Campbell, the then current Warcop Commandant, felt that tree planting would improve the military training capacity of the area while also enhancing the landscape.

Four years on the trees are establishing well and the benefits they will deliver in terms of the wider landscape are becoming apparent. Heather Swift is the WT Site Manager responsible for the establishment

of the new woodland at Warcop and as a member of the Warcop conservation group Heather is able to make the links between tree planting and the wider landscape to improve resilience and create a more functional space. Heather said: *"By resilience we mean creating an environment where a variety of trees and wildlife can flourish. It won't always mean planting lots of trees, it involves looking at how everything links up. So for example, it may be about creating hedgerows as wildlife corridors or creating a countryside which can develop and evolve the test of time. Warcop is a great example, with areas of woodland and open space."*

This becomes more urgent and relevant in the face of ash dieback, which was discovered in Lancashire in 2014 and is now established in a much wider area including south Cumbria (moving towards Warcop in mid-Cumbria), where the mature ash woods will be particularly vulnerable.

In addition in only a few more years the new woodland will be providing much needed realistic training environments for the armed forces at Warcop and at no additional cost to the MOD.

The Future

The partnership between DIO and the Woodland Trust is an ever evolving one. In the short term, planting will continue on the new woodland at Dreghorn as the woods start to flourish.

Longer term the MOD Foresters are also exploring the opportunities to create new woodland as part of the army basing programme. They are keen to hear from any MOD establishment who think trees could deliver improvements for people and nature at their base.

And, of course soldiers will keep on training amid the beautiful surroundings of new woodland.

Andy Bond
Woodland Trust



Dreghorn Woods, a WWI site is the location for the Woodland Trust's Scottish Centenary Woods. Thousands of trees will be planted to honour all those who lived and served in WWI. © Woodland Trust

ARC and the MOD a long term partnership



Woolmer Pond Longmoor © Crown

One of the key mechanisms that allowed this work to take place on a sustainable level was the formation, in 1974, of the very first MOD Conservation Group at Longmoor Camp.

For a small organisation such as Amphibian and Reptile Conservation (ARC) that is dedicated to conserving our native reptiles and amphibians, managing and protecting important areas of wildlife habitat has always been one of our primary activities. Forming strong alliances with large land-owning bodies has always been a key aspect in this task and it is our long-standing working relationship with the Defence Infrastructure Organisation that we are perhaps most proud of.

This relationship dates back to 1969 when the British Herpetological Society (BHS) Conservation Committee carried out much needed 'scrub

bashing' tasks on various heathland sites in Surrey, Hampshire and Dorset, including some owned by the military, in an attempt to reverse the declines that were affecting species such as the sand lizard *Lacerta agilis* and natterjack toad *Epidalea calamita*.

The BHS CC gave rise to the UK's first professional herpetological conservation organisation, the Herpetological Conservation Trust (HCT) who continued and built upon the good work of the BHS. The HCT became ARC in 2009, retaining largely the same staff and with a similar, albeit more wide-ranging ambition to protect and enhance our native reptiles and amphibians. Throughout

this time we have continued to work together across a range of very important sites, which collectively form a secure and robust core of sites across the south of the country.

One of the key mechanisms that allowed this work to take place on a sustainable level was the formation, in 1974, of the very first MOD Conservation Group at Longmoor Camp. This innovation was down to the vision of the late MOD Conservation Officer Lt Col Norman Clayden MBE and has given rise to the formation of over 100 similar groups that thrive to this day and form a vital forum for conservation practitioners and the military to work together and achieve their combined goals. Col Clayden was also instrumental in the creation of the magazine you are reading now; Sanctuary, which began in 1975. Some of the earliest and most important work of the Longmoor



group was directed at the natterjack toad at Woolmer Forest; a species that at the time was undoubtedly facing imminent local extinction. The combined efforts of the Army and conservation NGO personnel secured the necessary funds to create new aquatic habitat in the form of scrapes and to carry out much needed

pine and birch control. It is this site, home to the only remaining native population of natterjacks in southern Britain, also incredibly important for a wide range of other species, that epitomises the working relationship between ARC and the MOD. The newspaper clip (above), dating back to 1981, showcases a typical conservation

effort on the behalf of natterjacks and highlights the dedication of the well-respected Col Clayden. He is certainly always mentioned with admiration and gratitude by those within the organisation who were active at the time, and of course he in turn was supported by a much bigger cast of characters, including foresters and land agents, that in their own way were also major contributors to these early and ground-breaking activities.

The work is not confined to Hampshire however: the swathes of heathland that form part of the Bovington and Lulworth ranges in Dorset are some of the largest remaining fragments of this important and rare habitat, their value being preserved by the fact that, compared to the more urban heaths further east in the county, they receive far less in the way of disturbance and visitor pressure. It is the continuing MOD licences that allow us to carry out essential maintenance across these sites, including scrub and tree removal, the control of bracken and invasive species and the creation of exposed sandy areas for sand lizard egg-laying substrate. Sites such as Woolbridge, part of the tank training area at Bovington, provide some of the best



Natterjack toad © Chris Dresh



Male sand lizard © Chris Dresh

examples of smooth snake habitat in the country. There are similarly important areas in Surrey; Ash Ranges and the Hankley sites both support important populations of our rarest UK reptile species.

As heathland managers, ARC do not focus on amphibians and reptiles in isolation but attempt to incorporate the needs of as many other species as possible. Birds, butterflies, other

invertebrates and plants also feature strongly on the southern heaths with a huge range of important and specialist species present. To maximise conservation gain for these species the input of specialists in other taxa is vital and again the various conservation groups organised and run by the MOD prove ideal in allowing us to share in the skills and experiences of others and in turn, to push our own message regarding the most appropriate

management methods and outcomes for herpetofauna.

ARC are very pleased to be a continuing part of the on-going MOD conservation effort and look forward to many more years of successful partnership working.

Gary Powell

Senior Reserves Manager
Amphibian and Reptile Conservation



Purpose built Natterjack pond at Longmoor © Crown



Sand lizard breeding habitat at Bovington © Crown

AROUND THE REGIONS

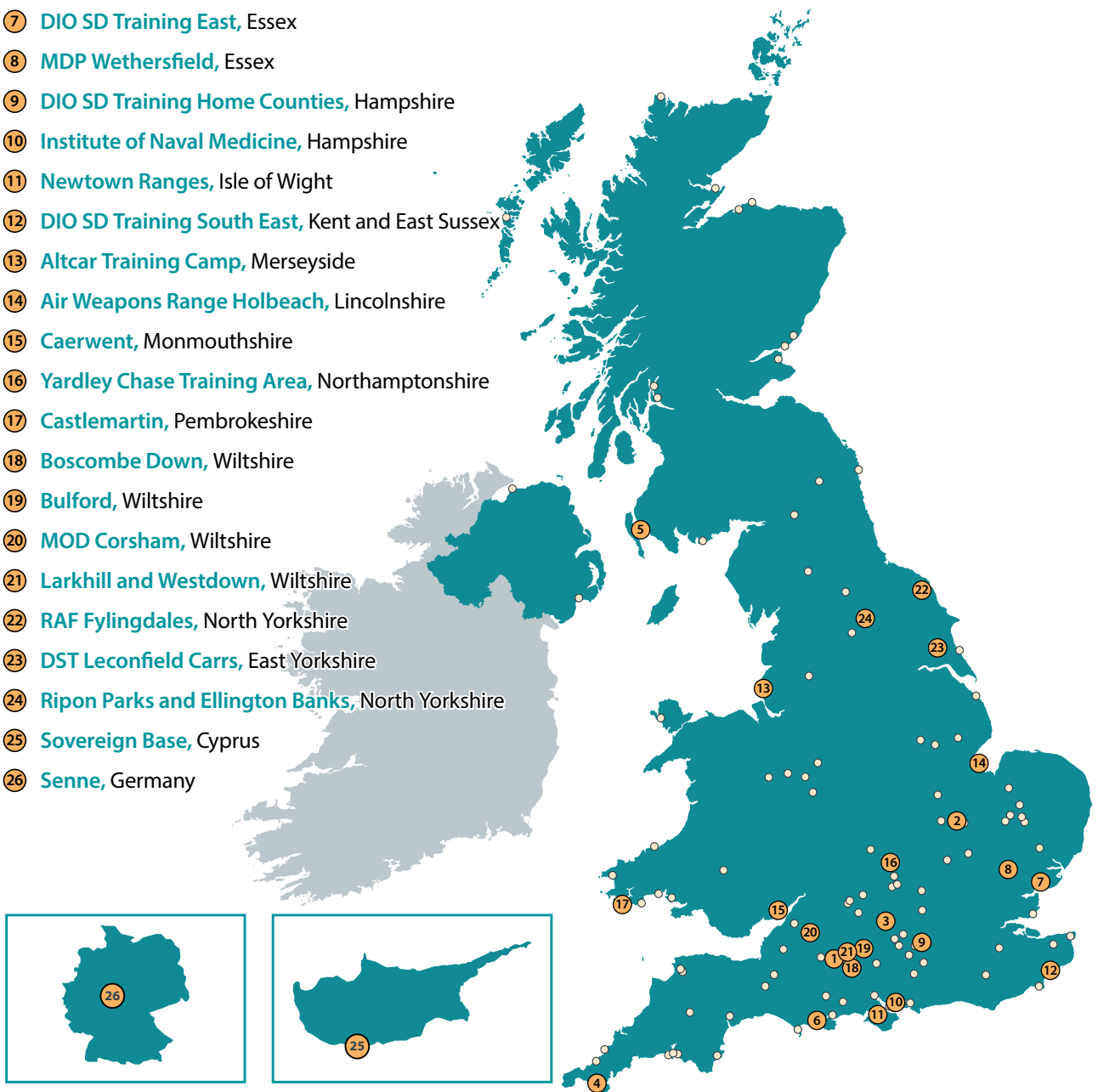
with the Conservation Groups

There are over 125 Conservation Groups operating across the MOD. The following section provides an update on the dedicated work of some of these groups.

- 1 Spotlight on... Imber Conservation Group Salisbury Plain, Wiltshire
- 2 Joint Intelligence Training Group Chicksands, Bedfordshire
- 3 RAF Halton, Buckinghamshire
- 4 RNAS Culdrose, Cornwall
- 5 West Freugh, Dumfries and Galloway
- 6 Bovington and Lulworth Ranges, Dorset
- 7 DIO SD Training East, Essex
- 8 MDP Wethersfield, Essex
- 9 DIO SD Training Home Counties, Hampshire
- 10 Institute of Naval Medicine, Hampshire
- 11 Newtown Ranges, Isle of Wight
- 12 DIO SD Training South East, Kent and East Sussex
- 13 Altcar Training Camp, Merseyside
- 14 Air Weapons Range Holbeach, Lincolnshire
- 15 Caerwent, Monmouthshire
- 16 Yardley Chase Training Area, Northamptonshire
- 17 Castlemartin, Pembrokeshire
- 18 Boscombe Down, Wiltshire
- 19 Bulford, Wiltshire
- 20 MOD Corsham, Wiltshire
- 21 Larkhill and Westdown, Wiltshire
- 22 RAF Fylingdales, North Yorkshire
- 23 DST Leconfield Carrs, East Yorkshire
- 24 Ripon Parks and Ellington Banks, North Yorkshire
- 25 Sovereign Base, Cyprus
- 26 Senne, Germany

KEY: UK MAP

- 1 Featured Regional Conservation Group
- Other Regional Conservation Group





Spotlight on... Imber Conservation Group Salisbury Plain, Wiltshire



Dutch Scientists amazed by the vast chalk grassland of Salisbury Plain during their visit; in Holland there is only a few hectares of similar habitat © Crown

A year ago the Imber Conservation Group (ICG) was a-glow after a series of successes in the Sanctuary Awards. Whilst the winners were all justifiably proud of their achievements, all would agree that we must not forget the many unsung heroes in our conservation groups; the many who make valuable contributions in a wide variety of ways to the low-level management of the Defence Estate on behalf of Defence Infrastructure Organisation (DIO). Volunteers are the backbone of MOD conservation groups the length and breadth of the country.

Advances in technology and the Boer War (1899-1901) starkly showed the

need for larger permanent training land. So came about the early purchases of land on Salisbury Plain in the late 19th and early 20th century; but it was not until after the Great War (1914-18) that purchases spread west of the Devizes-Tilshead road (A360). By 1939 the military occupation was largely as it is today with Imber village being evacuated in December 1943.

It was not until the early 1990s that SPTA experienced once again the intensity of armoured manoeuvre training with modern weapon systems; the potential effect on the landscape really worried the Statutory Bodies and NGOs such as Wiltshire Wildlife Trust

and RSPB. There followed years of action by the MOD/Defence Estates; stone tracks and the Southern Transit Route were built; protective measures for archaeology and tighter control and monitoring of training were introduced. It has paid off.

ICG operates on SPTA (West) and in concert with the Larkhill and Bulford Conservation Groups provide invaluable data gathering and monitoring of this wonderful area of historic landscape and habitat – the finest area of chalk grassland in NW Europe. Each group operates in about 30,000 acres, much of it being protected as a Site of Special Scientific Interest. A strong membership requires communications to keep members informed about military activity, direction from DIO and to encourage participation in projects and activities. We have done this by regular newsletters (six per year) since 2005 and by creating a website for the exclusive use of members. Recording species data can now be submitted electronically (over 9000 recordings since 2012) and passed easily to the database at Westdown Camp. Historic datasheets also have



Marsh fritillary and red hemp-nettle are both surveyed for annually on SPTA (W) © Crown

been retrospectively submitted to the database so members can feel that their efforts were meaningful and appreciated.

A most comprehensive ICG Dossier of species data, background history and projects first published in 1985 has been looked at rarely since the 1990s will be more widely available on our website. We now have to decide how best to take the dossier forward as a permanent record of ICG activities over the years to come. Working with national and local conservation groups such as Natural England and Butterfly Conservation can be very rewarding in terms of 'educating' us and encouraging participation. Once again this year, we went 'international' with an excellent visit by Dutch conservationists who had never previously experienced the beauties of such an expanse of chalk grassland. We expect they will be back!

We have worked closely with Landmarc and Aspire Defence, the latter devising the Red Start Project in 2007 for the sale of nest boxes produced by 'Geordie' Ward and his team, the sale of which has raised invaluable funding for the conservation groups across SPTA.

At the grass roots level of course we have our members who get out onto the ground to carry out annual tasks and projects as part of our support to DIO. Clearing scrub, a back-breaking task has improved habitat for many grassland species and tidied up



ICG members surveying for hen harriers, braving the cold of winter © Crown

archaeological features; butterfly surveys contribute to the Butterfly Atlas and bird counts keep BTO data up-to-date; frequent botany walks encourage further activity; there is support to the stone-curlew project, hen harrier surveys and all recording supports County recorders. The Raptor and Owl Nest Box Project (Silver Otter Winner 2014) is now in its 31st year, still led by redoubtable Nigel Lewis MBE; it attracts much national acclaim and positive publicity for the conservation work of the MOD/DIO on its training estate.

An excellent project led by Neil Skelton with Church Commission blessing has seen a transformation of Imber Church. Following significant internal preservation of this 14th century church, the cemetery is maintained by the ICG; a set of bells installed and a new pathway built to cope with the

many hundreds of visitors when Imber is open. In ten years a lot has been achieved without undue pressure from the training need.

The public in general is unaware and suspicious about what value the MOD places on its estate, some 1% of the total landmass of the UK. With conservation groups largely made up of local enthusiastic civilians, it does not take long for the public to get the right messages about the importance the MOD does place on looking after this heritage for future generations and to recognise that MOD ownership of SPTA for over 100 years has been the saviour of this wonderful area of conservation and historic landscape.

Lt Col (Retd) Mike Jelf
Chairman
Imber Conservation Group



Imber Church © Crown



Michael Smith (left), County Micro-Moth Recorder on a moth evening © Crown



Bedfordshire

Joint Intelligence Training Group Chicksands



Short-eared owl at Chicksands © JP Conservation Officer

The Joint Intelligence Training Group (JITG) was formed from the Defence Intelligence and Security Centre (DISC) on 1st January 2015 and is situated at the former RAF Chicksands site, which lies approximately one mile to the west of the Bedfordshire market town of Shefford.

The site itself is spread across approximately 2km² of diverse habitat, ranging from manicured parkland to unimproved grassland and mixed forestry blocks used as a military training area. It is due to this mix of habitats that the site hosts a surprisingly wide range of flora and fauna, much of which remains unnoticed by those going about their daily business. Chicksands also contains four designated County

Wildlife Sites and although these do not attract any official protection, they do recognise the importance of the habitats at Chicksands in relation to the Bedfordshire countryside as a whole.

Much of the past year has been spent undertaking an inventory of the various species on site in order to both record these for information purposes but also to raise an awareness, which will hopefully encourage more involvement with conservation matters across the wider community. One such initiative was the Chicksands Bird Survey, which invited all residents of Service Families Accommodation, Single Living Accommodation and the workplace to record bird species seen in and around their immediate

area. As expected, the usual range of common garden birds was seen but some surprises did occur in the form of an abundance of nuthatch, nesting spotted flycatchers and the occasional lesser spotted woodpecker and tree sparrows. The training area also threw up some more unexpected birds, with a wintering population of at least two short-eared owls and the once in a lifetime observation of two great grey shrikes together. Unfortunately 'Murphys Law' was truly in operation that day, with the Conservation Officer's camera languishing in the car boot, and the birds deciding to depart before a picture of this amazing sight could be recorded on film! To ensure such sightings are not lost in the mists of time they have regularly been entered into the BTO Birdtrack database¹, which is a partnership project between the BTO, RSPB, and the national ornithological groupings that looks at migration movements and distributions of birds throughout Britain and Ireland.

It is not all about the birds though, with other notable species such as great crested newt, several active badger setts and some interesting orchids all found during the period. These have all allowed the local management plan to be updated and we look forward to a number of activities during the following year, with the aim of protecting and enhancing some of the hidden treasures we are so lucky to enjoy here at Chicksands.

JP
Conservation Officer
JITG Chicksands

¹ <http://www.bto.org/volunteer-surveys/birdtrack/about>



Buckinghamshire

RAF Halton



Volunteer Service personnel © Crown

Over the last year, the conservation committee at Halton has been overjoyed at a number of successes, which are all thanks to the hard working and committed volunteers that keep driving and promoting conservation. It was difficult to note all the Station's achievements in such a small article, nevertheless, here is a snapshot of some of the activities from the previous year.

The Station was fortunate to retain its former Grounds Site Manager through the CarillionAmey transition, which has resulted in maintenance of care for the sympathetic land use management techniques formally employed. The chalk grassland known as 'Happy Valley' goes from strength to strength, having seen an impressive array of orchids again this year.

In June, the Station hosted its Families' Day at the Airfield. Wanting to promote conservation to families and friends alike, a conservation stand was set up by committee member Dave Short, who was supported by Lily the barn owl. This was a great opportunity for children and parents alike to learn more about owls and their behaviours. The Wheatley Birds of Prey from Oxford generously supported this event, extending the scope to a range of birds of prey including a peregrine falcon.

This year also saw a surge in interest over the Neolithic Long Barrow which sits nestled in the Chiltern Hills with an impressive view over the Vale of Aylesbury. To the unknown footpath walker, the obvious sign indicating

the 'Ancient Monument,' is misleading as it was put in the wrong location, however what was a mistake actually affords the real monument an extra level of protection! In the recent past, the Barrow had not received any attention, however this year we were able to round up a group of Servicemen awaiting Trade Training to help clear it of scrub and weeds. After a gruelling afternoon, the contours of the Barrow became much clearer. Since, Defence Infrastructure Organisation archaeologist Guy Salkeld has been to site to conduct some surveying to reveal the extent of the Barrow.

During the spring, a small team were able to survey for newts, and found 22 adult great crested newts alongside a handful of palmate newts living in an old training bund, which after a number of years of non use had naturally turned into a hub for conservation. Night cameras were set up by the committee to monitor activity in and around the facility, and revealed other visitors to the site, including ducks and deer.

As the outgoing Conservation Officer, I wish to thank the whole team for all their hard work, dedication and commitment to the Halton Conservation Group. I have enjoyed working alongside everyone from the bird surveyors to 'Batman' and even the enthusiastic Conservation Operations team. I know I leave Halton with conservation in a good place.

Emily Haddock
Station Safety Health and Environment
Advisor & Conservation Officer



Cornwall RNAS Culdrose



Hawk aircraft from 736 Naval Air Squadron (NAS) flying over Loe Pool with the sea behind © Crown

Royal Naval Air Station (RNAS) Culdrose, located in West Cornwall in an Area of Outstanding Natural Beauty, places great importance in its relationships with the local area and community. Just 1km from the MOD boundary is Loe Pool, a Site of Special Scientific Interest which along with the Penrose Estate, is in the care of the National Trust. Loe Pool is the largest natural freshwater lake in Cornwall and is cut off from the sea by a broad shingle bar heaped up by heavy Atlantic seas.

Loe Pool is a truly beautiful place – no wonder organisations and individuals strive to improve the water environment to encourage plant and wildlife to flourish. Unfortunately, the pool has historically suffered from eutrophication, a process where nutrients in the water feed algae. This leads to algal blooms, which reduce the oxygen levels in the water causing difficult conditions for aquatic life.

A potential cause of this problem was the Kelda Water Services (Defence) (KWSD) sewage treatment works (STW) at RNAS Culdrose, home to approximately 3000 military personnel. Consequently a group of organisations came together a few years ago to

investigate the impact that the STW was having on the pool. There are six tributaries flowing into Loe Pool and these were sampled every week for a year by National Trust volunteers. The Environment Agency then used this information to apply a phosphorous limit to the discharge permit at KWSD STW: KWSD and Defence Infrastructure Organisation (DIO) have invested upwards of £1m upgrading the STW to ensure compliance with these new environmental permit conditions.

KWSD hosted an open day for all interested parties to have a tour and see the improvements. Personnel from RNAS Culdrose, including the Head of

Establishment, Captain Adrian Orchard OBE RN, attended the event, as well as representatives of South West Water, Helston College, Natural England, Cornwall Wildlife Trust, DIO, the University of Exeter, the Environment Agency, members of the Loe Pool forum and the National Trust. This open day was a great success, reinforcing for the attendees the passion for improving the water quality in Loe Pool. It also attracted the interest of BBC News, who broadcast a piece about the pool shortly afterwards.

The phosphorus levels being discharged from the STW have decreased from around 5mg/l to less than 1mg/l. This is a significant decrease and a real win for the environment. The impact that this has on the water quality will be monitored over the coming years.

Sarah Maiden

Environmental Manager
Kelda Water Services

Tim Gibb

SHE Advisor
RNAS Culdrose



The group at the open day alongside the filter beds at the STW © Kelda Water Services



Dumfries and Galloway

West Freugh



Cleared dunes with digger in background © Crown

MOD West Freugh has been in use since 1936, as a bombing range initially and in recent decades as a test and evaluation facility. Aside from its military use the site is notable for other reasons over the years, historically for the most well documented UFO incident in the UK, and for the importance of its dune habitats and associated wildlife by being designated as a SSSI, SAC, SPA, and Ramsar site.

The site is managed on behalf of MOD by QinetiQ, and is a fundamental part of the annual Joint Warrior exercise, hosting training including amphibious beach assaults. A lot goes on in the background to support these activities, and in 2014 Defence Infrastructure Organisation (DIO) and QinetiQ staff worked together to resolve the issue of maintaining transit routes for vehicles

at night along tracks where great crested newts (GCN) were foraging near their breeding sites. The solution was to construct a permanent barrier to exclude the newts from the track, and to achieve this DIO acquired a European Protected Species licence while QinetiQ provided the materials and manpower to do the work. This culminated in two days of intense activity with DIO and QinetiQ staff working to get the trench excavation and barrier construction completed against the clock in accordance with the conditions of the licence. In the face of horizontal rain and cold, determination and good humour plus a few extra volunteers from the range staff got the job done, so the newts are safe and training is no longer restricted on this part of the site. To compensate for the exclusion, five GCN breeding ponds nearby were then enhanced by

clearing scrub covered margins and connecting areas to help the population in the long term, providing a win-win result for protected species and training requirements.

As part of MOD commitments to improve the condition of the Site of Special Scientific Interest the first stages of a dune restoration programme have taken place, with removal of invasive gorse from the dunes and aerial spraying of areas where botanical diversity has been lost to a monoculture of bracken. Turning the clock of natural succession back to restore favourable condition is not something that happens overnight, but a template for ongoing works is in place now for future years. This is a result of a team effort between DIO ecologists, archaeologists and Explosive Ordnance Clearance specialists plus QinetiQ staff and members of the West Freugh Conservation Group, particularly local archaeologists John Picken and Jane Murray who were instrumental with defining the methodology for mechanised scrub removal whilst protecting the important archaeological features that are part of the dunes.

John Black
Ecologist
Defence Infrastructure Organisation



Digger clearing gorse © Crown



QinetiQ team with GCN barrier behind © Crown



Dorset

Bovington and Lulworth Ranges



Driver training area Bovington © Crown

Bovington

The Bovington Stream drains a catchment intensively used for tank training and military exercises which remove the shallow topsoil, resulting in mobilisation of exposed sediment which enters the River Frome (see Sanctuary No.34, 2005 for details). This is an ongoing problem which is currently monitored under contract by Queen Mary University of London and the Freshwater Biological Association at the FBA River Laboratory. Part of the

scheme to control sediment involved the construction of a small in-line pond on the Bovington Stream, from which a diversion channel leads sediment rich water into a larger pond during periods of flood. Here most of the sediment, with the exception of clay particles, settles out before the water enters the River Frome. To date, this has been a successful operation and the ecological quality of the Frome below the Bovington Stream input has remained in the Environment

Agency category 'very good' for the last 10 years. An ancillary effect of the sediment management regime has been to create a new stream (the diversion channel) which despite experiencing extreme flows has offered a habitat for 115 macroinvertebrates including 12 mayflies, 14 beetles and 28 caddis flies. In addition, the sediment control measures have created the large settlement pond (Harvards Pond) and an additional pond at the downstream end of the Bovington Stream. These ponds represent new aquatic habitats and with sympathetic management will increase biodiversity in the area. In addition the levels of sediment entering the River Frome have been much reduced and photographs taken on January 21st 2015 compared sections of the Frome below the Bovington Stream (no discernible sediment cloud) with that from a nearby tributary the River Win.

Patrick Armitage

Bovington and Lulworth Conservation Group member



Diversion channel in action © Patrick Armitage



River Frome at junction with Bovington Stream © Patrick Armitage

Lulworth

The Lulworth Ranges continue to provide a habitat rich area for many species of birds. From coastal cliff to heath, woodland, china clay pit and grassland many species of birds are recorded each year. We have unfortunately lost nightingale - no records over the past three years - but this is not a local issue - more of a national trend. Twenty years ago probably some 15 pairs bred but now alas they have gone. On the plus side though we have gained little ringed plover as a breeding bird over the past four years.

The Range is surveyed each year and target species in particular are noted, namely nightjar, woodlark and Dartford warbler. The group plot breeding locations of these species and have also kept the nest box scheme going, which was started in 1999 with considerable help at that

time from the Range Officer Mick Burgess. In recent years we have seen a subtle increase in breeding coal tits at the expense of blue tits, in particular the Highwood area of the range. In the same area the number of breeding siskin has also increased and crossbills continue to maintain a toehold with a few pairs successfully breeding.

The heath area provides the chance to try for more interesting species and we continue to colour ring Dartford warblers but these birds are often hard to catch. Recent clearance of conifers on the Highwood training area has

improved conditions for nightjars and we have noted an increase in the numbers of birds here. Nightjars are targeted on calm balmy evenings when mist nets are set up just before dark.

The group, Maureen Spencer, Luke Phillips and Steve Hales wish to thank both Range Control and the RSMI for continued help and cooperation which has enabled us to contribute to the MOD bird recording.

Steve Hales

Bovington and Lulworth Conservation Group member



Harwards pond © Patrick Armitage



Luke Phillips with an arm full of owls! © Steve Hales



Essex

DIO SD Training East



EWT staff and volunteers © EWT

Friday Woods

Three years ago, Friday Woods North Local Wildlife Site was a dense tangle of mature cherry laurel *Prunus laurocerasus*. Very little light made it through the evergreen canopy which suppressed ground flora and prevented natural regeneration of native trees.

Essex Wildlife Trust (EWT) has now been working in partnership with the Defence Infrastructure Organisation

for three years to clear areas of this invasive shrub from the ancient woodland. EWT staff and volunteers combined, last winter, with volunteers from the University of Essex Student Union VTeam to cut and burn even more laurel than in previous years.

Now in early summer the positive effects of this work can really be seen with some regeneration of native ground flora in the areas cleared.



Friday Woods North - before with ground flora shaded out by cherry laurel © EWT



Friday Woods North - after removal of cherry laurel, restoring the natural light © EWT

Unfortunately, more prolific is the regeneration of the cherry laurel on any untreated stumps and from the seed bank in the ground. This clearly demonstrates the need for follow-up herbicide treatment of the cut stumps and the carpet of seedlings. Hopefully, a supply of herbicide will be secured and treatment can commence.

Fingringhoe Ranges

Thanks to the new grazer on the marsh land who is using cattle and a new breed of sheep, called 'Easy Care', and the scrub management by Landmarc, has ensured that the borrowdykes remain clear and unshaded. A recent survey has shown that important aquatic invertebrates, such as the scarce emerald damselfly still flourish within the brackish waters.

John More

Local Wildlife Sites Officer
Essex Wildlife Trust



Scarce emerald damselfly on Fingringhoe marsh © Crown



Essex

MDP Wethersfield



Essex Bird Watching Society work party at Wethersfield © Ros Gourney

'Surveillance drones' patrol at Wethersfield!

'Tree bees' *Bombus hypnorum*, a new species of bumblebee to the UK, unexpectedly chose some blue tit boxes as desirable residences around our HQ site. Once they take over a nest box, the female worker bees forage for pollen, while the male bees, or drones, hover around the nest keeping guard, justifying their name 'surveillance drones'!

Turtle Dove project update

Wethersfield is a participating site in an exciting RSPB and Essex Birdwatching Society (EBWS) project to encourage, the nationally declining, turtle doves *Streptopelia turtur*. Volunteer work parties, led by Sam Lee (RSPB) and Gerry Johnson (EBWS), worked hard to remove rank vegetation and rake shingle, before sowing a special arable seed mix including fumitory *Fumaria officinalis*, now scarce in a region of intensive arable monoculture. Germination in spring 2015 was not great, but we see this as a long-term

project. Let us hope the turtle doves appreciate our efforts and we hear their gentle purring in future.

Our great crested newts benefit all wildlife

A Defence Infrastructure Organisation project to remove a redundant underground fuel facility has benefitted wildlife. Surveys showed great crested newts were present so the new pond, part of the action plan approved by Natural England, had to be constructed before work could begin and is now a welcome drinking facility for all our wildlife in this very dry part of England. Dr Ken Adams, BSBI botanical recorder for Essex, discovered two colonies of Adder's-tongue ferns *Ophioglossum vulgatum* which we protected during construction. Unfortunately replanting the pond was omitted from the project, but we have had welcome donations of native aquatic plants from friends and colleagues. Dragonflies and damselflies were soon spotted patrolling the new pond.

Breeding bird survey

Our breeding bird survey resumed in 2015, with our volunteer BTO licensed ringer, Ken Venus and trainee, Josh Stafford, with over 1900 birds ringed. 2015 sightings started well in early March with flocks of approximately 1000 migrant golden plover *Pluvialis apricaria*, on their way north. Swifts, *Apus apus*, finally returned to nest in boxes erected on the gym five years ago. EBWS have donated two splendid owl boxes. Currently the barn owl is roosting alongside the box; not quite what we planned, but nature is always unpredictable.

Grassland maintenance

Areas of long grass, with mown paths to allow our police, army staff and site residents to wander among the beautiful grasses, has been one of our goals but proved surprisingly controversial. Concerns about allergies, snakes and rubbish meant that the original designated area had to be mown. However, we found an alternative and it was gratifying to see families enjoying the butterflies and orchids, and youngsters skipping along the curvy paths. Thanks to ISS staff, Martin and Tony, who helped us achieve this manageable landscape, which allows nature and site residents to co-exist.

Finally, thank you to David King, who retires this year as Head of Establishment for his commitment and support to our conservation work, especially our Diamond Jubilee Wood.

Ros Gourney

Sustainability Adviser
MDP HQ Wethersfield



Hampshire

DIO SD Training Home Counties



Fairy shrimps are sexually dimorphic © Iain Perkins

Aldershot Training Area in Hampshire contains a mosaic of open heathland and rough grassland, woodland (both conifer and broadleaved), and an extensive rough track network. The majority of the areas are designated as a Site of Special Scientific Interest and form part of the European designated Thames Basin Heaths Special Protection Area.

In 2014, the DIO Conservation Team followed up on a report from conservation group member John Eyre that fairy shrimp *Chirocephalus diaphanus* had been found on the training area in 2013. Two surveys were then carried out within the B4D area to see if the species was still present.

Previously widely distributed across England and Wales the species is now nationally scarce in Britain; the MOD having the largest metapopulation on Salisbury Plain.

The fairy shrimp is a translucent crustacean which is considered to be quite primitive due to its body structure. This crustacean is a passive disperser and is able to colonise new

ponds by laying eggs that lay dormant in the substrate of temporary ponds. During dry periods the eggs are dispersed on the wind, on the hooves of livestock and by vehicle movements until they are wetted again through rain, when they hatch, quickly colonising new ponds.

Therefore fairy shrimp favour temporary ponds where there is a seasonal precipitation/evaporation deficit, which causes the ponds to periodically dry out, removing predators such as fish. The ideal ponds stay wet for four months of the year; the temporary ponds on the B4D Training Area created by vehicle ruts and tracks fit this description and have great potential to support fairy shrimp.

A visual survey was carried out in June of 62 semi-permanent ponds on the area but no fairy shrimp were found. At the same time, a characteristic

assessment of the ponds was carried out to check habitat suitability. The team returned to carry out a sweep net survey (under licence) in November, and found fairy shrimp within a cluster of small non-vegetated ponds, with a sandy soil substrate, that were previously dry. Approximately ten adult individuals were observed in each pond, 50/50 male and female.

It is not clear how the fairy shrimp arrived on the training area, it could have been through vehicle and troop movements from Salisbury Plain or they may be part of a relic population which has been there for many years.

Another notable species found during the survey was the small red damselfly *Ceriagrion tenellum* which was seen hooovering around a temporary pond in the sun.

Conservation Group Team
Defence Infrastructure Organisation



Even the Training Area Marshall has now become quite the 'expert' on fairy shrimps © Crown



Hampshire

Institute of Naval Medicine



Restored INM pond taking shape © Wendy Lydiatt

Hidden in a far corner of Gosport by the sea is the Institute of Naval Medicine (INM). The original building, Monckton House, dates back to 1854 and sits in eight acres of land with a well established garden at the front of this Grade 2 listed building. In November 2013 a few workers rediscovered a corner of INM hidden behind the stores building that had a neglected pond area and decided to tidy it up. The INM 'Ponders', as they came to be called, with the support of the Medical Officer in Charge, had a team building day to clear the pond. Frogs and plants were removed safely so that a new pond liner could be put in place. But that was just the beginning. The initial idea of just doing the pond area grew to creating a whole garden.

INM has an affiliation with the Worshipful Company of Barber Surgeons in London, which has a long established medicinal garden. So it was decided to create our own medicinal garden, encompassing a wildlife and quiet area.

Over the next 18 months there were more team building afternoons, but every week the INM Ponders were out planting, painting, pruning, watering and redesigning as new ideas came into their heads. Plants were 'Googled' for their medicinal properties. INM staff donated money, plants and equipment. A couple of dead trees around the site were cut down, shredded then used to make a bark path. Natural stones were used around the pond area.

To help encourage wildlife, there is a wild meadow grass area, a buddleia plant for the butterflies, an insect house and a bird box. There was frog spawn in the pond but we think a heron spotted by the pond may have dined out on it. A pair of mallard ducks are regular visitors, as are the dragonflies. We are still waiting for a bird to take up residence in the bird box. The garden is now a festival of colour.

There are over 25 medicinal plants including lavender, lemon balm, evening primrose, feverfew, valerian,

foxgloves, borage and camomile, but also some more unusual ones including betony pinks, lady's bedstraw, heartsease, sempervivum and redcurrant. All provide a great nectar source for pollinators.

The INM Medicinal Garden and Pond Area was officially opened on 12th May 2015. In attendance were the families of some INM staff who have sadly passed away and had donated plants in their memory. The Seconded Medical and Dental Officers (SMODOs) had donated money for a bench in memory of a colleague who died in 2014.

The garden would not have been possible without the generosity of INM staff, the SMODOs, the Royal Navy and Royal Marines Charity (RNRMC), and a team at HMS Sultan who provided several plaques. Not to forget all the hard work done by the INM Ponders who will continue to raise monies and maintain the garden for all INM personnel.

Wendy Lydiatt

INM Ponder



Medicinal garden and pond area © Wendy Lydiatt



Isle of Wight Newtown Ranges



Hoopoe a rare visitor to Newtown Ranges © Barry Angell

A great year here on the Island, with bookings for Jersey Camp and the Training Area up on last year and some 62 units using the Camp facility and 76% weekend usage across the board. Once again there is an increase in bookings from the Air and Sea Cadet community who enjoy their range days.

Birds and mammals nest in the most peculiar places. This year mice nested in the cooling fan of the ride-on mower. After laying up the machine for the winter we discovered the abandoned nest before starting up. A pair of wagtails decided that the solar PV system on the roof of Jersey Camp was the place to settle this year, so as well as providing an income; the system is affordable accommodation for wildlife. Robins nested again in the barn; they are starting to fill up the old post office pigeon holes above the work bench.

2015 is the 40th anniversary of Sanctuary as well as the Conservation Groups 40th birthday and we still have founder members in the group.

Today, most people accept the need for greater sensitivity towards our environment and organisations from supermarkets to local councils have 'gone green'. This was certainly not the case in the late 1960s and 1970s when such thinking was considered a little eccentric, the preserve of bearded individuals who wore sandals. However, one of the early, somewhat unlikely, clean-shaven environmental pioneers was Lt Col Christopher Norman Clayden MBE. Norman and his wife Jean were the forerunners in conservation within the MOD and the original editors of the Sanctuary; they took a keen interest in our Conservation Group on the Island.

Norman retired in 1986 but maintained his interest in wildlife generally, and birds in particular. Of all the conservation areas in the nation, Newtown was his favourite. A frequent visitor to the Island, he often visited the Range. He died in December 2003. On July 13th 2004 his ashes were interned near Clayden Pond. A memorial seat was placed nearby. Jean and her family come every summer to pay their respects and picnic by the pond.

We are still commemorating WWI this year, especially the Gallipoli Campaign. Many a soldier including our local volunteer force the Isle of Wight Rifles fired on our ranges in preparation before deployment. The IOW Rifles suffered many casualties in Gallipoli. To relieve the boredom of working behind the butts the soldiers just as they do today leave their mark in the form of graffiti. Etched on the side of one of the target stores is a good likeness to Kaiser Bill. Sightings are in abundance; great crested newts, long and short eared owls, never recorded leaf minors and fungi discovered by Dr David Biggs too many to mention. Come to the

Isle of Wight to see our *mallishags* (caterpillars if you are not a *caulkhead*) they turn into beautiful butterflies here on the range and what a grand show we had last year including glanville fritillary.

The crowning glory has to be a hoopoe. Stuart Hersey and the local Hants and Isle of Wight Army Cadet Admin Assistant spotted one on the track leading to the ranges. This was mentioned to Barry Angell who managed to photograph the bird on our Lambsleaze farm a week later. We believe there have not been many sightings on the Island.

Jersey Camp hosted a seminar sponsored by the local council; the subject was Area of Outstanding Natural Beauty (AONB), 75% of the Island falls into AONB including us at Newtown Range. A successful day, I gave a talk on what goes on here including conservation, followed by a tour of the range area.

A very proactive conservation group AGM in November resulted in an experiment to change the cutting regime of the range meadow. Hebridean sheep on loan from the National Trust were introduced for winter grazing at the end of November. This is the first time sheep have grazed the meadow in living memory. We await a botanical survey of the meadow before committing to a new regime or continuing with the current practice.

All in all another good and interesting year, full of surprises and events to keep us actively involved in what must be one of the best sites in the UK. Well we would say that wouldn't we...

Maj (Retd) Dave Maidment
Range Officer



Kent and East Sussex

DIO SD Training South East



Kent botanical recording group visiting Dibgate Quarry © Richard Goslett

In January 2014, the introduction of Training Safety Marshals on HQ Cinque Ports Training Area (CPTA) and at Crowborough Training Camp, both part of DIO SD Training South East, transformed policing the training areas, with added benefits to conservation. The Marshals provide a deterrent against trespass and rural crime, including poaching and hare coursing. They have built up excellent relationships with local landowners and police, culminating in a number of joint operations with Kent Police on the CPTA Training Areas.

In spring the Kent Botanical Recording Group visited Old Park Training Area to conduct a census of plants. Plants on the area and on the Kent Rare Plant Register included clustered clover *Trifolium glomeratum*.

Alfie Gay and Sue Buckingham led the CPTA conservation walk at Beachborough on the Kent Training Area. Unusual plants recorded included quaking-grass *Briza media*, hounds'-

tongue *Cynoglossum officinale*, early spider-orchid *Ophrys sphegodes* and western gorse *Ulex gallii*.

In July, Jamie Cordery of the Deer Initiative, led the Crowborough Conservation Group summer walk to look at the beneficial aspects of deer management on the Pippingford Training Area. The fallow deer population has risen sharply in recent years prompting a 'managed' cull. This reduces the pressure on the environment whilst improving the condition of the remaining deer population and reducing the number of deer related road traffic incidents.

Martin Randal, Site Manager RSPB Dungeness Nature Reserve, led the CPTA Conservation summer walk around the Reserve to look at open pit and grassland management. A highlight of the day was looking at the successful programme encouraging common terns *Sterna hirundo* to breed on floating pontoons on the pits.

The CPTA Conservation Group is also getting involved with the short-haired bumblebee project, which is reintroducing one of Britain's extinct bumblebee species. Read more on page 28.

In June, Land Management Services (LMS) successfully renegotiated the lease with the Conservators of Ashford Forest for the military to have walkover rights on the 2400ha of the forest for the next 15 years. This is one of the largest areas of heathland in South East England regularly used for military orienteering exercises.

HQ CPTA, Landmarc Support Services (LSS) and Kent County Council have been working hard to improve the condition of the permissive path around Reinden Woods. This not only benefits the growing population of Hawkinge but will hopefully encourage the public to stay on the permissive path and not stray into the training area. To date this has worked, although a small portion of track still requires improvement to complete the project.

Finally, everyone involved in conservation at CPTA was sad to see Richard Goslett leave LMS in January 2015 to move to LSS as their Rural Team Manager. Richard has done much for conservation (including regularly contributing to Sanctuary) and was a well known and respected member of the group. Although his loss is keenly felt, as LSS Rural Team Manager he is still able to contribute to conservation issues in Kent and Sussex.

Maj Rick Beven
Senior Training Safety Officer
Cinque Ports Training Area



Merseyside

Altcar Training Camp



Altcar ranges set within the sand dunes of Sefton Coast © Crown

Altcar Training Camp, situated on the Sefton Coast a few miles north of Liverpool is a site of large open habitats and a foreshore of national importance. They include fore and fixed dunes, dune grassland, damp meadows, scrub and plantations which are mainly coniferous. Through this flows the river Alt with associated water edge herbaceous vegetation and trees.

Work compiling lists of moth species found on site has been ongoing but over the last three years a more standardised approach has been applied to the recording. Using two separately spaced Mercury vapour moth traps on two or more nights during the spring, early and late summer and autumn have given a better picture of the moth populations. In addition to this, daytime visits to record day-flying moths, the collecting of larvae and leaf mines have added to the records.

To date 367 different species of moths have been recorded not including

sub-species or variations. 92 of these have been micro moths. 82 are listed as nationally 'Local' and of these 31 are also uncommon in Lancashire. In some cases they are found only here on the Sefton Coast as singles or in very small numbers. An example is ruddy highflier *Hydriomena ruberata* a grey willow feeder, recorded on site last year as a single and the first seen for over 35 years in South Lancashire.

Whilst these 'Local' species are of great interest a further seven are regarded as of national importance. Sandhill rustic *Luperina nickerlii* and grass eggbar *Lasiocampa trifolii* are listed as Nationally Scarce B which means they are found in only 31-50 of the 550 10k squares which cover Great Britain. The larvae of the former feed on sand couch grass at the very front of the dune system and survive the salt spray and occasional sea water inundating, the latter feeds on creeping willow.

The following five are listed as Nationally Scarce A and are found in only 16-30 of the 550 10k squares. Goat

moth *Cossus cossus*, the larvae feeding within poplar trees for up to seven years. Red-tipped clearwing *Synanthedon formicaeformis*, the larvae feeding on creeping willow. Lyme grass *Chortodes elymi* whose larvae feed on its namesake. Shore Wainscot *Mythimnia litoralis* whose larvae feed on marram grass and *Cnephasia consperania* a micro moth feeding within the flowers of Rosaceae and Compositae plants.

The Altcar conservation group meet twice a year to assess the land management issues which arise from the movement of troops across the land and balance the need to conserve the wildlife on this important site. Colonel Gordon Black has given his time and permission to enable this moth survey to take place including the invitation to other Lancashire Moth Group members to record on site. In particular on the three dates each year designated as National Moth nights.

Richard B Walker

County Moth Recorder (VC59) and member of the Altcar Conservation Advisory Group



Red-tipped clearwing © Richard Walker



Lincolnshire

Air Weapons Range Holbeach



Otter seen near Holbeach © Crown

Holbeach Air Weapons Range is situated on the west bank of the Wash in Lincolnshire between the rivers Welland and the Nene, though closer to the river Nene. The range has had a new target installed this year to complement the existing ones. This target known as a L.I.M.O. is a moving target range and another that is planned for the future will be for high-tech laser guided weapons. There was also some ground training in the last year which progressed so well that the users have shown an interest in returning.

The main concerns of the conservation group are bird disturbance and the habitat condition on the range including the marine side which includes fish stocks, breeding areas, nursery areas, and the control of the shell fishing. This takes place out on the inter-tidal mudflats and creeks with bird disturbance overlapping both the 'mudflats' and the vegetated green shore. The habitat on the green shore has to be monitored for its plant life and is zoned into three areas, high, middle and lower level on the marsh. These are monitored for any invasive species that might smother the natural

plant life of the marsh. Access to the range outside of operations is controlled by the tide and the use of bridges which span the creeks near to the sea wall. Most bridges are for the maintenance of targets with the others allowing safe access on and off the salt marsh. A bridge that was damaged by the tidal surge in December 2013 has been repaired voluntarily by the local wildfowling associations.

The wildfowling are the eyes and ears of the group as they are the main users of the marsh on the ground. They control the shooting of water fowl that are on the legal quarry list and also the areas that may be shot over. Shooting is only permitted on the green shore. The mudflats are a no shooting zone. The mudflats are by far the largest area so insuring that there is always a quiet area where the birds may rest and feed. The height and time of the tide and the wind and cloud control the habits of the wildfowler so in learning this trade most become very good naturalists. Wildfowling traditionally takes place at dawn and dusk. The wildfowling clubs have released two hundred ringed

mallard inland of the marsh again this year and are now in their sixth year of the programme. The furthest ringing recovery being Holland. Previously, it was a hen mallard in a Siberian catching station.

The common gull has two small colonies one in front of the camp offices and the other out off the northern flag pole in the middle zone on the green shore where the sea purslane is dominant. Unfortunately one of the colonies is shrinking due to the invasion of couch grass as the ground becomes increasingly dry. This has also covered a previously important winter feeding area for Brent geese causing them to move further along the foreshore in search of better grazing.

A big plus for the range is that we suspect there has been a pair of otters using the marsh in late January and into February for the last two years. They have been seen briefly, but the problems of getting down wind and catching them on camera are very difficult. However, on a recent visit to the site the Sanctuary Editor managed to photograph a male otter on the outskirts of the range.

Graham Wall

Head Marsh Warden

Holbeach Wildfowling AWR

Holbeach Conservation Group



The repaired bridge © Graham Wall



Monmouthshire Caerwent



Grass vetchling *Lathyrus nissolia* © Gemma Wood

Caerwent Training Area which covers 600ha is renowned for Monmouthshire's largest remaining area of limestone grassland and supports a wide range of interesting and unusual plants; elsewhere in the county most limestone grassland has been lost to agricultural intensification.

The site receives frequent visits by the joint vice county recorders for the Botanical Society of Britain and Ireland (BSBI) to record plants for the planned National Atlas due to be published in 2020. This involves checking historical locations of rare or uncommon plants, and monitoring and recording important species that are restricted to the county.

Caerwent is the only site in the vice county for the small-flowered buttercup *Ranunculus parviflorus*; this is thriving in two areas but it is hoped that it will be found elsewhere.

There have been apparent losses of three species – wild liquorice

Astragalus glycyphyllos, wild pear *Pyrus pyraeaster* and the green-winged orchid *Anacamptis morio*. Other orchids seem to be flourishing though, early purple orchid *Orchis mascula* in areas of woodland scrub and in open areas and both bee orchids *Ophrys apifera* and southern marsh orchids *Dactylorhiza praetermissa* on gravel areas around buildings and banks.

The woodland to the north also has one of the largest populations of our native columbine *Aquilegia vulgaris*. Everyone knows Granny's bonnet as a popular garden plant in many forms and colours but the plants on the base are the true native species with large deep purple single flowers.

The uncommon fern Adder's tongue *Ophioglossum vulgatum* grows in profusion in one field. The field and woodland margin habitats are also a stronghold for hairy violet *Viola hirta*.

A plant more at home along the coast, the diminutive sea storks-bill *Erodium maritimum* used to be scarce at Caerwent but has undergone an amazing expansion and is now found along the edges of tracks and roads. Common cudweed *Filago vulgaris*, actually a rare plant despite its name, also now flourishes along some road edges and on the old railway line.

There are four species of grass on the base that are in the County Rare Plant Register: upright brome *Bromopsis erecta*; wood small-reed *Calamagrostis epigejos*; meadow oat-grass *Avenula pratense* and the downy oat-grass *Avenula pubescens*, the latter having increased significantly on the base over the last few years.

Madder *Rubia peregrina*, gromwell *Lithospermum officinale*, fragrant agrimony *Agrimonia procera*, Viper's bugloss *Echium vulgare*, large thyme *Thymus pulegoides*, grass vetchling *Lathyrus nissolia* and Dyer's greenweed *Genista tinctoria* are among the treasures that occur on the base whilst commoner plants such as ragwort *Senecio jacobaea* and field scabious *Knautia arvensis* thrive and provide important sources of nectar and pollen for a range of insects.

Recent discoveries in 2014 included moth mullein *Verbascum blattaria* and a stonewort *Nitella flexilis* found in a pond at the northern edge; this had not previously been recorded away from the coastal reens. Common whitlow grass *Erophila verna* was also recorded for the first time.

Stephanie Tyler and Elsa Wood

Caerwent Conservation Committee and Joint Recorders for the Botanical Society for Britain and Ireland



Dyer's greenweed *Genista tinctoria* © Crown



Northamptonshire

Yardley Chase Training Area



Purple Emperor (male) © J A Richardson

The Yardley Chase site of some 200 hectares was purchased in 1940 so that rail connected storage bunkers could be built. The site was mainly woodland, surrounded by meadow and parkland. Forty-four bunkers were built with blast walls excavated from the surrounding clay soil, but it was not long before these borrow pits filled with water creating a ring of ponds around each walled bunker, 124 in total. This unique site is now supporting a diverse flora and fauna, all three species of newt, frogs and toads, slow worms and grass snakes and 22 dragonflies; there is a creditable list of flora including vascular plants, mosses, liverworts, algae (including stoneworts) and lichens. The whole site was declared an SSSI in 1981. Many of the ponds are now becoming overshadowed by tree and shrub growth: there is some clearance in progress but efforts are also needed to return the surrounding meadowland to its original richness by managing mowing and grazing.

Focus on lepidoptera in 2014

Butterflies are in good numbers and include the black hairstreak and wood white; the black hairstreak has not been recorded over the last three years but could still be on site. Over the past three years our butterfly numbers have increased to include the purple emperor, dark green and silver-washed fritillary, none of these three have been recorded since the late seventies. Our total number of lepidoptera species has now reached 470.

Focus on desmids in 2014

The desmids have been studied since Victorian times (John Ralfs) and the literature is more extensive than with many freshwater algal groups. There are more than 900 known species in the British Isles: so they are comparable in biodiversity with bryophytes or birds. These are highly evolved single celled members of the Chlorophyta or green algae, they are among the most beautiful objects that can be seen under the

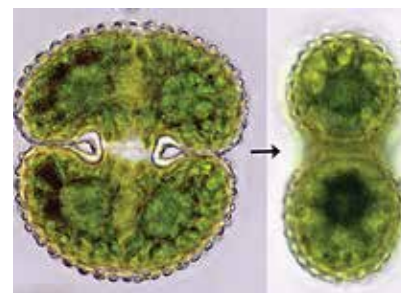
microscope and are indicators of wetland quality. Desmids are more often found in areas with unpolluted acid water and have thus been much less studied in southern lowland areas of the UK. A study of desmids in the Yardley Chase ponds is thus of scientific value and the diversity found already is greater than originally expected and it is of interest to speculate why this should be: perhaps because of the raised boulder clay deposits within ancient woodland? Within the bunker ponds 16 species from the genus *Closterium* have been listed, 9 from *Cosmarium*, 2 from *Staurastrum* and there are representatives of the genera *Pleurotaenium*, *Hyalotheca*, *Gonatozygon*, *Mesotaenium* and *Cylindrocystis*. There have been a few surprises: David Williamson, the UK expert on this group noticed an unfamiliar *Closterium* in 2009 and established that it was *Closterium regulare*, which had not been recorded for certain in the UK. The bunker ponds on Yardley Chase remain the only known location for this species.

C F Carter

Team Member for Algae

J A Richardson

Compton Estate Conservation Advisor



Cosmarium reniforme (Ralfs W. Archer), showing face view and side view (the cell is about 0.05mm wide) © C F Carter



Pembrokeshire Castlemartin



White green-winged orchid © Lynne Houlston

The Pembrokeshire Ranges Conservation Group (PRCG) is very active across four ranges in South Pembrokeshire; Castlemartin, Penally, Manorbier and Templeton. Experts monitor a wide variety of species either annually or for specific National Surveys. Our recent results have been mixed; some 'Good', some 'Bad' and some that start off 'Ugly'!

'The Good'

Grey seal *Halichoerus grypus* pups. Forty-two seal pups were born across Castlemartin Range in autumn 2014; our highest record to date. However, due to some stormy weather losses were also high at 38%.

Brownsdale Orchard. The Orchard was neglected and overgrown and of the 27 apple trees present in 2004 only 14 remain. The trees were planted in approximately 1900 and provide an amazing habitat to lichens, insects, badgers and birds. Now, in 2015, the Orchard is thriving with 28 young trees which were grafted from cuttings from the original 14. A new 'cut and remove' management plan has been introduced to the

vegetation and the apple trees are being gently pruned. In the last few weeks an empty bee hive has been placed in the Orchard to try and attract a swarm from a nearby colony.

Green-winged orchids *Orchis morio*.

The spring of 2015 saw an amazing bloom of pink green-winged orchids near to St Govan's Chapel. It was the highest number of orchids in this area since 2009 and amongst them was our first recorded white one.

Chough *Pyrhcorax pyrrhcorax*. We have 12 pairs of chough nesting on Castlemartin this year which is a 20% increase on last year. One of our male breeding chough is about to celebrate his 21st birthday; having been ringed when in the nest back in 1994.

'The Bad'

Strandline beetle *Nebria complanata*. We recorded our first zero count in 2014; having had in previous years the largest population in Pembrokeshire. Is this the end of our gorgeous pink/brown beach beetle? Another victim of the winter storms?

And 'The Ugly'; though not for long!

Beach clean. A group of volunteers filled ten 1xton bags with flotsam and jetsam off Bullslaughter Bay on Castlemartin Range at Easter. All the rubbish was taken to the Camp's waste sorting station.

Fly-tipping. Fly-tipping has hit Castlemartin Range three times over the past few weeks, with beauty spots being used to dump a mixture of waste, some of which was hazardous. This has all been removed.

Petalwort *Petalophyllum ralfsii*. When the Military told Natural Resources Wales (NRW) that they needed to train with mortar rounds within the Site of Special Scientific Interest, they didn't expect a joyful response. But NRW had been looking at ways to rejuvenate sections of the sand-dunes and using mortars was an effective way to do it. The ground looked like it had chicken pox but over time it is hoped that petalwort will spread into these vegetation free areas.

Scrambled egg lichen *Fulgensia fulgens*. Due to an increase in training at Castlemartin, sheep grazing in some areas has been reduced. This has resulted in a reduction in the lichen *Fulgensia fulgens* that enjoys a sandy, open environment. Members of the PRCG went out in force with their garden rakes and forks to help this lichen and spent a number of hours scuffing up the surface of the fixed dunes to remove the vegetation and expose the sand below.

Templeton Ponds. Following a request from a member of the PRCG and funding from 'Amphibian and Reptile Conservation' ten ponds were scraped out and re-sculptured on Templeton Range. They look a bit raw at present but will provide an amazing aquatic habitat in the near future. Progress will be monitored.

A very busy year for wildlife, military and conservationists but because we all work together we make it happen!

Lynne Houlston
Authority Ranger
Pembrokeshire Coast National Park



Wiltshire

Boscombe Down



All intrusive work at MOD Boscombe Down is now carried out under archaeological supervision © QinetiQ

MOD Boscombe Down is located on the southern edge of Salisbury Plain, Wiltshire. The site is managed by QinetiQ under the Long Term Partnering Agreement. The station has an aviation history spanning almost a century, although the landscape in which it sits is substantially earlier. Boscombe Down has an active conservation group of nearly 30 years standing, comprising a number of specialisms in the management of biodiverse landscapes, as well as a resident archaeologist who works with both the MOD and outside official external bodies.

Throughout 2013-2015 the station has been the focus of a number of infrastructure upgrades; including new heavy duty electrical cabling traversing the site, communications and power upgrades to a number of facilities and various other intrusive works. In all an estimated 4.5km of trenching work has been carried out under archaeological supervision. Discoveries during this work have

allowed us to re-evaluate the extent of a large prehistoric and Roman settlement in the eastern sector of the station.

Currently it is our policy to supervise all work that requires intrusive groundwork; since 2013 this has included historic building survey and condition work. The intention is to catalogue and identify the chronological development of Boscombe Down with reference to the station's unique place in both the United Kingdom's industrial heritage and the development of aviation technologies over the last century.

The task is a large one, with over 400 structures on the station the possibility of recording all buildings appears daunting. The immediate problem is the level of diversity currently encountered on the site. As an example building 24 is one of the few remaining buildings on site that dates from the World War I, built in 1917 this structure was the first

medical centre on the station and remains substantially unaltered. Building 934, on the other hand, is one of a number of Hardened Aircraft Shelters built c.1980-81. B934 has recently undergone substantial modification and whilst still an important reminder of the Cold War, now displays alterations covering both a new role and current health and safety concerns.

The challenge is how to record these changes in such a way to demonstrate the continued value of structures and recognising their place in the station's aviation history. Subsequently a methodology is in development with the QinetiQ Facilities Management Team allowing pre-modification and removal surveys to be carried out, capturing something of a building's former use before it moves on to the next phase of its life-cycle.

Bob Clarke
Boscombe Down
Conservation Archaeologist



Wiltshire Bulford



Broad-leaved cudweed on CCDA 2014 © John Moon

The Salisbury Plain Training Area (SPTA) contains a vast diversity of mostly chalk-loving plant species and members of the conservation groups are frequently finding new sites for scarce plants in its 377km². However it was a surprise when members of the Bulford conservation group found a large and previously unnoticed population of broad-leaved cudweed *Filago pyramidata*, since this Red Data Book species had not previously been recorded in Wiltshire and currently



The criss-cross tracks of CCDA on SPTA (E) aerial photo © Crown

exists in less than ten other UK sites, all to the east of Wiltshire.

This small annual, generally between 3cm and 15cm high, was found on the Cross Country Driving Area (CCDA), north-west of Tidworth, which is about 1km across and criss-crossed by dozens of chalky tracks which are interspersed by islands of chalk grassland. The plant is characterised by near-globular clusters of 10 to 20 small yellowish flowers and leaves which broaden towards their apex. The track-edge habitat occupied by the broad-leaved cudweed is occasionally, but not continuously, disturbed by the passing vehicles and this provides good conditions for seed dispersal and germination. Some desiccated *Filago* specimens were found at the end of the long and hot summer of 2013, but confirmation of their identity had to wait until July 2014 when the next generation were in flower. Initially only a few tens of plants were seen but further survey work located around 700 plants spread over 0.5km²

and a few outliers were also found on a track edge 1.5km from the main cluster. It seems probable that there are other track edges in the general area where the plant remains undiscovered.

The plant has quite a short life-cycle, usually germinating in late spring and finishing flowering in August, and this may be one reason it was previously overlooked. Another reason is that the CCDA is frequently occupied by fast-travelling vehicles creating clouds of dust – so not a prospect to entice botanists away from the surrounding areas of pristine chalk grassland. This is another example of the disturbance caused by military activity being good for annual plants; other interesting annuals found on tracks in and around the CCDA include lesser centuary *Centaureum pulchellum*, dwarf mouse-ear *Cerastium pumilum*, Basil thyme *Clinopodium acinos* and knotted pearlwort *Sagina nodosa*.

Some people have suggested that the plant may have reached the CCDA via seed trapped in the tracks of tanks returning from Germany (like hairy rocket *Erucastrum gallicum*, which has now spread over most of SPTA) but this seems unlikely as broad-leaved cudweed is even scarcer in Germany than in the UK and has its main distribution around the Mediterranean. A pleasing aspect about this find is that nothing needs to be done to ensure the plant's survival which only seems to depend on the continued use of the CCDA for its current purpose.

John Moon
Botanist
Bulford Conservation Group



Wiltshire

MOD Corsham



Overgrown pond © Nicky Wookey

A purpose built pond for great crested newts (GCN) *Triturus cristatus* was surveyed in 2007 and confirmed the presence of the species as well as palmate *Lissotriton helveticus* and smooth newt *Lissotriton vulgaris*. Unfortunately a repeat survey in 2013 only found palmate and smooth newts. The reason for their absence is unknown, although a combination of predation and a reduction in habitat quality may be factors. This prompted conservation works to the pond which included cutting back banks of bramble and trimming trees to reduce shading.

As pond management works were proposed for late 2014, a follow up survey was carried out in April 2014. This confirmed a maximum count of 14 GCN, along with smooth and palmate newts.

As GCNs were recorded, under the Wildlife and Countryside Act 1981 (as amended), no works should be undertaken in and around the pond without a Conservation Licence from Natural England (NE). After discussions with NE, it was confirmed that a licence would not be required as the method statement was updated. Interserve personnel were given the task to carry

out the pond management work providing the method statement was followed to the letter. The aim was to undertake habitat improvement in January 2015.

The majority of the pond had been swamped by reed, with over-hanging willow on its northern and eastern side. Leaf litter, branches and silt equated to approximately 30cm in depth.

To improve the condition of the pond in line with the GCN Conservation Handbook the following tasks were identified.

- Partially pulling of emergent vegetation
- Cutting back over hanging trees
- Partial-desilting and clearance of leaf-fall

Where possible the works proposed would aim to provide the following characteristics:

- Surface area between 100 and 300m²
- Depth may vary; both deep (up to 4m) and shallows

- Substantial cover of submerged and marginal vegetation
- Open areas to facilitate courtship
- Absence of shading on the south side
- Absence of fish
- Absence or low density of water fowl

Partial removal of marginal and emergent vegetation was carried out by hand and a 'fringe' of vegetation was left around at least a half of the pond edge.

Trees and scrub on the northern side of the pond were retained though shading vegetation on the southern sides was removed. Log piles were left and scrub vegetation was cut-back just above ground level. Care was taken not to remove vegetation in areas that may be used as a hibernacula.

Silt and debris was removed by hand to increase the general depth of the pond and provide open areas.

Nicky Wookey
Compliance Advisor
Interserve Support Services



Conservation works to the pond © Nicky Wookey



Wiltshire

Larkhill and Westdown



The rare Deptford pink *Dianthus armeria* near Black Heath © Nigel Cope

We offer our congratulations to all the winners of the Sanctuary Awards and particularly to Nigel Lewis, Paul Castle and the other members of our group who were successful.

Unlike the previous year, the weather in 2014 was brilliant and Nigel Lewis' team had a particularly successful year ringing 512 barn owls. Tawny owls also did well with breeding pairs three times the ten year mean. Kestrels equalled the ten year mean but there are gaps in their distribution that need to be filled.

In August the conservation group commemorated the start of World War I by visiting some of the landmarks on the Plain. The arrival of the Canadian Expeditionary Force in October 1914 required the building of

an extensive training infrastructure. Christopher Beese led a party to find the remains of WWI building platforms, training trenches, a mine crater and tree carvings.

Richard Osgood DIO archaeologist, and Mark Khan, our Archaeology Sub-group Leader, continued the WWI theme by conducting a major project called Digging War Horse involving an excavation to search for the lost Larkhill isolation hospital.

The ringing group led by Graham and Phil Deacon had an exceptional year trapping 5,307 birds in the Westdown scrub. The years prize bird was a barred warbler, a vagrant to the British Isles, breeding in Central and Eastern Europe and migrating via the Middle East to winter in East Africa. Other highlights

included spotted flycatchers, green woodpeckers, nightjars and sparrowhawks. Record counts were made of redstarts, sedge warblers and house martins.

In the winter, the entomology group, led by Marc Arbuckle, conducted a search for the tiny white eggs of the brown hairstreak butterfly on blackthorn and were successful near Lavington Folly. Mike Lockwood is tracking this elusive UK BAP priority species across Wiltshire and Salisbury Plain. In the spring/summer a series of bee walks were a great success!

This summer Tony Rowlands Chair and Botany Sub-group lead hosted a very productive visit by a team of taxonomists from the Natural History Museum in London. They were impressed by the display of the rare Deptford pink near Black Heath and the quality and quantity of tuberous thistle on Penning Down.

The year was kind to the deer population on the Plain without the prolonged wet weather seen in winter 2013. This has benefitted the deer population which built up good fat reserves for the winter. Recent fencing work around the Impact Area should not effect the roe deer population as this tenacious species can easily jump fences and fiercely defend their territories. The number of muntjac deer have been gradually increasing over the years, which is reflected in the frequency of sightings and the quantity culled annually.

Lt Col (Retd) Richard Clayton
Secretary
Larkhill & Westdown Conservation Group



North Yorkshire

RAF Fylingdales



The cuckoo Vigilamus © Scott Wicking

A number of cuckoos 'stationed' at RAF Fylingdales, have been fitted with satellite tracking devices by the British Trust for Ornithology (BTO), in an effort to monitor their migration and track their activity. Using this advanced technology, satellites will detect the trackers on the back of the cuckoos which in turn will provide this important information on migration and bird activity to the trust.

The last 25 years have seen a significant decline of almost 75% in the number of breeding cuckoos, predominantly in the south east of Britain. Whilst some data is currently available on cuckoos while they are here in the UK these tracking devices should hopefully provide organisations like the BTO with a valuable insight into the cuckoo's habits over the winter months and shed some light onto the reason for their decline.

RAF Fylingdales has a big part to play in the success of the project. In

essence it will track the satellites which in turn track the transmitters located on the bird's backs, providing the trust with detailed flight patterns of their day to day exploits.

The project is led by BTO scientist Dr Chris Hewson, who said: *"If we are to produce a conservation strategy for a bird like the cuckoo that spends most of its time outside of the UK, we need to understand its full life cycle. Without this it would be like doing a jigsaw with some of the pieces missing. With the help of RAF Fylingdales, we hope to find some of those missing pieces."*

"Right now we want to know whether the migration routes of birds in the north east differ from those in other parts of the UK. RAF Fylingdales still has a healthy population of cuckoos and what they do once they leave for the winter could give us important information that will help inform cuckoo conservation across the UK."

Whilst carrying out the tagging of the cuckoos, Mick Carroll, a long time Fylingdales conservation group volunteer, enquired about the possibility of one of the tagged cuckoos being named 'Vigilamus' after the station motto 'We are watching'. BTO kindly agreed to the request and a tagged male adult cuckoo was named Vigilamus at RAF Fylingdales on 20th May 2015.

Tagged cuckoos can be tracked to their location via the BTO website. Information received via the satellite tracking system showed Vigilamus had arrived in Africa at the end of July 2015.

Kevin Phillips CMIOSH, MIIRSM
Station Safety & Environment Advisor
Carolyn Keeble
Safety & Environment Clerk
RAF Fylingdales



The team with Mick Carroll (right) and Vigilamus © Scott Wicking



East Yorkshire DST Leconfield Carrs



North Scandinavian 'acredula' willow warbler © Maj (Retd) Tim Cowley

A third visit by the bird ringing team took place at DST Leconfield over the period 1st to 4th May 2015.

Lt Col (Retd) Roger Dickey (Army Ornithological Society Chairman) and Sqn Ldr (Retd) Julia Springett (RN Birdwatching Society), were ably assisted by our resident birdwatcher Maj (Retd) Tim Cowley, who whilst not licensed by the British Trust for Ornithology to handle the birds, was on hand to identify and record species.

Two sites were set up, one proving much more productive than the other. At the end of a most successful day the ringers had caught 57 birds of 17 species, during what had been a poor spring passage in East Yorkshire. To put



A female common darter © Maj (Retd) Tim Cowley

that into context the Bird Observatory at the nationally important Spurn Point during the entire month of May only caught four times the number of birds caught at DST in one day! In addition to the quantity and variety of birds caught, the tally included a north Scandinavian 'acredula' willow warbler, a long-tailed tit that had been caught at another site previously (the details are still being investigated) and a chiffchaff that was first caught as an adult at DST two years ago. The latter record is amazing, as it proved that the bird had successfully migrated to Africa and returned to the same location at least three times. Incredible when you know that this small bird only weighed nine grams.

In June a number of orchids were in flower on the training area including bee, common spotted, southern marsh and pyramidal. The spotted and marsh orchids are a regular feature, but the bee orchids had not been recorded for a few years, and the pyramidal is a welcome newcomer to our lists.

In between the summer showers a number of insects emerged from hiding, including large skippers, small skippers,

orange tips, small tortoiseshells, many ringlets and meadow browns, as well as the migratory painted lady butterflies. This was also a good year for the daytime flying chimney sweeper moth, with good numbers on the verges around the ponds. There were also records of common darter dragonfly and a visitor's report of a brown hawk. Reptile records were thin on the ground but there were at least three grass snakes found basking on 28th June.

Last August the East Riding Bat Group visited again, following on from the success of their previous visit in 2013. After a quiet start, with minimal activity, the group were delighted to record all four species previously identified (soprano, pipistrelle, daubentons, and noctule), and were particularly delighted with very good views of the Daubentons skimming the surface of the lakes for food. These were seen by using high powered searchlights in conjunction with the bat detectors.

The group will visit again this August, which will also include the use of night vision goggles as an additional aid for the first time.

Other highlights of our year at Leconfield included the return of two turtle doves (sadly a decline from recent years), increased red kite sightings, a green woodpecker (not a common sighting locally), and an indication that the little ringed plovers had probably bred, following a sighting of one bird performing a feigning injury display.

**Alan Bakewell MCMI and
Major (Retd) Tim Cowley**
Leconfield Carrs



North Yorkshire

Ripon Parks and Ellington Banks



Elevator nets at Ripon Parks © East Dale Ringing Group

Ripon Training Area is comprised of three main sites clustered within 2km of one another on the northern fringe of the historic city of Ripon, nestled in between the Yorkshire Dales and North Yorks Moors. The training area supports a variety of military use, including driver training, bridging, heavy engineering and infantry training, and also supports a range of diverse and valuable wildlife habitats. Two of the training sites, Ripon Parks and Ellington Banks, have national and local nature conservation designations and are subject to various types of management and monitoring throughout the year.

Ripon Parks consists of 275ha of neutral and calcareous grassland, wetland and woodland on the banks of the River Ure, much of which is designated as part of two Sites of Special Scientific Interest (SSSI) due to the important diversity of habitats and geological features. Most of the area is managed by sheep grazing, but one of the main difficulties in maintaining the SSSI habitat in favourable condition, like many other riparian sites in the UK, is the presence of the highly invasive non-native plant Himalayan balsam. This alien species is extremely adept at

rapidly colonising damp soils at the expense of more diverse and beneficial native plants. In summer 2014, as in previous years, Landmarc Support Services put considerable effort into controlling the growth of balsam before it could set seed. This is a laborious task requiring pulling by hand, a task with which many MOD sites and conservation groups are unfortunately all too familiar with, and although we continue to endeavour to set a good example of responsible land management by controlling it within our own boundaries, it will take a concerted effort by other landowners throughout the river catchment to achieve a long term improvement.

During the winter months volunteers from the East Dales Ringing Group led by Jill Warwick gave up their time to clear rushes from part of the SSSI and manage adjacent willows. This is done on rotation to maintain scrub that aids the bird monitoring they have been undertaking for the past 12 years, and adds to overall structural diversity. Their ringing efforts were rewarded with an exceptional sample of migratory winter thrushes thanks to the use of their innovative 'elevator nets', most notably redwing which totalled more than 400.

Nearby at Ellington Banks the monitoring focus has been on invertebrates, and Dr Charlie Fletcher is keen to discover more about the life cycle of *Scrobipalpa pauperella*, a small inconspicuous moth that was thought extinct in the UK for 40 years until Charlie confirmed its presence on site, along with 650 other moth species he has recorded there. The plan for 2015 is to broaden our knowledge by confirming the larval food plant used

by *S. pauperella* so we await Charlie's results with interest, and in the mean time have been concentrating on maintaining the value of the magnesian limestone grassland and wetland areas where the moth was found.

Ellington Banks is 65ha in size and notified as a Site of Importance for Nature Conservation by Harrogate Borough Council. Thanks to an offer of help from the Nidderdale AONB Conservation Volunteers, three winter volunteer days were organised which focused on clearing invasive scrub from the limestone grassland and ponds. These are important features on the site in terms of botanical value, invertebrates and breeding amphibians including great crested newts. The group were able to field an enthusiastic team of up to 15 volunteers per session led by the AONB Volunteer Coordinator Paul Mosley and supported by DIO, and their efforts in clearing half a hectare of alder and willow were greatly appreciated. This was communicated directly to the volunteers by a visit from the training area's Training Safety Officer Major (Retd) Paddy Ennis when he thanked them for their contributions and gave a short talk on the history and use of the site. In times of austerity when budgets are stretched support from local volunteers to help maintain the conservation value of the training estate is becoming more important as a means of maintaining effective delivery, and we thank all who contribute by giving up their time to help manage and monitor our natural resources on the MOD estate.

John Black
Ecologist
Defence Infrastructure Organisation



Cyprus Sovereign Base



Loggerhead turtle swimming in Cyprus © Mick Smith/Dragon Divers, Cyprus

The beaches in the British Sovereign Base Areas (SBAs) in Cyprus are important nesting sites for the endangered green *Chelonia mydas* and loggerhead *Caretta caretta* turtles.

Sea-turtles in Cyprus are protected as priority species under the Protection and Management of Nature and Wildlife Ordinance (implementing the provisions of the Habitats Directive), enacted in 2007. Despite this protection, disturbance to nesting beaches and illegal killings are not uncommon.

Since 1990, sea-turtle conservation projects in both SBAs, carried out by volunteers and overseen by the SBA Environment Department, have monitored the turtle beaches to find and protect nests, assess hatch-success and record any dead turtles found. The information collected is used to inform policy decisions regarding sea-turtles and their habitats.

The work undertaken by volunteers is invaluable. They are on nesting beaches on a daily basis, which is an enormous asset to enforcement action, reporting damaging activities such as camping, driving on beaches, dogs on beaches, illegal fishing etc, as they happen.

The Western Sovereign Base Area (WSBA) turtle project, covering a number of beaches, has benefitted from long-standing and enthusiastic volunteers, as well as, until last year, involvement from the University of Glasgow. The Eastern Sovereign Base Area (ESBA) project covering two beaches, has suffered from a lower profile, poor recruitment of committed and interested individuals in recent years, and high volunteer turnover.

These beaches over time have become increasingly important for nesting turtles, with the numbers of nests and hatch-success showing a general increase. Because they are located on military bases, these beaches are potentially better protected from disturbance than other beaches in Cyprus. To achieve this potential, protecting the turtles and their nests during the sensitive period of nesting and hatching (May–October) could be made more effective by overcoming the challenges of regular changes to garrison staff and serving battalions, and high volunteer turnover. Ensuring that the required conservation measures are implemented relies on the projects and the legislation protecting the turtles being given due consideration, and on all new and existing staff being updated regularly with turtle conservation

information. The relevant legislation must be considered when planning normal garrison and battalion beach activities such as physical training and summer parties.

Just recently, all turtle nesting beaches within the SBAs have been included in the List of Areas of European Environmental Interest published under the Protection and Management of Nature and Wildlife Ordinance. They will soon be formally designated as Special Areas of Conservation.

Now funding is needed to raise awareness across military communities and the wider SBAs about turtles and their fragile status. The ESBA would benefit from the employment of a conservation officer to cover the project. With help from charities such as the UK Overseas Territories Conservation Forum funding is being sought to support and enhance both these projects.

Dr Phoebe Carter

Ecologist and volunteer for UK Overseas Territory Conservation Forum



Loggerhead hatchling making the long journey to the sea at Dhekelia beach, ESBA. Only 1 in 1000 hatchlings will survive to adulthood © Dr Phoebe Carter



Germany

Senne



Senne Training Area open day 2014 © Crown

The Senne Training Area was opened to the public in August 2014 when the British Forces held a Senne Information Day. The idea was to inform and entertain visitors to the Senne and also to permit controlled access for a day to walkers and cyclists through selected parts of the training area that would normally be out-of-bounds.

A huge amount of work went into organising and running the open day, not just from the British side, but also from the German authorities, without whom it would have been impossible to hold the event. A show ground was prepared in the centre of the Senne alongside the airstrip at the Windmühle (a windmill). Soldiers from the 1st Battalion, Prince of Wales Royal Regiment (1PWRR), with range staff from DIO SD Training (Germany), were instrumental in setting-up stands of tents and managing access routes and car-parking.

There were numerous displays and attractions from all involved in the military and estate management of the Senne Training Area. These included a Warrior armoured vehicle with its crew from 1PWRR and a Bundeswehr

Leopard II panzer, not surprisingly popular with the children. There were also tractors and machinery used for land maintenance, fire engines and other emergency vehicles. The Defence Infrastructure Organisation (DIO) had an informative display illustrating the history of the Senne since it first became a training area back in 1892. There were also stands from our German partners in managing the estate - the Federal Forestry Department (Bundesforst), the Senne Biological Station and the Land Maintenance Team. Most important was a display from the Explosive Ordnance Disposal Team (EOD) from range control with their frightening collection of 'blinds' - munitions actually collected from the Senne as a potent reminder to visitors not to stray off roads or into a training area that will always remain potentially dangerous.

For more adventurous visitors, there were opportunities to walk and cycle on cleared routes, including outings with local foresters, nature and culture experts acting as guides and answering questions about this beautiful and fascinating place.

Perhaps the highlight of the day was an excellent video of drone flights

over the Senne produced by Capt Ric Gill of 20 Brigade, which was very popular and certainly had a somewhat mesmerising quality.

The day was a great success and it was estimated that 7000 visitors may have attended the day, who left for home both entertained and with a much better understanding of the Senne Training Area.

In October 2014, the Senne Training Area played host to BBC Countryfile, who were filming a slot for their World War I Special, broadcast on 9th November 2014. Lt Col Mike Onslow, Commander DIO SD Training (Germany), introduced the training area to Countryfile presenter Ellie Harrison, explaining the primary importance of military use. Markus Lorenz of the Land Maintenance Team walked with Ellie over the characteristic, inland, sand dunes of the Senne with their special grasses. The shepherds, Max Laabs and Renate Regier, garbed in traditional smocks, then showcased their rare breed sheep and the accompanying goats carrying 'luggage' of coffee and cake. Other filming also captured the interesting history, beautiful landscape and rare species of the Senne.

In what was otherwise a poignant one hour Countryfile Special from Flanders and the Western Front, the ten minutes of the programme featuring the Senne showed how former enemies have become friends, cooperating in the management of a training estate rich in wildlife and natural beauty.

Mark F Johnson MSc
Land Management Services
Defence Infrastructure Organisation

Richard Brooks Principle Environmental Advisor



Since the last edition of Sanctuary (43 2014) the Conservation team has been part of a major re-organisation within DIO. This re-organisation saw the creation of a newly named directorate - that of DIO Safety, Environment and Engineering (DIO SEE). At the risk of accusations of plagiarism – it does exactly what it says on the tin! i.e. Safety (Health and Safety), Environment and Engineering. This grouping contains the specialists within these areas who offer professional support, advice and guidance in these key business areas.

The Conservation Team has been re-badged as the Environmental Support and Compliance Team (ES&C) which again ensures that our title reflects better what we deliver as a team as opposed to suggesting we only 'do' conservation. The team still contains the same areas of expertise (as can be seen to the right) and works very closely with the Town and Environmental Planning Team, also within DIO SEE, under the umbrella of Environment and Planning Support. This group is headed up by Paul Wilson who recently returned from a three year posting in the Falkland Islands to take up this role.

I would like to take this opportunity to thank Paul for his engagement and the ES&C team (and other SEE environmental staff) for all of their continued efforts across the MOD estate. Their commitment to ensuring that the MOD estate continues to be such a valued resource of such environmental

DIO ES&C specialists provide in-house expertise to DIO and the wider MOD by providing advice & guidance in the fields of:

Access & Recreation

- Technical & legal support on access & recreation legislation and management of the public on the MOD estate. Provides part of the 'Safe Place to Train' assurance.

Forestry & Woodland

- Providing and maintaining woodlands and trees for military training and capability whilst unlocking the sustainable economic returns. Legislation, policy, audit/assurance, industry best practice and safe working practices across the estate to ensure compliance and liability management.

Historic Environment

- Advice and expertise allowing MOD to sympathetically manage the archaeological monuments and landscapes on the estate whilst enabling training capability.
- Providing support to meet Departmental Government targets, including heritage appreciation, training and preservation of historic MOD archives. Advice and support relating to historic buildings and gardens to allow for the best use of the buildings for MOD capability.

Natural Environment

- Statutory assessments and approvals for development processes, fulfilling

statutory duties through SSSI, Stewardship and Integrated Rural Management Plan programmes Specialist ecological support/advice including Habitat Regulations Assessments and Protected Species management. Integrating training into designated landscapes.

Conservation Groups and Sanctuary

- The ES&C also supports MOD Conservation Groups across the estate and is responsible for the Sanctuary Awards and the production of Sanctuary Magazine. We would encourage all areas of MOD business including project partners and individuals to suggest articles for the 2016 Sanctuary magazine and to consider putting forward projects and individuals for the 2016 Awards.

Sustainable Development Support and Environmental Planning

- Advice & support regarding the implementation & integration of sustainable development and environmental planning best practice into estate management.

As the magazine highlights, we actively encourage organisational collaboration and project partnership and we would be happy to discuss any ideas you have to further integrate conservation / sustainability into our business.

Please see the opposite page for all contact details.



Heather on the open acid grasslands of Stanford Training Area (STANTA) © crown

interest whilst enabling challenging MOD activity to go ahead on such a designated and sensitive estate deserves due recognition.

The MOD estate will continue to facilitate continuous changes in military activity and operations. ES&C

are well positioned to ensure that environmental best practice, developed over past years and highlighted in all 40 Sanctuary magazines, continues to be part of the MOD's development processes and we look forward to engaging with many exciting and challenging projects in the future.



The Green hairstreak butterfly has been a recent colonist of the Barry Buddon Training Area © Bob McCurley

Defence Infrastructure Organisation

DIO manages the MOD's property infrastructure and ensures strategic management of the Defence estate as a whole, optimising investment and providing the best support possible to the military.

Secretariat maintains the long-term strategy for the estate and develops policy on estate management issues. It is the policy lead for sustainable estate.

Safety, Environment and Engineering

The SEE provides direct support to Project & Programme Delivery and Service Delivery by providing a front line support, a safety assurance function, technical oversight to ensure MOD/DIO discharges its duties and corporate responsibilities under the Health and Safety at Work etc Act 1974, Environment Protection Act, other relevant legislations and Regulatory Articles; and also by providing the DIO intelligent client interface with industry.

Environment and Planning Support (EPS)

The EPS team is the focal point for all your environmental and planning needs and enquiries across the Defence Estate. It includes professional ecological, archaeological and planning support to the MOD. Specialists and experts maintain communications and liaison with a large number of statutory and non-governmental organisations.

Environmental Support and Compliance

Building 21
Westdown Camp
Tilshead, Salisbury, SP3 4RS

ES&C Ecology
Tel: 01980 674820
ES&C Historic Environment
Tel: 01980 674718

ES&C Access and Recreation

Tel: 01980 674782

ES&C Scottish Environmental Liaison

Tel: 01383 648042

ES&C Forestry

Tel: 01980 674766

EPS Environmental Planning

Tel: 01980 674665

Energy, Utilities & Sustainability Team

The EUS team is responsible for Energy Management, Energy Delivery and Payment, along with Water and Waste Policy Implementation and Data across the MOD estate both in the UK and Overseas.

Energy Management Team

Tel: 0121 311 2017

Energy Delivery and Payment Team

Tel: 0121 311 3854

Water and Waste Policy Implementation and Data Team

Tel: 0121 311 3733

Sustainable Development Support

Tel: 01980 674866

FMC Cap Infra

FMC Cap Infra acts as the strategic infrastructure planners and policy makers for Defence; taking a defence-wide perspective on estate assets and construction, and advice for capability planning for estate and infrastructure.

Including agriculture, forestry, natural and historic environments, access, planning and strategic engagement, waste management, energy, and environmental protection, Greening Government Commitments and MOD's sustainability strategy. Contact: FMC-Cap-InfraPolSustEste@mod.uk



**Defence
Infrastructure
Organisation**

SUBMISSIONS

If you would like to contribute to Sanctuary Magazine or enter future Sanctuary Awards please contact Iain Perkins, Editor at:

DIO-Sanctuary@mod.uk

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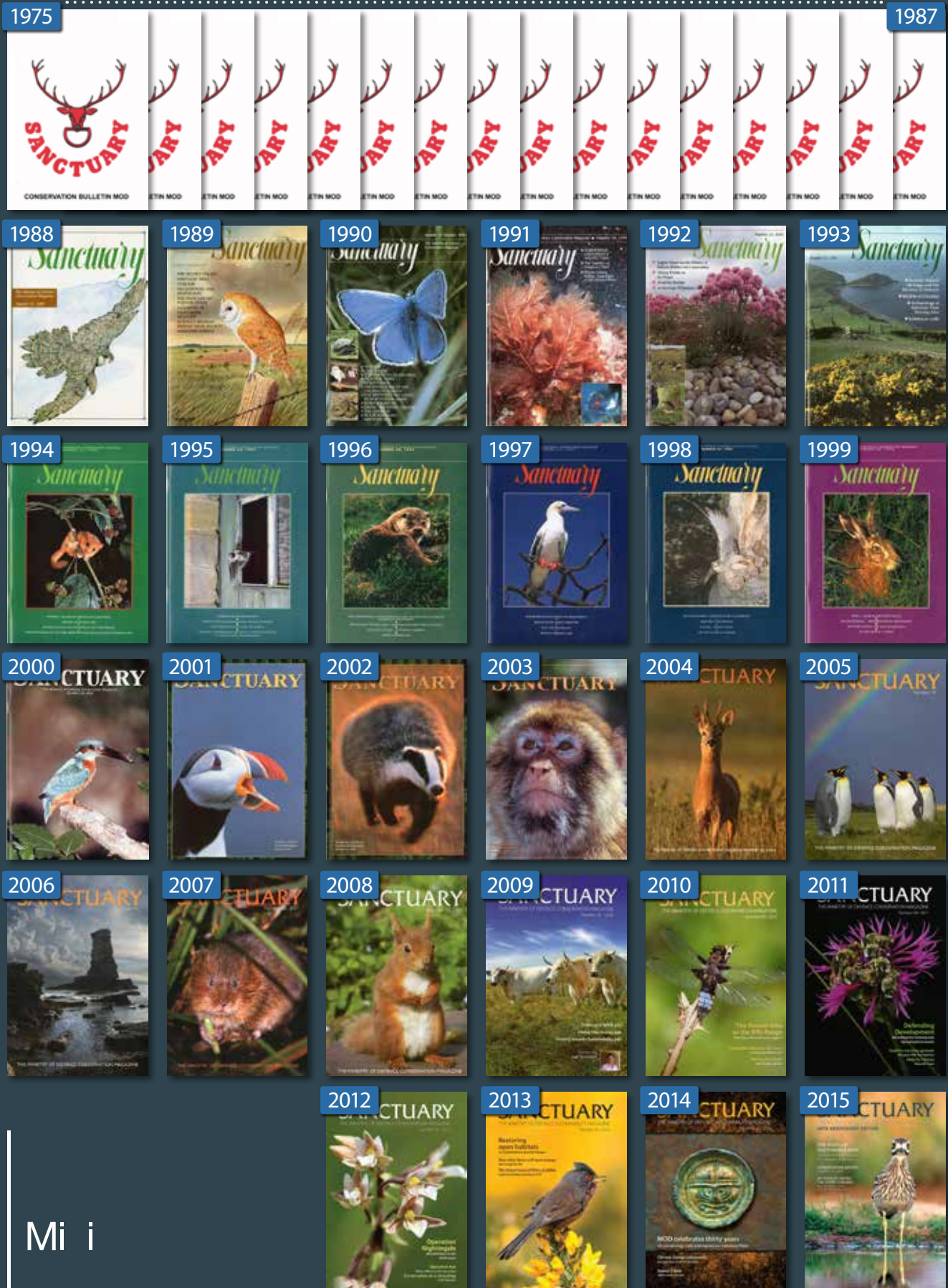
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COVER IMAGE: Cover image kindly donated by David Kjaer: The shy and secretive stone curlew looks out over a shallow scrape. The MOD has played an important role in conserving these birds through a long standing partnership project led by the RSPB. As a result of successful conservation measures delivered through this project, which has been running since 1985, the stone curlew population has increased back to around 350 pairs nationally from around 150 pairs in the mid 1980s. Read more on page 54.

This species was chosen to represent one of the many conservation successes on the MOD estate over the period in which Sanctuary has been produced.

SANCTUARY 40th anniversary edition

SANCTUARY started in 1975 and produced 16 issues up to 1987, when it became an annual publication



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