

SANCTUARY

THE MINISTRY OF DEFENCE SUSTAINABILITY MAGAZINE

Number 43 • 2014



MOD celebrates thirty years
of conserving owls and raptors on Salisbury Plain

Climate change adaptation
and resilience on the MOD estate

Spend 2 Save
switch on the success

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.

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Foreword by Jonathan Slater Director General Head Office and Commissioning Services



It gives me great pleasure to welcome you to the 2014 edition of Sanctuary Magazine which showcases some of the great sustainability work taking place across the MOD to benefit the MOD estate.

Our estate is an essential enabler for delivering Defence capability. The following articles show that a sustainable estate that is resilient and adaptable to defence requirements, now and in the future, is an integral part of Defence business.

There are some fantastic initiatives, including the Dartmoor Mires Project restoring an area of blanket bog to improve the ability of the peat habitat to provide clean water supply, absorb heavy rainfall and carbon; water efficiency with the Aquatrine Partners; and the Environmental and Socio-economic assessment audit at the British Army Training Unit Kenya (BATUK).

It has been another successful year for the Sanctuary Awards with judges having to choose between some very impressive entries. I am delighted to see that the Silver Otter trophy has been awarded to the Owl and Raptor Nest Box Project on Salisbury Plain. This project has been running for more than three decades and is still thriving thanks to the huge dedication of its team of volunteers.

A new Sustainability Business Award has also been awarded for the first time this year, and whilst our industry partners have been regular recipients of the other Sanctuary Award categories, this award has been established to recognise the exemplary sustainability work carried out by them. I would like to offer my congratulations to each of the Sanctuary Award winners and runners up, all of which have shown outstanding commitment to improving the sustainability of the estate.

As you may be aware, these are exciting times for the Defence Infrastructure Organisation which has recently welcomed its new Chief Executive Richard McCarthy who I look forward to working with, along with the rest of the incoming Executive Management Team, to continue to drive initiatives for a sustainable estate.

I hope you enjoy reading this year's magazine.



Foreword by **Richard McCarthy** Chief Executive Defence Infrastructure Organisation

I am delighted to have the opportunity to contribute to this year's Sanctuary Magazine and to be able to introduce myself as the new Chief Executive of the Defence Infrastructure Organisation (DIO).

As you will be aware, the Department is still undergoing a period of great change and DIO remains at the forefront of the transformation agenda having recently brought on board Capita, working with URS and PA Consulting, as its Strategic Business Partner.

These are still early days, but on behalf of myself and DIO's Executive Management Team, I would like to say that we are all very enthusiastic about the future and the potential that this exciting new partnership brings to further improve the way the Defence estate is run for our military customers.

The Defence estate is managed to enable military demand and capability with DIO being key to this delivery. DIO's effective management of the infrastructure business includes the integration of environmental and sustainability best practice. This ensures we can not only achieve the military requirements but also embeds environmental management and future sustainability of the estate in our daily thinking and delivery. As a relative newcomer to DIO, I am already impressed with the commitment of our staff and partners to this agenda - examples of which can be found throughout this publication. They bring real value to our work and the estate.



Sanctuary Magazine is the MOD's sustainability publication produced by DIO. It is a celebration of the excellent environmental and sustainability delivery across Defence including, but wider than, DIO's immediate business. It allows us to showcase some of the many successes in this area. Indeed, I would like to reiterate Jonathan Slater's congratulations to the winners and runners up of this year's Sanctuary Awards and also thank all of those who contributed articles. The hard work and dedication demonstrated in the Sanctuary Awards and Magazine articles serve as fine examples to us

all and I am personally committed to supporting this in the future.

I look forward to getting out and about on the Defence estate in the coming months to see first hand some of these and other new sustainable projects in action.

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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 2014 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. New this year, 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.

The Sanctuary Award Board

The Sanctuary Award Board for 2014 was made up of Defence Infrastructure Organisation: Julia Powell, Deputy Head (Policy), Jane Hallett, Assistant Head (Estates Policy), Alan Mayes, Deputy Head (Secretariat), Julian Chafer, Head SD Energy, Utilities and Sustainability Team, Richard Brooks, Principal Conservation Manager and acting as external judges: Martin Baxter Executive Director of Policy at the Institute of Environmental Management & Assessment and Marcus Yeo, the Joint Nature Conservation Council Managing Director.

ENVIRONMENTAL PROJECT AWARD **WINNER**

SILVER OTTER WINNER

The Raptor and Owl Nest Box Project



Three young barn owls © Nigel Lewis

The Raptor and Owl Nest Box Project was conceived by Maj (Retd) Nigel Lewis back in 1983 to conserve owls and raptors on Salisbury Plain Training Area where the habitat is ideal but had long lacked suitable nesting sites.

Thirty years on, the project has evolved from a small acorn to an established

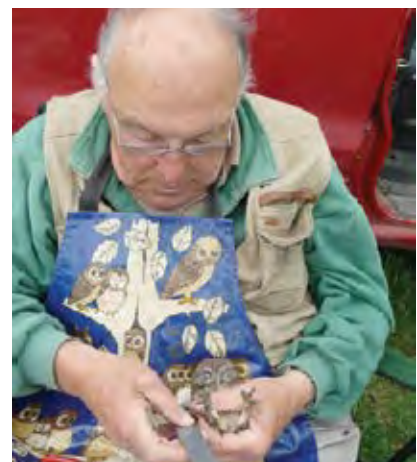
part of conservation work on Salisbury Plain. A dedicated team of volunteers now monitor, record, repair and clean around 500 nest boxes on the Plain and a further 600 in the Pewsey Vale, Nadder, Avon and Wylye Valleys where local farms and estates have been keen to be involved. Work continues all year round, in all weathers and the enthusiasm for this project and its aims shows no sign of slowing down.

Using recycled timber the team strive to provide the best nest boxes that can be produced, with minimum or no cost. In particular, they have always looked for better ways to exclude non-target species so increasing nest box occupancy rates.

The team readily gives advice to other MOD conservation groups looking to support owl populations on their training areas and host bird ringing demonstrations at nest box sites enabling others to learn about the process.

The project has been closely involved with the DIO aspirations for biodiversity and is an excellent example of conservation working alongside military needs. The data collected increases our knowledge of the health of biodiversity enabling effective long term management decisions to be made.

Read more about this project on page 16.



Measuring a little owl © Michael Groves

THE SANCTUARY AWARDS

ENVIRONMENTAL PROJECT AWARD **RUNNER UP**

Duke of Gloucester Barracks Conservation Group



Members of the Conservation Group © Crown

At the Duke of Gloucester Barracks (DoG Bks) in South Cerney there is great ambition to make a positive impact on conservation and sustainability.

Although in its infancy, the conservation group has already achieved a vast amount in a short time by engaging with external

stakeholders, building relationships with the community and using resources efficiently.

Species and habitat surveys have been completed to assess the potential for improvements; changes to calcareous grassland management within the site

will allow a greater variety of herb rich species to flourish as well as associated invertebrates.

The conservation group is only one aspect of the wider environmental work being undertaken at DoG Bks. The station has successfully used the EMSAS Framework and the CO's SHE&SD Action Plan to improve sustainability and environmental performance. Utility usage is regularly monitored and efficiencies have been made by installing roof insulation, attaching variable speed pumps and inverters to the district heating system and upgrading lighting.

The group has clearly shown that a plan and strategy is in place to achieve gains for the environment.

ENERGY PROJECT AWARD **WINNER** SUSTAINABILITY BUSINESS AWARD WINNER

RPC Central CarillionAmey Energy Team



RAF Northolt © Phillips

The RPC Central CarillionAmey Energy Team are responsible for identifying opportunities and overseeing the delivery and reporting of the Energy Management programme.

Ray Antonelli heads up the team with responsibility for the Spend to Save programme and the Energy Bureau. He is supported by Kevin Muttitt, Energy Implementation Manager, Alan Stagles, Bureau Project Manager and Paul Fallon, Energy Bureau Data Manager.

Through the implementation of a fast-track carbon strategy programme the team have lowered energy consumption, carbon emissions and achieved financial savings. This work supports the DIO led Spend to Save programme and the MOD Greening Government targets.

The team undertook research of the latest technologies available and best practice to provide technological

solutions to fit all 58 sites. The results from this research coupled with information gathered from past maintenance works, helped to produce a schedule of projects which could be rolled out in large numbers across the estate.

Project work included the installation of innovative LED lighting, building and pipe insulation, street and security lighting, boiler optimisers and the upgrade of Building Energy Management Systems at 23 MOD sites.

With tight payback criteria, the £17m invested in these technologies will see savings of £7.5m in a full year with a 2.1 year payback. When added to the savings already achieved from the previous two years of the programme (£8.5m), the CarillionAmey Energy Team will have made total savings of £19.2m.

ENERGY PROJECT AWARD **RUNNER UP**

GM Support Team and PriDE

Logistic Services Bicester is a principle logistics centre and has been classified as a high energy user spending £6m per year on utilities. As part of the Spend to Save programme, the General Management (GM) Support Team collaborating with PriDE (Industry Partner) carried out a feasibility study on high usage warehouses to identify invest to save potential.

The aim was to save money, reduce the carbon footprint and improve the

working environment for warehouse operatives. Savings were made by switching the primary fuel from furnace fuel oil to natural gas, installing LED lighting, draft exclusions and boiler and pipe work modifications. Quick drop fabric doors fixed to the outside of most of the warehouses ensures more heat is retained.

The energy initiatives and latest technology delivered at Bicester are now being considered and rolled out at



Warehouse thermal imagery © Crown

other MOD sites to enable Government targets to be realised.

The team's innovative approach to improve existing infrastructure has achieved substantial energy savings over a short space of time.

HERITAGE PROJECT AWARD **WINNER**

Operation Nightingale Exercise Tally Ho!



The Spitfire crash site © Crown

Operation Nightingale continues to go from strength to strength, with another exciting project in the form of Exercise Tally Ho!

This remarkable project focused on the excavation of a 609 Squadron Spitfire which crashed on Salisbury Plain during the WWII Battle of Britain. Serving personnel and veterans, including several from Tedworth House Recovery Centre in Tidworth (which is run by military charity Help for Heroes) took part in the exercise.

The excavation, which uncovered an array of artefacts, provides a case study of best practice to English Heritage on how similar sites should be examined. Other professional archaeological field units attended the site to examine how

this sort of modern archaeology should be handled and are now applying these techniques.

Operation Nightingale uses archaeology to aid the recovery of wounded service personnel; by providing access to heritage, those involved gain invaluable skills and renewed confidence. It is also an important example of the care Defence takes with the custodianship of the heritage of the estate and could not have been as successful without the dedication of the project team and volunteers. *Read more on page 60.*

HERITAGE PROJECT AWARD **RUNNER UP**

Scaesdon Fort Restoration Project

Scaesdon Fort in the South West region of the National Training Estate is a Victorian fortification completed in 1868 and is one of the most complete examples of its kind in the country.

The fort has become increasingly important as a modern training feature used by the Royal Marines, however there were many structural problems which needed to be addressed to

remove the fort from the English Heritage 'Heritage at Risk' Register.

Landmarc Support Services, with the assistance of DIO staff and external contractors, coordinated an extensive project to remove vegetation effecting the drainage and integrity of the walls as well as restoring the access bridge to the fort.

Sensitive materials and original designs were used during the works and the handrails and deckpans from the bridge were also refurbished. The team overcame many challenges to successfully complete the project and remove the fort from the 'Heritage at Risk' Register. Restoring and preserving this historical building whilst securing its future as a valuable training feature is a great achievement. *Read more on page 36.*

SUSTAINABILITY PROJECT AWARD **WINNER**

Project Ubique

The main objective of Project Ubique Phase One was to replace a series of potentially dangerous Public Rights of Way (PROW) with new, more sustainable circular routes allowing the public to continue enjoying the site alongside military activities.

To ensure project success SD Training and DIO's Access and Recreation Team undertook extensive engagement work with Parish Councils and the public through site briefs and presentations conducted by Lt Col (Retd) Nigel Linge, as well as published material. Local off-road groups were also consulted, leading to the creation of a volunteer workforce managed by Nigel Linge. With their support, Nigel worked numerous weekends installing hundreds of signs, finger posts and waymarkers across SPTA, promoting clearer recreational use and easing management. This collaborative



Ensuring the clarity of the new PROW signage © Crown

approach has strengthened relationships between all parties and has provided a base on which future work can be carried out allowing further stages of Ubique to develop.

Twelve new PROW have been successfully created supported by the new signage giving greater clarity for both military and public use.

Read more on page 22.

SUSTAINABILITY PROJECT AWARD **RUNNER UP**

HPC Energy Efficiency Investment Programme



Refurbished Service Family Accommodation at Bulford © Crown



Three sites were refurbished including improvements to building insulation, easy to use heating and boiler systems installed (that families can operate themselves) and installation of solar thermal panels to supplement hot water needs.

Through these improvements, Service Family Accommodation (SFA) has become more efficient and comfortable allowing military personnel to directly benefit from lower energy bills.

This joint project between DIO and CarillionAmey (Housing) has achieved significant reductions in carbon emissions and financial savings through sustainable building solutions.

The aim of the project was to not only make energy savings on the MOD housing estate but also reduce the burden of rising energy costs on Service families.

The project has greatly contributed towards the Governments challenge to reduce emissions by 25% and has achieved a 13% reduction on the SFA estate in the project delivery period 2013-14.

INDIVIDUAL ACHIEVEMENT AWARD **WINNER**

Paul Castle



Paul Castle out on a survey © Linda Cady

Paul has been involved in the Salisbury Plain Raptor Conservation and Monitoring Project for more than 20 years after taking over the reins in 1986. The survey covers the whole of Salisbury Plain and up to 20 volunteers brave cold and often wet winter afternoons to count the hen harriers into their roost sites.

Thanks to over 30 years of continuous monitoring, Salisbury Plain is established as one of the most important wintering sites for hen harriers in the UK, with up to 20 birds roosting each winter the maximum count at one roost site was 15 harriers in February 2013. Paul regularly liaises with the DIO team to ensure that roost sites are protected and habitat is maintained in favourable condition.

Paul has shown immense dedication to the project and has given a huge amount of his own time and energy over the last few decades.

The award board commended Paul's ability to manage volunteers and inform land owners and the public on the importance of work carried out to protect species of high conservation value.



An immature male hen harrier © Dave Kjaer

INDIVIDUAL ACHIEVEMENT AWARD **RUNNER UP**

Glenn Chatwood HMS Sultan



Glenn Chatwood © Crown

Glenn Chatwood is the Environmental Protection Advisor at HMS Sultan in Gosport, Hampshire. Since 2007, Glenn has been leading the charge to implement environmental efficiency, building on a vast portfolio of successful projects that have all achieved impressive energy savings.

Thanks to Glenn's attention to detail and determination, HMS Sultan has fulfilled the requirements under the ISO14001 accreditation and satisfied the needs of the Environment Agency, ensuring the site is managed to a high environmental standard.

Glenn has a great passion regarding all environmental matters and looks to share ideas and initiatives to promote cultural changes through his role as Environmental and Energy Advisor at HMS Sultan.

Glenn's overall professional etiquette and enthusiasm has encouraged best practice and pushed forward environmental improvements at other sites. The financial and energy consumption savings gained (totalling more than £1m) using a range of applications shows innovation and a willingness to think outside the box.

Climate change adaptation and resilience on the MOD Estate



Floodwater is pumped into the River Parrett at the Saltmoor Pumping Station near Burrowbridge in Somerset © Crown

The severity of the latest winter including a succession of storms in the UK, and other parts of Europe, has highlighted once more our vulnerability to weather extremes and the need to increase resilience to climatic changes.

Strong winds, high waves and widespread flooding caused power cuts in some areas, flooding of homes and serious transport network disruptions. For England and Wales it was the wettest winter since records began in 1766.

Simultaneously, as the UK and Europe experience exceptionally wet weather, North America was experiencing remarkably cold weather and Australia was undergoing a major heatwave. It is quite often forgotten that global averages can mean greater extremes regionally.

Everyone who enjoys reading the annual weather summaries published

by the Metrological Office would have realised that despite the in-year and year-to-year variability, the global and long term trend is still towards warming. 2011 was an interesting year, when the UK experienced heatwaves in April and October, as well as a warm February and November, but then to the 'amusement' of all, a cool summer. Overall, 2011 was the second warmest year in the UK but the ninth globally. Another interesting year is 2009. In December 2009 whilst a cold snap affected Northern Europe, some areas of Canada were up to 10°C warmer than average for the time of the year. Overall 2009 was rated as the second warmest year globally but was the fifteenth warmest in the UK.

Current evidence and computer modelling capability does not always allow us to make immediate links between a specific extreme weather event and climate change, and that is why there are still so many controversies when events happen, as scientists do not want to make a statement until they have sufficient evidence and data. Understanding the climate system is complex. For instance, it took about ten years for scientists to estimate that climate change doubled or even trebled the likelihood of the floods that hit England and Wales in the year 2000.

However, there is sufficient evidence to know that climate change is a risk multiplier and that many existing risks and natural hazards are likely to become more frequent and severe. A recent paper published by the Metrological Office identifies that climate change has at least doubled the risk of heatwaves and is leading to more intense daily and hourly heavy rain events.



Soldiers help to fill sandbags and assist the people of Gloucestershire © Crown

The UK Government Climate Change Risk Assessment, published in 2012, identified that the UK is already vulnerable to extreme weather, and that with climate change there would be added burdens on UK emergency services in responding to more frequent flooding, heatwaves and wildfires.

These added burdens were clearly exemplified during the latest winter's extreme weather events. UK emergency services were so overstretched that the armed forces had to assist the emergency services across the country from filling, moving and laying sandbags to ferrying civilians, providing flood defence and dam reinforcements, constructing metal barriers to stem and divert rivers and conduct flood risk assessments. Locations where the armed forces provided support included Somerset, Hampshire, Dorset, Herefordshire, Gloucestershire, Berkshire, Worcestershire, Surrey and the Isle of Wight. It was the biggest civil deployment of this type since the east coast floods of 1953. After the events, the armed forces helped the Environment Agency to assess the condition of all flood defences in the country. An excess of 150,000 sites were assessed over six weeks, quite a challenge!

This is not the first time that the armed forces had to provide civil contingency assistance to climate related events. In 2001 the military provided support to manage the Foot and Mouth disease

outbreak, followed by the provision of key military aid to the Cumbria floods in 2005 and 2009, Yorkshire and Gloucestershire floods in 2007 and the cold snap in December 2009 – January 2010. All interventions are a reason for admiration but the support provided during Gloucestershire 2007 floods needs special mention as the military were key in providing logistics support for bottled water distribution following the inundation of the Mythe water treatment facilities, and engineering skills to protect Walham substation from flooding. This prevented half a million people from being without mains power which would have had huge implications.



Reserve Soldiers of the 7th Battalion The Rifles assist Berkshire Fire Brigade to dam a breach in the Kennet Canal that threatened an electrical sub-station near Burghfield, south of Reading during flooding in February 2014 © Crown

The provision of support to civil authorities and structures when civil capability or capacity is exceeded is not the only way that Defence contributes to UK resilience. The National Security Strategy 2010 highlights the importance of being prepared by making our institutions and infrastructure as resilient as we possibly can. The roll out of the Climate Impacts Risk Assessment Methodology (CIRAM) across the MOD estate allows MOD to increase its understanding of the MOD estate ability to anticipate, absorb, accommodate and recover from the effects of hazardous events.

CIRAM complements MOD business continuity processes and has identified those sites already assessed, so that overall, the MOD estate business continuity management plans and procedures are in place to manage and recover from extreme weather events so that operational capability is maintained.

For instance, the CIRAM assessment at Ashchurch (located in Gloucestershire) identified that the site has a history of flooding inside and outside the wire and consequently the risk is tolerated. Furthermore during the 2007 Gloucestershire floods it operated as an



A Royal Air Force Chinook helicopter from RAF Odiham in Hampshire, contributing food aid flights around Northern Ireland, delivering vital agricultural aid to stricken farming communities © Crown

emergency distribution centre for water. Following the last winter storms, there have been examples of great responses including the works undertaken at Donna Nook (which ensured the site was operational soon after being closed by the storm surge of the 5th December) and Cinque Ports Training Area Hythe (which avoided a major flood defence breach).

However, all these events affect the MOD estate efficiency and incur a cost. CIRAM helps identify existing vulnerabilities and potential threats arising from a change in climate, taking into account the UK Climate Projections 2009. CIRAM also helps assess any past events to evaluate existing management of the risks so that resilience solutions can be identified and implemented. The CIRAM process helps sites to understand what can be

done to increase resilience in the short and long term.

CIRAM outcomes are also used to inform the Sustainability Appraisal process, which aims to see that new infrastructure and refurbishment projects consider climatic risks so that assets are resilient and fit for purpose throughout their expected life.

MOD has also been working in partnership with Statutory Bodies, National Park authorities, NGOs and others such as water companies in other initiatives that contribute to UK resilience. Examples include the Dartmoor Mires Project which restored part of Dartmoor's blanket bog to improve the ability of the peat habitat to provide clean water supply, absorb heavy rainfall and carbon; and woodland creation at Catterick Training



As temperatures across the UK plummeted this winter, runway clearance vehicles were out keeping RAF Coningsby in Lincolnshire operational © Crown

Area which aims to tackle the causes of downstream flooding in the area.

Quote by Debbie Corbett, Head of Sustainable Development Support Infrastructure Professional Services – who leads on the roll-out of CIRAM:

“By undertaking Climate Impacts Risk Assessments (CIRAM) across the MOD estate we are helping sites remember what happened during extreme events and what may happen in the future taking into account the UK Climate Projections 2009. This is so that resilience can be built onto the sites’ management plans and procedures more efficiently and MOD can make sure they prepare for the future.”

Quote by Dr. Julian Wright, Senior Advisor for Climate Change, Climate Ready Support Service, Environment Agency:

“Effective adaptation to climate change will require all parts of society to get involved, but it is particularly important that organisations with the biggest relationship to climate impacts and capacity to adapt respond first and set an example for others to follow. That is why I am delighted that the MOD Estate is leading the way in carrying out climate change risk assessments on a site by site basis. The work that the MOD has been doing has helped inspire others to take action – for example Natural England and the RSPB, together with the Forestry Commission and Environment Agency, will shortly be publishing an Adaptation Manual to support individual conservation managers plan adaptation at their sites. I look forward to seeing MOD Estates continue with their work to support the country’s resilience to climate variability and change.”

Begonia Pedreira-Regueira
Climate Resilience Officer
Defence Infrastructure Organisation

Thorney Island - Working together in Chichester Harbour

Chichester Harbour, is a large natural harbour sitting on the south coast of England, straddling the County boundaries of West Sussex and Hampshire.

Fifty years ago it became a nationally protected landscape following designation as an Area of Outstanding Natural Beauty (AONB). Since then the harbour has been designated as a Site of Special Scientific Interest, a Special Protection Area for wild birds and a Special Area of Conservation. It is an internationally important and naturally beautiful site and the extensive coastal paths mean it can be enjoyed by many thousands of visitors every year.

Nestled within the harbour is Thorney Island, home to Defence Estates' Baker Barracks and two regiments of the Royal Artillery. Walkers have access around the perimeter of the island via a public footpath; an enjoyable walk in itself and also forming the important first link in the long distance Sussex Border Path. Most of the coastal path runs along the top of sea walls that protect the property and agricultural land behind. Inevitably many of these sea defences have taken a battering during the winter storms, presenting a challenge for managing coastal access in the future.

On Thorney Island, a recently upgraded section of footpath was seriously damaged during the winter's tidal surges. In response a partnership project was undertaken to carry out repairs in May this year. Chichester Harbour Conservancy, working together with the command at Baker Barracks, led a volunteer project with serving personnel to restore the damaged path, building a wooden



Thorney Island path © Phil Greaves

retaining wall and replacing the lost surface material. By working together the two organisations were able to pool resources and expertise to get the work completed, where costs would have normally been prohibitive.

Dr Richard Austin, Chichester Harbour Conservancy's AONB Manager said:

"I am delighted that the Conservancy, the Ministry of Defence and the local community worked together to successfully restore this footpath. It is an excellent example of partnership working and it is good news that the public footpath is open once again for walkers to enjoy."

The coast is a wild and dynamic environment that provides year round challenges. In the long term there are tough questions to ask about the resource implications of maintaining failing defences and the implications this has on providing continuous, safe coastal access for the public. As this project has shown, partnership working will be essential to allow resource

sharing, effective planning and the maintenance of site security.

The MOD and DIO will continue to work with Sussex Council, Natural England, Chichester Harbour Conservancy and the local community to investigate and deliver effective solutions such as 'rolling back' and 'realigning' the coastal path to accommodate natural change. It is anticipated that ongoing collaborative success will continue to deliver a coastline that is available for everyone to enjoy in the future.

Nicky Horter and Dr Richard Austin
Chichester Harbour Conservancy



Service personnel from the Royal Artillery 12 Regiment © Chichester Harbour Authority

Spend 2 Save - Switch on the success



RAF Northolt, one of fifteen sites to have shared a £1.7m investment in external LED street lighting © Phillips

This year has seen the culmination of the Energy Spend to Save Programme, a three year initiative that has delivered savings of £51m for the Department and carbon savings of 173,839 tonnes of CO₂ towards the Greening Government 25% emission reduction target.

As reported in Sanctuary Number 41 in 2012, the Energy Spend to Save Programme, a Strategic Defence Security Review recommendation, has seen £105m invested to improve the energy efficiency of the estate, both nationally and internationally, in order to make enduring savings of some £70m a year. When it costs a staggering £1m every day to heat, light and power the Defence estate, the business imperative to manage these costs, whilst maintaining operational capability, is all too apparent.

From the installation of over 1,400 energy efficiency projects to achieving the payback, the programme certainly has delivered. A programme of this scale is not without challenges,

however, the sheer determination and commitment of all who were involved was fundamental to the success of the programme and realising the benefits.

Rebekah Jones, the Programme Manager at the Defence Infrastructure Organisation (DIO) Utilities Team worked closely with DIO Service Delivery teams and Industry Partners including this year's Sanctuary Energy Award winners CarillionAmey and PriDE during the intensive three years.

"The delivery of such fantastic financial and carbon savings, with more to be saved, is very much down to the collaborative working of the wider programme team. The willingness to share best practice, adapt processes to

deliver a large amount of projects in quick time and to roll up our collective sleeves, is for me one of the positive outcomes of the programme." – Rebekah Jones, Energy Spend to Save Programme Manager.

It is fitting at programme end to celebrate the successes and look back on some of the key highlights.

Spotlight on the savings

Over 1,400 quick win energy efficiency projects were delivered across 223 sites, both UK and Overseas, with 71% of the investment made in technologies that have the biggest impact on improvements to building energy efficiency, and improve the working and living environment for users of the estate. Projects included Building Energy Management Systems (BEMS) and controls, heating replacement/upgrades, lighting, draughtproofing and insulation, along with some investment in renewable technology like solar hot water systems for the Service Family Accommodation across British Forces Cyprus.

Aligned and also part funded by the programme were the Strategic Energy Management Services (SEMS) implemented across the Regional Prime Contract areas of the estate. The SEMS provide a centralised and strategic energy management service and bureau that actively monitors, manages and verifies energy consumption, supporting the energy projects.

Investment in technology

At the end of the programme 23 of the estate's highest consuming sites had received investment of over £1m each, including DCAE Cosford and DSDA Bicester who both benefited from over £5m in improved energy efficiency technologies.

At 31st March 2014 main gate consumption savings of £51m were achieved across the 223 sites and this is expected to rise to £70m during 2014/15 as the full effect of the investment is realised, hitting the enduring savings target set. This represents an astounding return on investment of over 60%.

The carbon savings are equally impressive. So far the investment has saved a total of 291,969tCO₂, the equivalent of filling Wembley Stadium over 125 times, and provides a 70%, some 173,839tCO₂ contribution towards the Department's Greening Government target to reduce carbon emissions by 25% by 2015.

In addition to the financial and carbon savings the investment has also provided other benefits for those that live and work on the Defence estate. The following are just two of the success stories from the Spend to Save Programme.

Fort George sympathetic secondary glazing

Described as the finest example of 18th century military engineering in the British Isles, Fort George is an important part of British Military history. It is for

this reason that the fort attracts Historic Monument status and any changes must be sympathetic to the buildings history and aesthetic.

When Turners Estate Solutions, the Industry Partner for RPC Scotland, carried out a site survey they discovered the forts sash windows to be in disrepair, affecting energy consumption and occupant comfort. Initial solutions were rejected by Historic Scotland but eventually a secondary glazing unit was agreed upon and the project was overseen by Ben Johnston and Stuart Martin, Energy Engineers for Turners.

The completed works resulted in elimination of draughts, reduction in energy usage, improved noise insulation and importantly did not adversely affect the aesthetic and history of the building. The savings generated, which also include those from the improvements to the heating management system, have seen a total financial saving of £145,310 and a reduction in carbon emissions of 780t CO₂ and 2,511,929kWh.

As with the majority of the spend to save projects the aim is not just to reduce energy usage and carbon emissions but to improve the quality of living for personnel, a benefit highlighted by RQMS(M) Alan Cunningham of The Black Watch, 3rd Battalion, The Royal Regiment of Scotland:

"Prior to the secondary glazing project, complaints of rooms being cold and noise from outside impacted on the soldiers rest at night. Since the project has been completed, noise reduction and heat retained in all rooms is significant."

PriDE lighting up the South-East

The PriDE Energy Team focused their spend to save effort on technologies that would achieve a quick payback, such as the installation of external LED lighting on sites across the Regional Prime Contract South-East region.

Building on a partnership with the lighting supplier Phillips, which had seen the successful delivery of internal LED solutions earlier in the programme, the team developed solutions for the use of LEDs for external lighting projects during 2013. Working across fifteen sites throughout the South-East including the Royal Military Academy Sandhurst and RAF Northolt, some £1.7m was invested in external LED street lighting. Costs were kept to a minimum by utilising as much of the existing infrastructure as possible but special attention was paid to 'future proofing' installations through careful selection of technologies, resulting in a longer life-span and the ability to adapt to newer technology in the future. The improved lux levels of the LEDs also allowed the lights to be dimmed during silent hours, furthering the savings potential.

The project has seen savings of circa £900,000 per year and a payback period of just 1.8 years, equating to approximately 2.3 million kilowatt hours per year or 1,200 tCO₂.

Saving for the future

In a 'nutshell' the spend to save programme has provided the opportunity to switch off the consumption and turn on the saving. While the benefits are expected to endure, the challenge now is to ensure that energy efficiency becomes part of day-to-day operations and every person who lives, works or trains on the estate uses it in the most efficient way possible.

Tracie Tittley and Leon Korner
DIO Utilities
Defence Infrastructure Organisation

One community, many generations

Community archaeology at RAF Lakenheath



The archaeological excavation © Nathan Campbell

RAF Lakenheath is an operational airbase leased to the United States Air Forces (USAF) located 25 miles from Cambridge.

It has nearly 5,700 active-duty military members that support two squadrons of F-15E Strike Eagle fighters, a single squadron of F-15C Eagle fighters and HH-60G Combat Search and Rescue helicopters. The airbase accommodates 2,000 British and US civilians, including four schools that encompass pupils from 5 to 16 years old.

The globally renowned Earth Day celebrated each year on 22nd April was extended to become Earth Month; the

highlight of which this year was an archaeological excavation with participants from the airbase community, supervised by the Suffolk County Council Archaeological Unit led by Jo Caruth. The excavation was commissioned in preparation for a newly built extension for the recycling centre, allowing the US to expand their recycling program and process more materials. It was felt that the airbase would benefit from the community interaction that could be provided by a

project undertaken in a landscape of such rich archaeology and history.

RAF Lakenheath lies within a multi-period landscape with the earliest evidence of human activity beginning with hunter gatherers using flint tools in the Mesolithic period after the last Ice Age. Settlements developed throughout the prehistoric period into a rich agricultural landscape of villas and farmsteads in the Roman period, followed by Anglo-Saxon villages and cemeteries, including the burial of the Lakenheath warrior and horse. Subsequently the Breckland landscape was used to house rabbit warrens, beginning in the mid 13th century and spanning the next 800 years. In the late 1930s the area saw a drastic development with the construction of RAF Lakenheath, which preserves the cooperation of British and US air forces to the present day.

The excavation covered a footprint of approximately 1200m², bordered by areas in which significant evidence of Roman and Anglo Saxon settlement had been identified. The US schools at RAF Lakenheath were invited to take part and visit the excavation, handle finds and meet the archaeologists. Over 500 pupils between 7 and 12 years old came to the site (with their teachers!), while further home-schooled children and their parents were made very welcome. The Boy Scouts of America also visited the site to take part and gain their archaeology badges. The children were given an introduction to archaeology, including the formation and excavation of layers, what finds you might expect to uncover and how these could inform us about who had lived on the site and what activities they may have been involved with. The budding archaeologists were then able



A 1960s USAF dog tag © Paul Briggs

to take part in the excavation, digging trial pits and sieving soil. Many small finds were discovered by their tiny hands, including struck flint flakes, a tooth and Roman pottery sherds. In addition to those of school age, the excavation was also opened up to curious and inquisitive adult volunteers, with US military, US civilian and UK civilians (such as Defence Infrastructure Organisation) encouraged to take part. Many gave up whole days to be mentored and supervised by professional archaeologists, who they worked alongside in excavating pits, sections through ditches, technical recording, surveying and washing finds.

Contrary to all expectations, the first find from the topsoil was not Roman or Anglo-Saxon but a classic example of 'modern' archaeology: a 1960s US 'dog tag' belonging to a Joseph W. Larsen. The 48th Fighter Wing Historian Mr Peter A. Law, confirmed that by examining the style and manufacture of the tag, it had been dropped as far back as 1965 to 1967 and lay just beneath the surface ever since. The tag is an old style type with a flat edge, whereas the modern tags have a rolled

or folded over edge. Larsen's tag also had his service number stamped onto it. Service numbers were discontinued by the US Air Force and Army on 1st July 1969, but the changeover began in 1967. The AF stamped into the tag stands for male Air Force personnel, where as female Air Force personnel was AA. The service number prefix of 14 is a region identifier and tells us he entered service from the south-eastern US (either Tennessee, South Carolina, North Carolina, Florida, Georgia, or Alabama). The rest of the service number, 916202, means he enlisted during the 1960s. The T65 indicates that he received a Tetanus vaccination in 1965, and the A NEG shows his blood group. The tag also tells us that Joseph was Catholic.

With the topsoil removed, the site revealed two parallel sets of ditches appearing to enclose a single area, with the 'outer' ditch over a metre wide and deep, and the 'inner' ditch comprising several re-cut shallow gullies. Within this area was a layer of historic buried soil, probably the result of the historic ploughing of a specific field, divided by boundary ditches from a domesticated

farm animal enclosure. Metallic finds from this area included a 1st century AD (Roman) 'Colchester' brooch, a selection of low denomination copper alloy Roman coins, including a corroded 'barbarous radiate' or Roman period imitation of a genuine Imperial coin, in circulation during the reigns of the emperors Victorinus to Tetricus II (c. AD275-285). A single medieval silver half penny of Henry III was also recovered, probably the result of casual loss in the 13th century, coinciding with the commencement of the rabbit warrens (and hunting). In addition to the metal work, numerous sherds of Roman and Anglo-Saxon pottery were collected and carefully washed for future study. These finds tie in well with the historic landscape, including a Roman farmstead complex previously recorded to the east, and Anglo-Saxon settlement to the west, demonstrating that continuity throughout the centuries is nothing new on RAF Lakenheath and that the school children who learnt so much represent just the latest generation. In the words of the children... the archaeology and their experience was 'AWESOME!'

Dr Joanne Mortimore
Area East Environmental Manager
Defence Infrastructure Organisation



A Roman Colchester brooch © Nathan Campbell

The Raptor and Owl Nest Box Project - Thirty years of barn owl conservation



Five hungry young barn owls © Gordon Page

It all began not quite by mistake but nearly so. In the 1970s the DDT organo-pesticides had a huge effect on birds of prey causing thin egg shells too fragile to be incubated. All species were affected from the humble kestrel to the exotic peregrine falcon. DDT was subsequently banned but then Dutch elm disease struck and within a few years our hedgerow elms were skeletons tottering on the skyline. The elm was a great provider of hollows and cavities for our nesting kestrels; the lack of nesting sites would cause problems.

However, it is well known that a kestrel will nest in an open-fronted nest box. The conservation answer was simple; erect some nest boxes. A ready-made solution was available in the ammunition compound of the School of Infantry at Warminster. A wooden ammo box that contained the sub-calibre round for the 66mm LAW was the perfect size for a nest box. In 1984 we erected several of these for kestrels

on the Plain. The take-up was slow in the beginning, but within a few years we had thirty nesting pairs.

And then in 1987 it happened again, a barn owl nested in a kestrel box. The first time had been on the Fingringhoe Ranges in Colchester a few years before. At the time it was dismissed as an aberrant owl that had made a dreadful mistake. But this time the penny dropped, barn owls too were also desperate for nesting sites. Another visit

to the ammo compound was necessary. The Schermuly hand fired para illuminating flare came to our rescue; it was packed in large weather-proof wooden boxes, perfect for the barn owl.

The project covers the West and Centre of the Plain; it is about 240km², mainly chalk grassland with a mix of plantations and some scrub. It is an excellent habitat for the field vole, the staple food for barn owls but it lacks



Hobby nest high in the trees replicating a crows nest © Nigel Lewis

suitable buildings and hollow trees for nest sites. My assistant was Alan Bush who introduced Len Spackman and the three of us erected several hundred nest boxes on SPTA (West) and (Centre). We had enormous help from Geordie Ward QGM, the unit armourer back at the Land Warfare Centre (LWC), Warminster. He made time to make large numbers of boxes out of 'gash' wood to augment the ammo boxes and when Aspire Defence took responsibility for various functions in LWC in 2006, they were very supportive of Geordie's work. The boxes are a mix of mainly barn owl and kestrel boxes, but we could not ignore tawny and little owls who had started to use boxes not designed for them! We have also had erected a few baskets for the hobby to use.

And so the years have passed and the original threesome were getting ever older, but in recent years we were joined by Peter Green, Dave Ovenden, Michael Groves, Dick Clayton and many others who will help when asked. It is now very much a team effort to maintain and check all 483 boxes (incidentally, we also have 600 boxes off the Plain in the Pewsey Vale and Avon, Wylve and Nadder Valleys in South Wiltshire). Monitoring boxes on the Plain requires a 4x4 Land Rover and trailer. Our work would not be possible without the use of a vehicle from the Defence Infrastructure Organisation and the trailer generously purchased by Landmarc; whilst the 'head office' support and financial help from the Imber Conservation Group for ladders and puncture repairs has enabled us to annually publish our report and keep on the road.

It has been a very worthwhile and rewarding conservation exercise as the statistics show. Since 1985 we have ringed 4,449 raptors and owls raised in redundant ammo boxes and Geordie's nestboxes. We have moved from a very few breeding pairs of barn owls in 1984 to 73 pairs in 2003. Since then numbers have fluctuated and after two very bad years we now have 30 pairs in 2014.



Female tawny owl takes flight © Dave Ovenden

This is our thirtieth nest boxing year on Salisbury Plain. Every year is different, the effect of weather, cattle grazing, scrub removal, military exercises, all have an impact. Buzzards have arrived and are now established in strength but lurking over the horizon and even overhead sometimes, is a red kite!

Each year brings its surprises and disappointments. Some years are good and others less so; last year was the worst ever for barn owls, and the previous year which was potentially good but was wrecked by a month's rain over a few days and nights in June.

This year is excellent so far, an abundance of food combined with

perfect hunting weather is producing large first broods of barn owls and there is every chance that some pairs will have a second brood. Tawny owls and kestrels have finished breeding; broods were above average and the excellent mild and calm weather will have given the young a good start in life. In the meantime we have been awarded the Silver Otter for 2014; this has got to be the icing on the cake.

Nigel Lewis MBE
Project Team Leader
Member of the Salisbury Plain
Conservation Groups



Nigel giving one of his memorable talks with barn owl in hand © Crown

Aquatrine - The first ten years



Emergency water supply tanks often provide good habitat for amphibians © Crown

Now in its second decade, Aquatrine is a 25 year partnering contract between the Defence Infrastructure Organisation (DIO) and its three service providers Severn Trent Services (STS), Kelda Water Services and Veolia Water Nevis.

Aquatrine provides water and wastewater services through the operation and maintenance of water assets on approximately 4,000 MOD sites across Great Britain. The service providers offer improved services and efficiencies across the Defence Estate and ensure the MOD's performance in environmental compliance and sustainability is maintained to a high standard.

A key milestone already achieved by the Aquatrine service providers includes a reduction in leakage by more than 25% across the Estate – the most significant joint project achievement to date has been assisting the MOD in meeting its sustainable operation government targets, eleven years early.

Aquatrine operate a dedicated 24 hour helpline in each region, ensuring an uninterrupted delivery of all services to all users at all times. Not just ensuring water is delivered but also ensuring it is wholesome. In accordance with one of the Key User Requirements (KURs), compliance with drinking water inspectorate standards and security of supply to many parts of the Estate has been achieved through significant investment, which has improved the asset condition profiles. After gaining an understanding of the asset base and condition, a programme of asset improvements has been built for the lifetime of the contract.

Crown Fire Standards is of importance to Aquatrine with continued testing of Fire Hydrants and inspections of emergency water supply tanks continuing across all Packages. Millions of pounds have been invested in improving existing networks on key sites to ensure the flows being delivered meet expectations, continuing to protect valuable assets and vulnerable storage areas on sites.

Health and safety best practices have been embedded across each service provider and established common standards in work carried out across the Defence Estate. Each service provider has achieved a RoSPA Gold Award for

their performance in health and safety and the initiatives they have used to keep employees and customers safe.

Approaching and learning from challenges

A recent challenge that has been addressed by Severn Trent Services in the area they service under the Aquatrine contract is the impact of flooding. The Aquatrine helpline records each occurrence of flooding reported by customers, which when analysed highlighted that flooding continued to be high on the agenda for customers. STS then actioned a Flooding Mitigation Plan.

A key change has been to further enhance proactive plans to address the issues that cause flooding of both sewerage and surface water, STS has also created a register for sites at risk of flooding and weather warnings are now issued to these sites.

Flood mitigation measures can be implemented to reduce the impact of flooding, longer term solutions have been identified and are being completed to help prevent flooding incidents, these include enhanced proactive maintenance plans, education, or engineering solutions. The programme to develop site drainage area plans/hydraulic models has also been accelerated.

STS are sharing their approach to flood management with Veolia Water Nevis and Kelda Water Services through the Aquatrine Suppliers Association, where the three service providers share best practice and exchange ideas with the aim of improving service delivery.

These improvements put Aquatrine's three service providers in a strong position for the next decade.

Mathew Smith
Shared Services Marketing Specialist
Severn Trent Services

Reducing the environmental impact of the treated sewage discharge at Castlemartin Range



Bosherston Lakes (SSSI) © Lynne Houlston

Castlemartin Range, a Site of Special Scientific Interest (SSSI), is an exceptionally diverse area home to numerous rare plants and specialised habitats. It also homes the largest concentration of breeding seabirds on the Pembrokeshire mainland. The range runs along the rocky coastline with sea cliffs of Carboniferous limestone, which are of national geological and biological interest. The long term sustainability of the water environment in this area is therefore of utmost importance.

Kelda Water Services (Defence) Ltd. are responsible for Package A of Project Aquatrine, a 25 year Public Private Partnership (PPP) for the operation and maintenance of all water and waste water assets and systems. The operational area covers the

Midlands, South West England and Wales. Kelda Water Services is committed to ensuring compliance with environmental discharge permits for many MOD sewage treatment works throughout England and Wales. Compliance is monitored through a complex sampling and analysis schedule, by risk assessing the assets and through operator diligence. Significant investment is made each year to improve the condition of the assets or to make upgrades to ensure compliance is maintained.

Kelda Water Services operates the Merrion Camp sewage treatment works at Castlemartin Range; this discharges to the Merrion Stream which eventually finds its way into the sea via Bosherston Lakes (SSSI). Under the new

Environmental Permitting Regulations (2010), a requirement to limit the amount of total phosphorous in the discharge from Merrion Camp works was set by the Environment Agency.

High concentrations of phosphorous in slow moving watercourses and other water bodies can lead to eutrophication, which is the build-up of nutrients in the water. This can lead to algal growths which use up the oxygen and therefore results in a decrease in biodiversity and overall environmental water quality.

Previous to any intervention at Merrion Camp sewage treatment works, concentrations of phosphorous in the discharge frequently reached between 3 – 5mg/l. The new permit set a limit of 1mg/l as a mean concentration over a twelve month period. With extensive investment Kelda Water Services installed a new ferric dosing system. Concentrations of total phosphorous in the final effluent discharge have now decreased significantly to an average of 0.48mg/l, and are frequently below the limit detectable in the analysis. This decrease in phosphorous loading represents a significant win for the receiving water course and the long term sustainability of the water environment in this area.

Carmel Jakeman
Environmental Manager
Kelder Water Services Ltd

The prisoners of **Rat Island**



The skull of an adult male with evidence of pipe smoking on his teeth © Crown

'By the light of torches, we saw the black Hulk lying out a little way from the mud of the shore, like a wicked Noah's ark. Cribbed and barred and moored by massive rusty chains, the prison-ship seemed in my young eyes to be ironed like the prisoners. We saw the boat go alongside, and we saw him taken up the side and disappear. Then the ends of the torches were flung hissing into the water, and went out, as if it were all over with him.'

Charles Dickens, 'Great Expectations'

In the winter of 2013/14, the authors were informed that the police had been notified of the presence of human remains on the tidal Rat Island midway between Portsmouth and Gosport, overlooking the historic dockyard. The remains had been exposed by the actions of the storms that had lashed the south coast. The team set out to discover what they could about the site and to investigate the results.

All Ministry of Defence sites seem to have their legends of mysterious buried items; this one proved to be true.

In January the team waited for the tide to recede and trudged along the foreshore, across muds, sands and shingle to the suggested locations of the bones and were soon able to see that there were indeed graves eroding from the 3m high cliffs. Within a few

weeks a team of volunteers was assembled from Cranfield University and participants on Operation Nightingale arrived to recover these skeletons, and to record as much as possible about the graves whilst also investigating the context of the island itself. Over two visits, four largely intact skeletons were recovered from rock-cut graves, with evidence for coffin nails and perhaps even clay pipes but why were they here and were the local rumours as to them being either prisoners from the prison ships of the 18th and 19th centuries or Prisoners of War from the same period true?

If they were prisoners of war then the most likely conflicts were either the American War of Independence or the Napoleonic Wars. In either case the prisoners could be from a wide area of the globe, as fighting took place in North America, the Caribbean, Europe, North Africa and the Middle East. Abigail Coppins has undertaken



Cleaning down the cliff section to reveal eroded graves on Rat Island © Crown

research on the prisoners of war in Gosport, and there were large prisons at Portchester Castle and Forton Creek, as well as prisoner of war hulks in the harbour.

Whilst prisoner of war burials are possible, there is more evidence for the burials being of convicts who died in the prison hulks which lay in the harbour between the 1830s and 1840s. Prison hulks were a common sight in Portsmouth harbour and were large decaying ships which were used to house prisoners, either as a 'prison overflow' system or for prisoners awaiting transportation to the colonies. An OS map of 1852 it was described as 'the convicts' burial-ground' and in 1858 stated that the south-eastern section of the island was the 'convicts burying ground'. After the burials had ceased in 1891 the prison hulks were mentioned in a report about Queen Victoria's visit to Portsmouth 'any one will tell you the direction of Rat's Island, where the prisoners were buried.'

However, there is one certain, named, burial on Rat Island. In 1831 the Reading Mercury stated that Charles Morris Jones, a convict on the York prison hulk died and was buried on Rat Island. Earlier newspaper reports had charted the course of Charles's life and how he came to be on the prison hulk. The Abingdon court notices of October 24th 1829 give a detailed account of how Charles came to be caught. Charles Morris Jones was

described as a 'genteel looking young man' and he was born in Aberystwyth. In his early 20s he moved to Abingdon where he was employed in the drapers shop owned by Mr George Shepherd. Shepherd strongly suspected him of stealing money, so with some friends Shepherd set a trap whereby some cloth was bought with 'marked money'. Charles was searched and the marked money was found in his pockets. It also transpired that Charles had an unnamed accomplice in London who had received goods to the value of £30.

The trial report ends ominously 'There will be little doubt that he will be committed on Tuesday next on a capital charge'. The expectation was that he would be hanged. On November 2nd it was reported that Charles was not 'examined' by the magistrates owing to the fact that one of the witnesses from London failed to attend, but after a brief respite the witnesses arrived on November 7th. They were named Owen and Jones and they had received from Charles money, different sorts of cloth and, crucially, a ticketed piece of lace, which proved it had come from Shepherd's shop. Charles had also written to Owen and boasted that he was doing very well 'at the rate of one pound a day!' Charles was again committed until the next Assizes. The actual trial was on the 3rd March 1830 and Charles was one of nine others found guilty of relatively minor theft – all were sentenced to death. A long trial report was given in

the Reading Mercury which includes a transcript of a letter from Charles to Jones, his cousin, in Upper-Baker Street. The letters indicate that Charles was pretending to be a travelling buyer of cloth which he would then post via the Alert coach to Jones in London. Charles made no defence and was immediately found guilty with his counsel pleading that his life be spared. His life was spared – on the condition that he be transported for life.

Sometime during the week of May 17th Charles and seven others were taken to the York hulk in Gosport, in the expectation that he would be transported for life. It was nearly a year later the Abingdon correspondent reported on the 3rd February 1831 that Charles Morris Jones 'who was sentenced to 14 years transportation, lately died at the hulks at Portsmouth, and was buried on Rat Island'.

Charles would have a very distinctive isotopic signature, having been brought up in Aberystwyth and then living a few years in Abingdon, so it is just possible that he could be identified, but his story also shows how prisoners from almost anywhere in the British Isles could have ended up on the prison hulks in Portsmouth harbour. If the burials started earlier in the late 18th or early 19th century during the various wars then the possibilities have the potential to be from America, the Caribbean, Europe, North Africa, the Middle East or further still. There is even evidence of Russian prisoners of war with cholera in the harbour. The power of history shows the art of the possible, but it is the scientific analysis of the bones that will reveal where the people buried on Rat Island actually came from.

Chris Daniell
Senior Historic Buildings Advisor
Defence Infrastructure Organisation

Richard Osgood
Senior Archaeologist
Defence Infrastructure Organisation

SPTA Greenlaning - A good practice guide

Greenlaning – recreational vehicle driving ‘off the beaten track.’ Not to be confused with ‘off-roading’ greenlaning enthusiasts stick to legal public highways; just not the ones you take your average family car on. Increasingly becoming a more accessible and popular pastime, greenlaning is supported and promoted by numerous National and local organisations and clubs.



Greenlaners exploring the Plains historic byways © Dale Wyatt, Tread Lightly

The wide expanse of Salisbury Plain Training Area (SPTA) offers many greenlaning opportunities.

The extensive, varied network of both historical public rights of way (PROW) and military tracks can provide enthusiasts of all abilities an opportunity to explore. Online social networks and National media promote

this driving diversity, drawing greenlaners from all over the country.

Of all the recreational activity taking place on the Plain, greenlaning has the potential to have the greatest negative impact. Whilst military vehicle activity may counter-balance the presence of other all terrain vehicles, bad weather

and high visitor numbers can quickly turn tracks and old lanes into slippery, wet mud bowls. Trails normally a few metres wide grow in breadth as vehicles try to find a safer, drier option. This inevitably has an impact on the military’s use of the site for training and can leave permissive tracks and PROW unsuitable for other visitors.

In November 2013 Phase One of Project Ubique successfully completed important changes to Larkhill’s PROW. Ineffective and dangerous routes were closed, moving PROW and the public to numerous existing military tracks, creating a safer, sustainable and more easily identifiable network.

To support these changes information was needed to educate greenlaners to understand that despite being a military training area, Salisbury Plain is not indestructible. It is in fact a world renowned landscape, supporting important ecology and home to extensive archaeology. With the additional factors and risks associated with military training, the site has to be treated respectfully by both the military and the public.

The DIO Access and Recreation Team (ART) saw the creation of a Greenlaning Good Practice Guide (GPG) as a low cost but highly accessible means of delivering this message about responsible use. A small leaflet could easily be made available to the public electronically, and paper copies could be handed out by Training Area Marshalls on the ground.

Understanding that a user guide created independently by the MOD would lack impact, ART approached the main National greenlaning organisations: the Green Laning Association, the Trail Riders Fellowship and Tread Lightly, seeking to add validity and support to the final

product. Having participated in volunteer tasks across SPTA – installing new signs and waymarkers on PROW and permissive tracks – all the stakeholders were keen to further support and endorse a venture that would promote ongoing responsible use.

Greenlaning is a contentious pastime as it is often branded under the aforementioned moniker 'off-roading'. Much of the recreational access on the Plain is granted by the MOD and, if it is felt necessary, can be taken away. This would be a massive loss to the greenlaning community. These National Organisations all understand that in order to maintain a healthy long term relationship with the MOD, their members, prospective members and the wider greenlaning community should be informed about how SPTA can be used appropriately. This all helps to encourage the legal, sustainable pursuit of an activity that frequently generates a lot of criticism.

Greenlaning guidance is nothing new. All of the organisations involved had some form of guidance available. Rather than reinvent the wheel all the existing materials were reviewed to identify common guidelines. Incorporated into the Guide, these highlight that in many respects the Plain is no different to anywhere else and has to be treated respectfully. With the help of DIO Service Delivery Training, these fundamental points were then supplemented with guidelines more attuned to the specific demands of SPTA.

To bring the leaflet to life photographs were taken on the Plain with participation from members of the Trail Riders Fellowship and Tread Lightly, as well as Training Safety Marshall Jeff Elson. Information, guidance and images were then drawn together by the Aspire Multi Media Centre in Warminster to create a highly professional and appealing leaflet.

The creation of the Guide can be regarded as a perfect example of



Sustainable military tracks link with historic byways © Dale Wyatt, Tread Lightly

collaborative working between DIO, the wider MOD and key recreation stakeholders to create something relevant and effective in raising awareness and encouraging appropriate use of the Plain. Whilst the final document will clearly raise awareness amongst users, the strengthening links between the greenlaning organisations and MOD are just as, if not more, important.

The completed Guide has been welcomed. Dale Wyatt, Wiltshire North Ambassador for Tread Lightly, said:

"The greenlaning good practice guide is an essential tool in helping us educate

recreational vehicular users of unsurfaced roads. Understanding that our heritage of green lanes is a precious resource is essential. Overuse in wet weather can cause serious problems and users need to be aware that green lanes are not a place to go mud-plugging – there are 'pay and play' sites where you can test your vehicle to its limits."

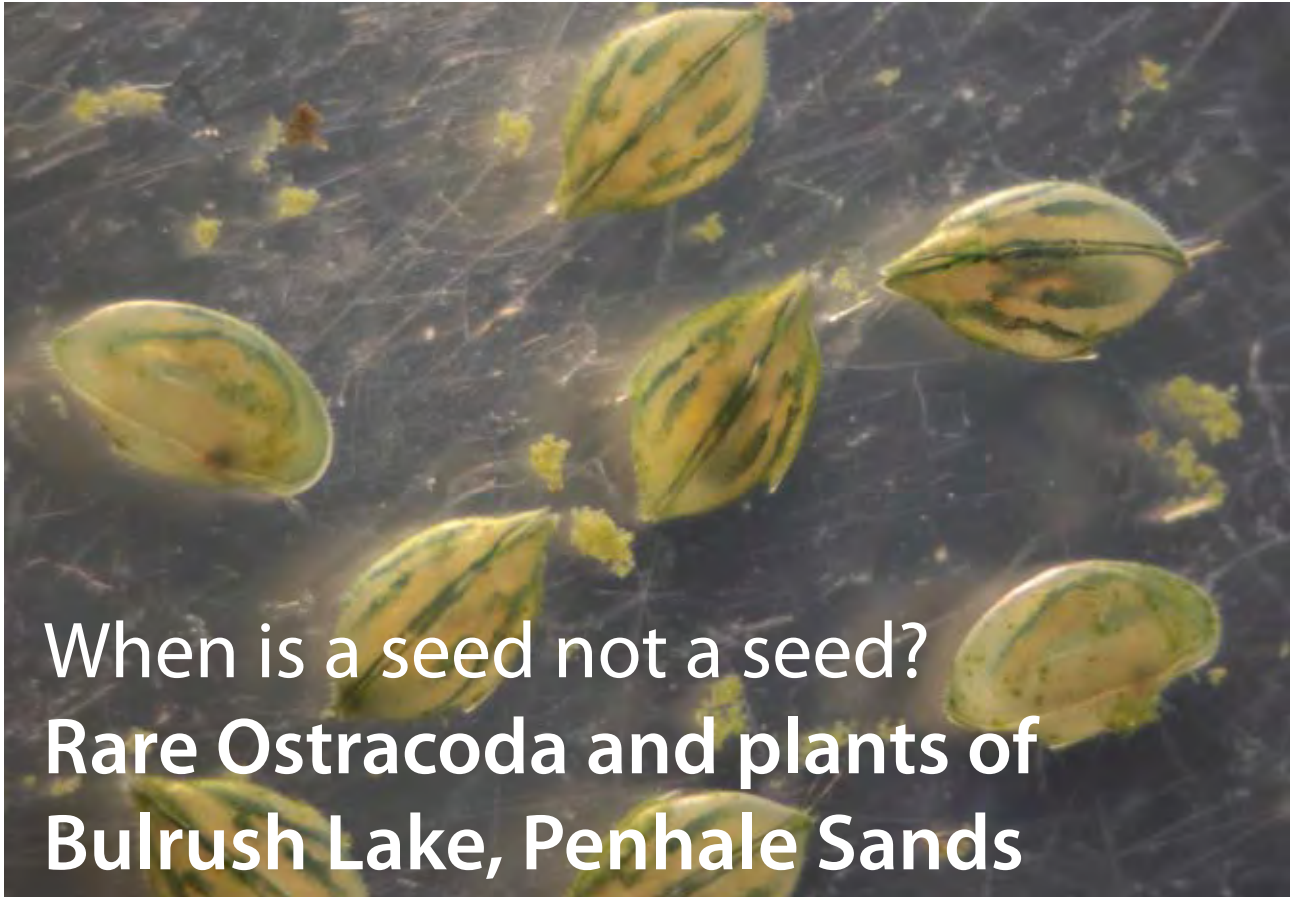
As well as support from the key greenlaning groups Wiltshire Council and Wiltshire and Swindon Countryside Access Forum have also provided input and final endorsement to the project. Wiltshire Council in particular appreciated the promotion of considerate use of rural PROW which they have limited resources to manage.

The Guide has been widely promoted through all of the organisations' websites and newsletters, ensuring that the document has received a distribution far greater than if the document had been produced and distributed solely by DIO. It is hoped that with continued partnership working between the MOD and the various greenlaning user groups, the message of sustainable and appropriate use of the Plain will continue to spread.

James Nevitt
Senior Access and Recreation Advisor
Defence Infrastructure Organisation



Volunteers assist with important signage improvements © Dale Wyatt, Tread Lightly



When is a seed not a seed? Rare Ostracoda and plants of Bulrush Lake, Penhale Sands

Cypris bispinosa Bulrush Lake June 2013 © Paul Gainey

The flora and fauna of Penhale Sands Special Area of Conservation (SAC), a large part which falls within the MOD training area, has been well-recorded over the years, especially by members of the Penhale MOD Conservation Group (which has been in place since the early 1970s). One of the key recorders from the beginning until early 2005 was Jean Paton who on one walk on the dunes in 1983 found what appeared to be small rounded seeds, about 2mm to 3mm in length, in the water of a dune slack ('Bulrush Lake'), but these were moving – they were obviously not seeds! Further investigation confirmed that these were small seed-like bivalved crustaceans in the class Ostracoda (commonly known as 'ostracods') and that the species was *Cypris bispinosa*. These are sometimes referred to as 'bean animalcules'. Paul Gainey, another long-term member of the conservation group, has since recorded *Cypris bispinosa* on several occasions between 1993 and 2013.

On a conservation group walk with Paul on Penhale Sands on 7th June 2013, the group was able to walk into Bulrush Lake after a period of high water levels had receded, and in a remaining small pool in the slack Paul netted many *Cypris bispinosa* – and, like Jean, knew they weren't seeds when they started moving! The authority, Henderson states that *Cypris bispinosa* "occurs in coastal and probably brackish water; widely distributed around the Mediterranean basin but very rare in the British Isles where it seems to be at the northern limit of its distribution." In Great Britain and Ireland *Cypris bispinosa* is known only from Penhale and the fluctuating meres that occur over chalk in the Breckland area of Norfolk and in turloughs, found over Carboniferous limestone in Ireland. The habitat is sufficiently rare in the United Kingdom to be recognised as a UK BAP Priority habitat – as 'Aquifer Fed Naturally Fluctuating Water Bodies' and *Cypris bispinosa* is listed as a key species in such habitats.

The dune slack where the *Cypris bispinosa* has been found on Penhale Sands is known by members of the conservation group as 'Bulrush Lake' due to the large stand of common club-rush (or Bulrush) *Schoenoplectus lacustris* at one end, in its sole confirmed Cornish site, though there is also grey club-rush *Schoenoplectus tabernaemontani*. Bulrush Lake is the largest of several dune slacks on the dunes, and like most of them the amount of water in the slack fluctuates yearly - it has been dry (but always damp) in about half of the years since 1990. Not all the slacks in the dunes are water-filled at the same time. The draw-down zones of Bulrush Lake have abundant silverweed *Potentilla anserina*, water mint *Mentha aquatica*, marsh pennywort *Hydrocotyle vulgaris*, marsh horsetail *Equisetum palustre* and lesser spearwort *Ranunculus flammula*, and both water-plantain *Alisma plantago-aquatica* and lesser water-plantain *Baldellia ranunculoides*. The western part, where the last of the water

remains in drier years, is often filled with the stoneworts *Tolypella glomerata*, *Chara contraria* and *Chara vulgaris* var. *papillata* amongst common spike-rush *Eleocharis palustris*. A recent arrival is cyperus sedge *Carex pseudocyperus*, another rare species in Cornwall. One plant was found in Bulrush Lake in 2005, and by 2013 it is now frequent in one part of the slack, and appears to have spread in years when the water level has been low or the slack is dry.

One of the most interesting vascular plants in Bulrush Lake is the internationally rare shore dock *Rumex rupestris* which appears on the margins of the pool after the water level recedes. Normally found in cliff flushes which emit onto wave-cut platforms, beaches or in damp heads on cliffs on the western seaboard of the British Isles, Spain and France, its presence in Bulrush Lake and other sites on Penhale Sands is rather puzzling, as it is the only 'sand dune-slack' habitat where it grows in the British Isles. Shore dock seeds are large and inflated and can withstand several days in water, and this facilitates the spread around the coast and to colonise new sites. Shore dock plants in Bulrush Lake are mostly found in the western margin along the strandline where the water level reaches the highest level.

Like *Cypris bispinosa*, shore dock appears to tolerate the fluctuating water levels in Bulrush Lake. With the threat of climate change after a period of dry years in the early 2000s, and apparent decline of numbers of shore dock plants (14 plants in 2005 from 123 in 2001), concerns were raised about the continuing existence of the species at this site. However, a long-term member of the conservation group, Rose Murphy, who had watched Bulrush Lake water levels rise and fall over the years, assured others that plants would appear again and indeed they did with over 50 plants found in 2009. In 2013 at least 19 large plants were recorded, producing abundant fruits ready for future colonisation and fluctuating water levels. Though Bulrush Lake lies near a channel draining Gear Sands to the south, the water table appears to be affected more by past mining activity in the area than natural filling of the slacks from rainfall. Penhale Sands is in an area which was exploited in the past by mining of tin, iron and silver, and several shafts and adits criss-cross the dunes, through the hard-rock low cliffs now hidden from view by the sand dunes which cover these cliffs. Blocked water-filled adits fail and drain, or empty adits fill with water: the almost complete filling of the dune slacks with

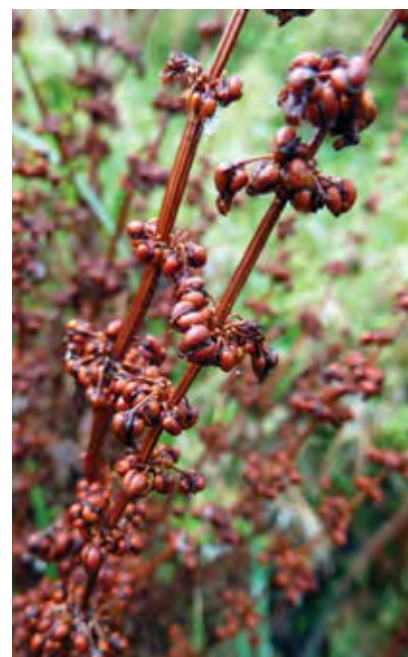
water on the dunes in 2012 was thought to be related to a newly blocked adit following heavy rains raising the local water table. As long as the rainfall patterns continue to replenish the surrounding area to keep the water table at least high enough to fill parts of Bulrush Lake, then the continued survival of *Cypris bispinosa* and shore dock should continue.

In previous National Vegetation Classification (NVC) surveys of Penhale Sands, the plant communities sampled in Bulrush Lake were found to be a fairly good fit to the sand dune slack or swamp plant communities as described in Rodwell's British Plant Communities, but the presence of other species such as shore dock skewed the analysis. Bulrush Lake may therefore be better classed as the UK BAP habitat 'Aquifer Fed Naturally Fluctuating Water Body', and if accepted as such would confirm the importance of the site within the Penhale SAC.

Ian Bernallick and Paul Gainey
Penhale MOD Conservation Group



Bulrush Lake in dry period June 2013 © Ian Bernallick



Rumex rupestris Bulrush Lake © Ian Bernallick

Operation Nightingale Excavations at RAF Akrotiri



Aerial view of excavation site © Crown

Royal Air Force Akrotiri and the peninsular it sits on has a rich historical past dating back to the earliest human habitation of Cyprus from around 9500 BC. Within the boundaries of the station are rock cut tombs, ancient harbours and many other archaeological features dating back to the Hellenistic and Roman periods. In September 2013 further light was shone on Akrotiri's past through a project to excavate a 7th century Basilica to the North of the Station, licenced by the Sovereign Base Administration (SBA). Operation Nightingale personnel worked under the direction of the Republic of Cyprus (ROC) Department of Antiquities (DOA) during the excavation.

The huge site, estimated to have been the size of Westminster Abbey, is now in its 6th year of excavation, which the DOA dates back to approximately 616AD. It is believed to have been a holding area for holy relics of St James and St Stephen brought over from Jerusalem during the Byzantine - Sasanian wars (602-628AD).

The buildings high status is clearly demonstrated by an incredible wealth of stunning mosaics, imported marble used in its construction, gold leaf trimmings, bronze and statues, which are now protected. According to the dig director for the DOA, its discovery

should not be underestimated and will help us understand and re-write the history of 7th century Cyprus. It is estimated that after its construction, it had a very short life-span of approximately thirty years before it was abandoned and destroyed.

A total of 27 Op Nightingale personnel including one National Trust archaeologist and medical support staff participated in the excavation, working with local Cypriot volunteers, archaeology students and DOA. As Trooper Danny Simpson explained, it is an excellent opportunity to help him start enjoying life again.

"I was injured during training and was medically discharged," he explained. "I think it is pretty awesome to be honest [the excavation]. I actually can't wait to start university. This is probably the happiest I have been since being discharged because it is something that is 1,400 years old and I am the first person to see that."

The excavations attracted media attention on the island, being reported in local Cypriot newspapers and via British Forces Broadcasting Services (BFBS) on both TV and Radio. A number of high profile visits were made to the site by Commander British Forces

Cyprus (CBF), Head of DIO International and most notably Phil Harding, a British archaeologist, who works on Channel 4's highly-popular Time Team programme. Speaking to Carla Prater from BFBS TV, he explained how much he enjoyed sharing his passion for archaeology:

"It is through something like Op Nightingale that I can actually share that passion with somebody else. People who have never done it before and actually feel it is beneficial, not just for the archaeology but for actual people's lives for what they are doing and for their future wellbeing and when you look at it like that it is actually quite humbling."

In conclusion the excavations represent a successful collaboration project between the ROC, MOD and the SBA to gain a deeper understanding of the islands history. DIO would like to thank the following for their support; CBF, HQ BFC Staff, SBAA Environmental Team. Special thanks go to Dr Eleni Procopiou (DOA) for allowing Op Nightingale on the dig, and Major (Retd) 'Smudge' Smith and Mrs Stasoula Stylianou for setting up the logistics.

David West
Environmental Advisor
Defence Infrastructure Organisation

Protecting the environment

Beyond the borders



Pollution Control Team at RNAS Yeovilton © Crown

RNAS Yeovilton can be found in the heart of Somerset, sat amongst extensive agriculture and important and fragile river habitat. As is characteristic of the area, the site is bordered and crossed by a series of water courses: Northmead Brook and the rivers Yeo and Cam.

Yeovilton is currently altering its operational footprint to become the home of the MOD's latest Reconnaissance Helicopter, the Wildcat.

Capable of storing approximately 6m litres of fuel, RNAS Yeovilton is conscious of its potential to pollute the controlled waters that run through and around the site. Yeovilton is a Lower Tier, Major Accident Control Regulations (MACR) Site with a comprehensive Environmental Management System (EMS), supported by a detailed MACR Environmental Risk Assessment (ERA), to aid its legal and morale obligations to protect the local and global environs.

To achieve this Yeovilton has addressed the ways in which it can not only minimise pollution on site, but to rigorously ensure that it does not allow pollution from any significant spillage, which may result in a Major Accident To The Environment (MATTE) to escape to

the wider environs; namely the rivers Yeo and Cam.

In support of Yeovilton's EMS, a detailed Unit Spillage Response Plan (USRP) is in place. The Station has a pro-active programme to continually review its contingencies against pollution; it encourages innovation and pragmatism to protect and enhance the environment that is increasingly governed by legislation, mandated within MOD and demanded and expected by the public, local communities and industry partners.

Several initiatives are firmly in place and practiced at Yeovilton:

- Yeovilton has a dedicated Pollution Control Team (PCT), provided by the Air Engineering Department, trained, equipped and on-call to respond to environmental emergencies within the Yeovilton estate
- A dedicated Mobile Spillage Response Kit (MSRK) has been made up, maintained and controlled by SERCO (Yeovilton's Fuel and Salvage Section) as part of a MOD Multi Activity Contract. The MSRK can be deployed to any MATTE or spillage at Yeovilton within 4 minutes

- A newly installed Penstock Valve can be operated from fully open to fully closed and locked off within 90 seconds. When closed it protects the river Yeo from any significant spillage in the main Technical Site, Sewage Treatment Plant or Bulk Fuel Installations within Yeovilton. The PCT, Salvage Team and the Standing Officer Of the Watch are all trained in its operation, with full instructions contained within the site USRP
- In accordance with the site USRP and MACR ERA a 'Sacrificial Area' been agreed by the Establishment Main Controller (EMC), the Pollution Control Officer and the Environment Agency
- In the event of the sacrificial area being utilised the Local Authority Fire Brigade and Yeovilton's Fire and Rescue Service have agreed a pumping relay routine to aid the relief of back-flooding, which will result once the Penstock Valve has been closed

With these measures in place, RNAS Yeovilton has ensured that the environment beyond its borders has been protected from pollution using the best possible options with the resources available.

John Fanning

Environmental Protection Officer
(RNAS) Yeovilton



Penstock Valve protecting the River Yeo against spillages © Crown

British Army Training Unit Kenya (BATUK) An environmental audit



Military in Kenya © Crown

As the sun rises over Mount Kenya, the lions of Ol Doinyo Lemboro Ranch, Laikipia remind you that you are not the top of the food chain here.

The British Army has trained in Kenya for over 60 years, the terrain is uncompromising, the scale vast and with the support of the local community, the training value is peerless.

Under a Memorandum of Understanding with the Kenyan Government, the training takes place across a total of 278,000ha (2780km²) including dedicated Kenyan Department of Defence (DOD) training areas on Mount Kenya, at Archers Post, Samburu County and under specific licence agreements on private ranches

across Laikipia District. Six light infantry battlegroups each undertake a six-week exercise called ASKARI STORM, designed so that infantry soldiers work alongside the engineers, medics and logisticians that make up their 1200-person battlegroup. Training comprises of a number of live fire and dry fire exercises, with and without helicopter support. The final element of the exercise includes up to 500 local Kenyans assuming the roles of insurgents and aid workers with tribal, ethnic and religious tensions, providing the ultimate challenge for young soldiers to overcome.

In addition to the battlegroup exercises, the Royal Army Medical Corps and squadrons from 33 Engineer Regiment undertake field exercises and community support activities in the region.

Following discussions with the National Environmental Management Authority (NEMA) and in order to comply with Kenyan Environmental (Impact Assessment and Audit) Regulations 2003, BATUK was required to undertake an Initial Environmental Audit of its current military activities within Kenya. Following a competitive tendering process, Defence Infrastructure Organisation, Infrastructure Professional Services and Service Delivery Training in BATUK, commissioned a unique partnership of SKM Enviro (now Jacobs Ltd), Howard Humphreys (East Africa)



Richard Snow talking to Kathendini community © Crown

Ltd and National Museums of Kenya (NMK) to undertake the audit.

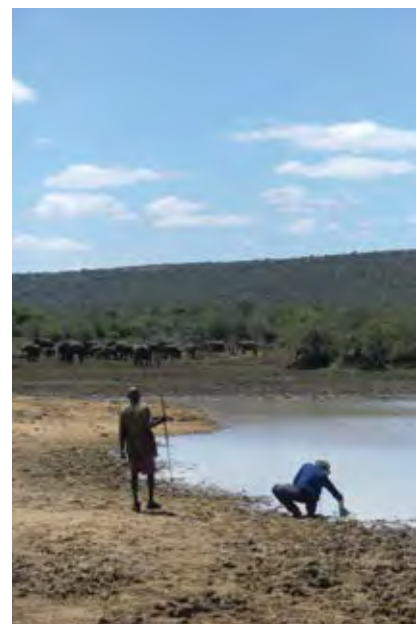
Commencing in November 2013, the audit, which comprised both desk based research and field visits, looked at activities and operations across all areas used by BATUK, and the use of military helicopters across Kenyan airspace. The existing BATUK environmental management controls and systems were reviewed, and the adequacy of these controls in protecting the environment and heritage of Kenya was assessed. The audit also looked to evaluate the socio-economic contribution to Kenya from the presence of BATUK, from quantifiable financial measures to the opinion of local stakeholders.

At Archers Post, National Museum of Kenya staff undertook field surveys of the archaeology and ecology of the areas used by BATUK. These were the first formal surveys of the area, providing important data sets for the Kenyan archive, showing significant finds of species such as elephant, Grevy's zebra, Somali ostrich, reticulated giraffe, African buffalo, leopard and lion,

while also finding important historic burial sites, rock art and tool sites.

The Laikipia and Samburu areas are important for wildlife at an international level and this in turn supports a vitally important tourism trade. Across the BATUK training locations, 13 recorded species are IUCN red listed including one species, black rhinoceros *Diceros bicornis*, listed Critically Endangered, two species, Grevy's zebra *Equus grevyi* and African wild dog *Lycaon pictus*, listed Endangered and 10 further red-listed species savannah elephant *Loxodonta africana*; lion *Panthera leo*, cheetah *Acinonyx jubatus*, common hippopotamus *Hippopotamus amphibious*, Thomson's gazelle *Eudorcas thomsonii*, lesser kudu *Tragelaphus imberbis*, leopard *Panthera pardus*, Beisa oryx *Oryx beisa*, striped hyaena *Hyaena hyaena*, generuk *Litocranium walleri* listed as Vulnerable. Detailed Ecological Impact Assessments undertaken to inform the audit identified potential hazards to habitats including: temporary camp sites; movement of people and vehicles both along tracks and footpaths; road network maintenance; use of explosives; and the

potential for accelerating the spread of invasive species; and hazards to species including potential risk of killing, injuring and disturbance. Existing controls were reviewed and were found to be generally successful in avoiding potential effects. Mitigating factors for residual effects include positive contributions to wildlife protection and monitoring. Recommendations for the



Sampling water at Mpala Farm © Crown



Elephants at Mpala © Crown

future include working with the various stakeholders to enhance monitoring, sensitive placement and management of any new training infrastructure, and ongoing review of standing orders. This will further enable BATUK to integrate its training exercises with the environmental sensitivities of each site.



Il Pinguan valley © Crown

The audit has completed Land Quality Assessments for each site identifying low risks from our current and legacy activities. Noise emissions were assessed for compliance against Kenyan environmental legislation and show that activities on training areas are fully compliant with the requirements of Kenyan legislation.

The Socio Economic assessment revealed that BATUK's presence within Kenya contributes both directly and indirectly, with an estimated economic benefit of £50m / 6.5 billion Kenyan Shillings into the community each year (based upon 2013 data). Local communities, individuals and companies such as hotels, builders' merchants, wholesale suppliers of food, suppliers of fuel, to local curio shops are all benefiting from the BATUK spend.

BATUK employs over 1300 staff (permanent, fixed-term and casuals) to support its presence within Kenya. Employment opportunities range from

temporary staff from the local villages supporting the training, through to full time posts such as mechanics, carpenters and financial clerks, building skills and capacity within the community.

Community projects have been delivered in line with the District Governor's aims and are contributing significantly to the broader local community. These include projects such as road and bridge restoration, building infrastructure for schools and orphanages, to working with Kenya Wildlife Services on anti-poaching measures, as reported in the international media.

Where the audit has recommended further controls or mitigation measures, these have been drawn together into one Environmental Management Plan for implementation.

The audit was submitted to NEMA in July 2014 and the results provide an important environmental baseline that furthers BATUK's ability to deliver compliance with Kenyan Environmental legislation, whilst working in partnership with local communities, thereby helping to secure BATUK's consent to train into the future.

Mr Richard Snow
Defence Infrastructure Organisation

Mr Wayne Bates
Lead Auditor
Jacobs

Lt Col E Edwards
Commander
Defence Infrastructure Organisation
SD Training (Kenya)



Rock art Archers Post © Crown

The helicopters are not the only thing buzzing at **RAF Shawbury**



Red mason bee *Osmia bicornis* © Iain Perkins

As many species of bee have declined over recent years, interest in their conservation has increased especially as their essential role in pollinating wildflowers and crops is becoming better understood.

As part of this conservation effort, RAF Shawbury has become involved in an independent project, established by local specialist Horticulturalist, Mr Viv Marsh. Viv has set up a partnership with local churches and Harper Adams University to promote the conservation of the solitary red mason bee *Osmia bicornis*. Whilst visiting close to RAF Shawbury, Viv noticed some individual red mason bees. He contacted the stations Environmental Officer, Mr Andy Parfitt who then joined the bee conservation project 'Praise Bee' which aims to bolster colonies of the species by creating new breeding sites; it was therefore agreed that artificial nests could be trialled on site.

In April 2013, the nests were checked and activity was found at four, one of which contained pupae. The nests were examined in November 2013 and 97 pupae had been produced. This was proof that the project was viable and new colonies could therefore be established elsewhere. In April 2014, further nest sites were established at

RAF Shawbury, and at the nearby Relief Landing Grounds at Ternhill and Chetwynd.

The bee emerges in the spring as an adult from the previous years nest where it pupated, then mates and starts to lay eggs which it supplies with food in individual cells. These eggs hatch and develop until they themselves pupate. In collecting food for its offspring, the bees pollinate a wide range of plants and has been shown to significantly raise the seed set of many field crops.

The 105ha airfield environment at RAF Shawbury provides an ideal habitat for the bees as there is no intensive agriculture with associated pesticides. Additionally, there are large expanses of grassland and hedgerows with a diversity of wild flowers which are ideal for these insects.

On Friday 9th May 2014, RAF Shawbury welcomed the Countryfile production team to film this innovative environmental project.

The team visited the stations workshop, where the carpenters had been busy constructing the nest boxes. The design of the bee box mimics the natural nest of the bee, which is usually hollow plant stems and beetle borings in deadwood.

Each nest provides a concentrated number of suitable tubes in a single place, so nest seeking females do not have to waste time seeking other hollows in which to lay their eggs.

Ellie Harrison, presenter of Countryfile was delighted to be invited to drive across the airfield and set up a new nest site. With the help of Andy Parfitt, a stake was hammered into place and the nest box firmly secured on top. Overwintering pupae, were then carefully placed into the nest to await a gentle warming from the sunshine to awaken them.

Group Captain Alastair Smith, Station Commander RAF Shawbury said:

"We are delighted to be part of this important environmental project. The MOD takes conservation and environmental issues very seriously and uses its considerable ownership of land to protect and encourage wildlife wherever possible. We are always receptive to new ideas and this project is ideal as it combines both supporting the environment and working with the local community".

Andy Parfitt
Station Environmental Officer
RAF Shawbury



Ellie and Andy erect new bee box on airfield © Crown

Netheravon Airfield, Salisbury Plain

100 years of flying history



Typical defects © Aspire Defence Services Limited

A restoration project by Aspire Defence Services Limited

Aspire Defence Services Limited (ADSL) supplies the Total Facilities Management element of Project Allenby/Connaught (PAC), a 35 year contract and the largest infrastructure Private Finance Initiative (PFI) ever let by the MOD, covering the four Army garrisons on Salisbury Plain and in Aldershot.

ADSL works in historically important locations across the PAC footprint and in this Centenary Year of The Great War, work at Netheravon Airfield, Salisbury Plain has brought modern conservation techniques to buildings which played a critical part in the airborne war effort 100 years ago.

In 1914 Royal Flying Corps (RFC) Squadrons 3 and 4 were sent to the new accommodation and technical facilities at Netheravon Airfield. The airfield was home to an intense testing and training exercise

throughout 1914 with the military wing of the RFC gathering in what was known as the 'Concentration Camp' to discuss operational techniques for an effective air force. In the same year Squadrons 3 and 4 with 12 aircraft each were deployed to France as part of a total British strength of 63 aircraft supported by 900 men.

At this stage of the war, reconnaissance and air attacks on land forces were the primary role and it was not until 1915 that a fighter squadron flying Vickers FB5 planes was formed at Netheravon. This was Squadron 11, the first unit established with the sole intention of destroying other aircraft.

In these early days accidents were common and for most of the war casualties at training units were greater than losses in action. Training standards were regulated in 1916 but increased demand for pilots meant that some still arrived in France unprepared for combat. This was one factor leading to a sharp rise in casualties. By the spring of 1917 the life expectancy of a new pilot on the Western Front could be measured in weeks.

Whilst Netheravon became the focus for Squadron Disbandment shortly before the Armistice, its role in pioneering flight did not end there. In 1924 the Fleet Air Arm was created and the first pilots trained at Netheravon, which remained the focus for training naval aircrew until 1941. The first military rotary-wing flying trials took place at Netheravon in 1933 and the airfield had an association with parachute and glider forces throughout the World War II with the advance party of the Glider Exercise Squadron arriving in 1942 and deploying to France within a month.

Netheravon closed as a mainstream base in 2012 by which time the Grade II Listed 'black and white' accommodation buildings were in need of refurbishment. The first purpose-built accommodation structures for RFC squadrons, these buildings contained significant quantities of asbestos, the 'miracle product' of its day, and the challenge was to retain as much of the original structure as possible whilst ensuring safety. Working closely from the start of the project with English Heritage, the Local Authority Conservation Officer and ADSL's licensed asbestos removal contractor, Merryhill Envirotec Limited, ADSL focused on restoring these historic buildings to a sound condition. This phase of the project has completed the regeneration of seven buildings in West Camp which comprises a complex containing a further twenty buildings including the old Officers Mess, the SNCO Mess and the old central bath house.

The original intention of the project had been to replace the external timber battens and repaint the structures but it soon became clear that considerably more work was needed. Over time, water had seeped in behind the asbestos cement sheets and caused the



Work is complete © Aspire Defence Services Limited

diagonal close boards fixed to the timber frame to rot away.

A temporary structure was assembled enclosing the listed building using plywood sheets and insulation for the walls and floor and tri-wall polycarbonate sheets for the roof. This provided a weather proof cover during a particularly wet winter and an enclosed area which could be heated and dried. Trailer mounted heater/dehumidifiers normally used for flood recovery works proved to be very effective in drying out the sodden timbers.

In order to facilitate a clear understanding of the original construction, work began on one building. Once this was under way a sequence was developed for the remaining six buildings to locate the rotten timber, remove the asbestos cement sheets and rebuild leaving as much as possible of the original structure undisturbed.

As repairs had been carried out to the buildings using various materials over many years, research was needed to find out exactly what timber sizes and sections had been used originally.

Cedar was used in the original construction for the external battens and this was replicated for the project.

A supplier was found who could cut timbers to imperial sizes exactly matching the originals. Architectural woodwork also needed to be replicated in the original imperial sizes, particularly around the main entrance doors. The sash windows all needed repairs to the weight boxes and sills and the work was carried out by a specialist sash window renovation company who also had the tools to replicate the imperial sizes used in the mouldings.

As asbestos cement sheeting was removed, it was replaced with a fibre cement sheet which has the same appearance as the original asbestos.

Replication of original materials and techniques was important but the repairs also needed to be durable. It would not have been practical to replicate the way in which the original construction was nailed together as this would not have allowed sufficient weather resistance so, stainless steel screws were used throughout, with the external battens held in place by special bare shanked screws which allow the timber to be drawn together very

tightly with the cement sheets. This will prevent water seeping in behind them.

Once the cement sheets were replaced, and before the battens were fixed, the whole structure was washed down with sugar soap and a waterproof coating applied. After the battens were fixed they were treated with sealant and the buildings were re-painted in their simple original black and white livery.

After restoration, the buildings provided a backdrop in August 2014 for a Western Front Association commemorative event dedicated to the first RFC casualties of war who died in an air crash at Netheravon. The buildings look as they did when the young flying officers first took up residence in 1914 and stand as a fitting memorial to their courage and sacrifice.

Julie Tite
Information Manager
Aspire Defence Services Limited

A decade of sustainable management on the Defence Training Estate



Bracken spraying 8th August 2014 © Landmarc

As Project Vanguard comes to an end we review some of the interesting and innovative projects Landmarc Support Services have delivered in partnership with Defence Infrastructure Organisation (DIO), statutory bodies and other stakeholders.

East – Stanford Training Area

As the glaciers retreated at the end of the last Ice Age they left huge chunks of ice embedded into the landscape of what is now mid-Norfolk. As these melted they formed an array of small to medium sized lakes known as pingoes.

Many have been lost and those that remain are incredibly valuable to both flora and fauna including European Protected Species such as the great crested newt which uses them as breeding sites.

Following close consultation with DIO ecologists and with consent from Natural England, Landmarc have sensitively re-excavated a number of

pingoes ensuring that the newts and other wildlife can continue to thrive in these Ice Age relic features.

South East – Pill boxes to bat boxes

When health and safety concerns were highlighted about a number of World War II pill boxes on Bourley Training Area (Home Counties), Landmarc developed an innovative scheme to convert the structures into roosts for increasingly rare and threatened bat species.

Human access was prevented by blocking up doorways and gun slits whilst access slots for bats were retained. Wooden boards and purpose built bat boxes were also erected inside to provide optimal conditions for a bat roost.

Local volunteers from the Bat Conservation Trust are monitoring the sites and early indications are encouraging, ensuring that both these

endangered species and their habitat are protected and historic relics from the early 1940s have also escaped demolition.

South West – Scraesdon Fort

Working closely with military users and English Heritage, Landmarc have developed and implemented a scheme to restore Scraesdon Fort, which was originally built in the mid-1800s as part of the defensive measures around Plymouth Harbour.

You can find out more about this project in the next feature titled 'Scraesdon Fort entrance bridge replacement' by Nigel Sharpe.

North – Beating back the bracken

Bracken can be an invasive plant if not managed appropriately and can turn a hillside of upland grazing land into a dense jungle of limited ecological value in a few short years.

As well as impacting on Sites of Special Scientific Interest (SSSIs) and grazing land, bracken encroachment can damage historic monuments and harbour ticks which can spread infections such as Lyme disease to humans – training soldiers may be particularly at risk.

Landmarc have deployed a range of techniques to halt the spread of bracken and have worked to eradicate it from ecologically important land. In sensitive and organically farmed areas, bracken bruising has been employed using mechanical rollers to break and crush the stems which, over time, depletes the plants resources and eventually it dies back.

On other sites, such as Feldom Moor SSSI (North Yorkshire), the areas are so large that aerial spraying from helicopters is required. This has been carried out on an annual programme agreed with the statutory bodies to ensure that the essential use of chemicals such as Asulox is carried out in a sustainable manner, reducing the adverse risk to the wider environment.

Wales & West – A sustainable future

Alongside traditional rural estate management, Landmarc have also been involved in the planning and delivery of innovative solutions aimed at increasing the use of renewable energy sources and recycling of materials generated on the estate.

Much of the work on the Sennybridge rural estate in Wales involves the maintenance of the extensive track network across the site which has, in the past, required the importation of large amounts of quarried stone transported considerable distances to the area in lorries.

To reduce reliance on imported quarried material, Landmarc have re-opened an on-site supply of exactly the right grade of stone for the maintenance of the roads utilising our own labour and machinery



Re-opened on-site quarry at Sennybridge © Landmarc

supplemented by a hired stone crusher. This ensures a steady supply of the right material at vastly reduced cost and environmental impact.

Scotland – Natural capital mapping

Barry Buddon was one of two sites used to test a world first natural capital mapping tool. Working with our long term partners Jacobs SKM and Smiths Gore, Landmarc with support of the University of Exeter have built a geospatial tool that enables multiple aspects of a site's natural capital to be evaluated in a common framework and displayed on site maps. The tool enables the impacts of proposed changes to be assessed across multiple natural facets and the total impact visualised.

The same tool can also be used to assess the natural opportunities a site holds. We are looking forward to expanding this tool to be available on many more National Training Estate Prime contract (NTEP) sites and with many more layers of information.

The Kirkcudbright estate in Scotland is one of the few places in Dumfries and Galloway where the traditional network of stone walls and hedges still exist while agricultural improvements to increase field sizes swept away these boundaries elsewhere.

Although largely still in situ, the boundaries had deteriorated with time but thanks to a DIO funded programme implemented by Landmarc, many have been fully renovated to their former glory and in the process provided considerable local employment in a traditional craft.

The future

The primary function of the estate is to carry out military training but we also have a critical role to play in protecting landscapes and their habitats.

As well as ensuring that the estate is run efficiently, to budget and is fit for our Armed Forces to train on much of the work carried out under the Vanguard contract has also included conservation activities.

As the next phase of this journey starts with the NTEP contract, Landmarc looks forward to being able to celebrate a bright future in partnership with DIO and the delivery of more projects to support our natural, historical heritage and its future alongside the all important function of military training.

Duncan Glen MCIEEM

Rural Estate Delivery Manager
Landmarc Support Services Limited

Scraesdon Fort Entrance bridge replacement



The new replacement bridge 2013 © Crown

One of the most difficult things to achieve in managing the defence training estate is to ensure that effective military training is facilitated whilst both natural and historic environment sites with legal protection are managed in harmony with one another.

Scraesdon Fort, located in Cornwall, was built in the mid-1800s as part of defensive measures around Plymouth Harbour and is an important heritage asset being designated as a Listed Building and a Scheduled Ancient Monument. It currently forms part of Defence Infrastructure Organisation (DIO) Antony Training Area.

Over the years, the original entrance bridge (which includes a drawbridge) has been weakened by rust and in 1980 vehicular use was banned as a result. As the primary users of the fort were Royal Marines, who did not need vehicular access, this was not a serious problem. However, as the fort is a scheduled monument, the gradual deterioration of the structure was far from ideal.

In 2003, DIO Estate Surveyors in consultation with English Heritage (EH) hatched a plan to restore the bridge to its former glory. At the time, EH were restoring a similar entrance bridge at

their Fort Blockhouse in Gosport, and a site visit was arranged to share best practice, and learn from any mistakes.

Hydrock (engineering consultants) were employed to develop plans for the restoration and scheduled monument consent was granted in 2004, following an extensive photographic record of condition. However, as the existing entrance bridge satisfied the demands of the military users a lack of funding delayed the project.

Eventually, by 2010, the bridge had rusted to the point where it became unsafe for use on foot, which had a profound impact on military use. At this point, the project was restarted and Landmarc Support Services, MOD's service providers for the training estate, dusted off the 2004 Scheduled Monument Consent, consulted with EH to update it, and got the green light to



Scraesdon 1911

restore the bridge. The project involved using as much of the old cast iron as possible but replaced the massive bridge girders with steel beams, suitably decorated to give the original riveted appearance.

The contract to restore the bridge was let to Dyer and Butler Ltd, who started works in the summer 2013. During the works, Landmarc arranged an alternative entrance for the Royal Marines which allowed training to continue whilst the entrance was restored.

Although the fort is a vital feature for the training of Royal Marines and the natural cover of trees and shrubs across the fort provides concealment for soldiers and creates realistic training scenarios, the vegetation on the parade grounds and ramparts are damaging the stonework and drainage.

Alongside the restoration of the bridge, Landmarc have developed and implemented a scheme to remove vegetation that suits all parties. Vegetation has been removed from the most historically sensitive areas and retained where it is most important for training. The once dry moat has been completely re-excavated allowing the 1850s drainage system to function again and removing damaging water from the lower level of the fort.

The best things are worth waiting for, and in spring 2014, the restored entrance bridge, together with refurbished original entrance gates, were reopened for military use and the grandeur of the fort entrance was once again apparent.

Nigel Sharpe
Senior Estate Surveyor
Defence Infrastructure Organisation

Senne Training Area

Still managed the traditional way



Senne flock on the training area © Dr Gerd Lakemann

The Senne Training Area, near Paderborn in northern Germany, is renowned for its beautiful landscape, with a wide diversity and rich abundance of fauna and flora. The training area covers 11,600ha, approximately half of which is woodland, interspersed with a patchwork of open, sandy heath and grassland that makes this a rare and attractive habitat. The area is also designated a Fauna, Flora and Habitat site, which is the equivalent in Germany to Special Protection Areas and Special Areas of Conservation.

The heathland, dry grasslands, wet meadows and mires are all elements of an historic, cultural landscape, which has been formed as a result of human interaction over thousands of years and careful management over the last several decades. At present, the open areas of the Senne are maintained largely by mechanical equipment, and wild red, fallow and roe deer and boar, but there is also a flock of special sheep making a valuable contribution to the management of the heather. These are a rare and ancient breed of German heath sheep, also unusual in that they are accompanied by a shepherd with sheepdogs in the traditional style.

The current flock was introduced in 1987 to help prevent the ageing and overgrowth of newly-restored heathland on the Senne. Many other breeds might struggle in this rough terrain, but these hardy sheep can graze out on the heath throughout the year. This persistent, controlled grazing leads to the sustainable management of the heather, encouraging new seedlings and fresh growth to keep it young and vital. In addition, the sheep eat young pines, beech saplings and the invasive bird-cherry, which would otherwise transform the open heath to unwanted scrub woodland.

Today the flock numbers about 450 ewes, with lambs in the springtime and



Shepherd Herr Labs in his traditional garb © Jutta Bergener

a handful of rams for breeding. The flock also contains a few goats, which graze some of the taller and tougher scrub. Professional shepherds with old German herder sheepdogs tend the livestock as they roam around the heath and rough grass. Their movements are de-conflicted with the live-fire templates by Range Control in order to maintain the safety of shepherds, who work for about nine hours, covering several kilometers each day and then corral the sheep in temporary enclosures at night.

The German Heath Sheep project is managed by the Senne Biological Station and is located on the boundary of the training area, where it provides a popular and educational visitor attraction, especially during lambing time.

It is an important aim of the British Forces in Germany to manage the rural estate in a sustainable manner, thereby leaving it in a good environmental condition when it is finally returned to the German Federal Authorities under the Army basing programme.

Mark F Johnson MSc

Land Management Services Germany
Defence Infrastructure Organisation

Working in harmony with nature on the MOD housing estate

"People from a planet without flowers would think we must be mad with joy the whole time to have such things about us."
Iris Murdoch.

The MOD housing estate in England and Wales sits comfortably amongst some of our most beautiful countryside. From the Northumbrian hills to the coastline of Cornwall our Armed Forces live in Service housing, nestled alongside rare plant and wildlife species. The CarillionAmey (Housing) team, who provide housing maintenance services on behalf of the Defence Infrastructure Organisation in England and Wales, works extremely hard to balance the impact of human life on nature in these areas.

Hazel Copse at Brize Norton, located in the heart of the Service Family Accommodation (SFA), had become a dumping ground for litter and household waste. CarillionAmey and



Local service and civilian families enjoying the natural space © Rosie Brown CarillionAmey

the Station Community Development Worker (CDW) wanted to counteract this anti social behaviour and create a copse in which families could take pride. Through CarillionAmey's countrywide programme of community projects, CarillionAmey and the CDW brought together the local police and various local stakeholder

groups to determine a way forward. Through effective collaboration and consultation with local Service and civilian families it was decided that the copse should become a natural play area for their children. Children could use the natural space to build dens and enjoy wildlife, and in time it could be used as a learning space for the local community college and play unit.



Beautiful bluebells of Pintail Wood © Josh Brown

The project was divided into two phases; phase one was all about removing unwanted rubbish and undergrowth, phase two about creating a natural area for play. Once the plans were in place, new rubbish bins were installed at the entrances to the copse. CarillionAmey's supply chain helped with the heavy duty work, allowing Station staff, families and CarillionAmey and community volunteers to litter pick, make woodchip paths, create teepees, log seats, and a mud kitchen. A new wooden sign was erected at the entrance to the copse, announcing its rejuvenation to the world. To celebrate the completion of the project all parties attended an opening ceremony



Sulphur tuft honey fungus © Josh Brown

officiated by Group Captain Support, Eddie Cole, RAF Brize Norton. Children from the local play unit got stuck in, building a mud kitchen and enjoying their first chance to explore the 'new look' copse.

In the space of just a few months, with excellent partnerships and project management, Hazel Copse had been transformed from a rubbish dump to a thriving natural space that could be enjoyed by all. Group Captain Cole summed it up as follows:

"The rejuvenation of Hazel Copse has drawn together a whole host of agencies and harnessed the efforts of a small team of enthusiastic volunteers to create a really special natural play facility for Service and local children alike. Having seen the enthusiasm of the children from the Carterton Community College Play Unit on the opening day, getting 'down and dirty', making mud pies, running in and out of wigwams and generally making the most of the fresh air, it was very clear that this is going to be a well-used and much-loved part of our local community."

At RAF Lyneham, Paul Waite, the CarillionAmey technical officer, is responsible for looking after the SFA and surrounding area. He is a nature enthusiast and has a passionate interest in ensuring that Pintail Wood, in the

heart of the Lyneham SFA, is cherished and looked after. The wood sits adjacent to a highly popular play park and bike track. Effective management of the wood has ensured that children using the BMX bike jumps and play equipment can live in harmony with the wildlife and plant species without upsetting the balance of nature. Paul, and his landscape staff, work hard to ensure that litter is cleared regularly and that the trees are maintained effectively (there is a blanket tree preservation order on the wood).

Pintail Wood is home to an orchestra of birds, chief among them the green, greater and lesser spotted woodpeckers who provide a soundtrack to the visual beauty of the area. A large pond on the edge of the wood contains great crested newts and the excellent selection of deciduous trees host a variety of insects and an understory of



Female mallard, part of the wonderful wildlife for families to share © Josh Brown

plant life. The wood itself is a natural gallery to rival any art museum, and the selection of fly agarics, birch bolete, shaggy parasol and sulphur tuft honey fungus create a colourful and interesting exhibition amongst the trees.

Future CarillionAmey Community Project plans may well see Paul taking groups of local school children for educational tours of the wood. His keenness for nature and his desire to share his knowledge with others should ensure that local Lyneham children will be less inclined to drop litter in the play park and the surrounding woodland. The hope being, that they may just take time to stop and listen to the woodpeckers, notice the creepy crawlies and enjoy the wood in all its glory.

CarillionAmey's role is to maintain SFA and much of the green space surrounding it, a job in which the CarillionAmey team take enormous pride. Many of them are from Service backgrounds, are reservists, or are married to current Service personnel. Some have lived in the houses they currently maintain and are familiar with the beautiful surroundings in which they sit. Paul is a shining example, one of the many, who take particular pride in doing their best to work in harmony with nature on the MOD housing estate.

Rosie Brown
Communications Manager
CarillionAmey

From Farms to Arms - The History of Catterick Military Training Area



Local resident Michael Webster in his Home Guard uniform at Downholme village, c.1940

In 1908, Lord Baden-Powell, General Officer Commanding (GOC) The Northumbrian Division, was tasked by Lord Kitchener of the War Office to survey a suitable place for a new military camp in the North of England.

At this time the Divisional Headquarters was based in Richmond Castle. After some deliberation, in 1914, a large area of open countryside around the villages of Hipswell, Scotton and Colburn in North Yorkshire was selected.

Local opposition to the Camp's construction, in what was good sporting and agricultural land, was assuaged by the thought that it would only be a temporary wartime measure. But in all likelihood Kitchener was looking to the long term when he referred to it as 'An Aldershot of the North.' The existence and success of the garrison today shows just how prophetic that judgment was.

Work began in spring 1915 and Sheffield-based construction firm Henry Boot was contracted for the princely sum of £250,000 to build a hutted camp suitable for the accommodation of some 40,000 men. Gangs of labourers, among them fishermen from Lowestoft and Yarmouth made unemployed by Naval operations in the North Sea, came to work on the site. The arrival, in 1916, of more than 5,000 German soldiers when Catterick became a Prisoner of War Camp, bolstered the infrastructure construction efforts, including the road linking Richmond Station with the Camp. Materials for the construction of the Camp were brought in by a

specialty-built light railway running from Catterick Bridge, with spurs leading to the various sites and depots. The Camp had to be self-sufficient, with roads, railways, electricity, water supply and sewage works all being built from scratch. The railway line crossed the River Swale using the medieval road bridge (constructed in the reign of Henry V in 1421) and it was not until 1922 that this ancient bridge was superseded by a metal girder bridge to carry trains across the river.

Originally known as Richmond Camp, in 1915, it was renamed Catterick Camp (to avoid confusion with Richmond in Surrey) with further designations of



A train travelling on the medieval road bridge over the River Swale at Catterick. The road bridge was constructed in 1421 during the reign of Henry V. Five hundred and one years later, in 1922, a purpose-built railway bridge was constructed (Courtesy of Henry Boot Plc)

The Camp had to be self-sufficient, with roads, railways, electricity, water supply and sewage works all being built from scratch

Catterick (Hipswell) Camp and Catterick (Scotton) Camp. The name Catterick was adopted because it was close to Catterick village and Catterick Bridge railway station, which served as the main station to the camp. The military association with the former Roman fort at Catterick may have played a part.

These facts and many, many more have been brought together in a new 136 page book entitled, *From Farms to Arms: The History of Catterick Military Training Area*. It is richly illustrated throughout with archive photographs, military maps and images of the garrison and the Dales landscape in which the Training Area is situated.

The idea for the book was conceived several years ago, but it was not until the advent of Rural Elements of the Estate Strategy (REES) funding, Conservation Group backing and the establishment of an Editorial Team that the idea turned into reality. The production of the book set out to meet three objectives: to commemorate the centenary of WWI, to mark one hundred years of military training at Catterick and to celebrate the

achievements of the Catterick Conservation Group.

Established in 1978, the Catterick Conservation Group has been at the forefront in championing the interests of the historic and natural environment on the Training Area. It still thrives and its members represent a range of conservation interests that could fill the pages of a university prospectus.

In the book's Foreword, Lt Col Mark Holden, Commander of Service Delivery (SD) Training North, emphasises the primary importance of military training at Catterick, whilst at the same time recognising that farming, the natural environment and cultural heritage interests must also be taken into consideration. This sets the scene for the rest of the book, with chapters on local history, ecology, geology, archaeology, historic buildings and conservation.

The principal editor, Nancy Tanner, has a career background in the heritage sector and is the wife of a serving officer in the Royal Dragoon Guards. As such, she has been able to combine a

sense of history with an eye for detail about military matters. Her fellow editor, Phil Abramson is an Archaeology Advisor in Defence Infrastructure Organisation (DIO) and has co-authored one of the chapters and assisted Nancy in the editing of the book. Jo East, an Assistant Rural Estate Manager for Landmarc Support Services Limited, has steered the book through the design and publication stages, as well as sourcing some of the images. Major (Retd) Tony Crease and Dr Moira Owen have contributed on ecology and biodiversity and Richard Almond and Tim Laurie have written about the geology and archaeology respectively.

If you have trained at Catterick, if you want to know about one of the country's principal military training areas, if you take a holiday in the Dales or if you simply live in the area and want to know more about history on your doorstep then this book is a must for you.

Phil Abramson
Archaeology Advisor
Defence Infrastructure Organisation

Brown hairstreak in South East Wiltshire



Brown hairstreak © Mike Lockwood

A focus on the land management of Salisbury Plain

The brown hairstreak *Thecla betulae* was once widely distributed in England though never considered to be common. In recent years it has disappeared from many areas and is now largely confined to South-West England, parts of Wales and Mid-West Ireland.

The serious decline is attributed to substantial losses in habitat due to hedgerow removal and annual flailing which destroys vast numbers of eggs. An estimate of over 40% reduction in population since the 1970s has led to the butterfly becoming a UK Biodiversity Action Plan species which means it is now of national priority for conservation. However, reports from some southern counties suggest the butterfly has enjoyed a revival in the last few years.

Today the brown hairstreak has two principal populations in Wiltshire:

Braydon Forest west of Swindon and on the Hampshire border around Shipton Bellinger on land managed by the MOD. There is also a small isolated population near Warminster. Other colonies have existed elsewhere but all seem to have disappeared, so it is important to monitor the status of the remaining sites.

The butterfly appears from the end of July to early September and congregates around prominent



Blackthorn thicket at Larkhill Garrison © Mike Lockwood

features in the landscape to attract a mate. The males usually remain at these prominent features while females disperse to lay eggs on young shoots of blackthorn *Prunus spinosa*. Being rather elusive, the best way to locate this insect is to search for eggs during the winter months. Colonies are often small and widely separated and because egg-laying extends over a wide area the butterfly requires conservation on a landscape scale.

Typical habitats are scattered woodland and hedgerows which are most common in the Avon and Bourne valleys on old drove roads and stock penning areas. There has been limited management for nature conservation here compared with the more important grassland on Salisbury Plain. Blackthorn thickets and scrub are characteristic of parts of the Plain providing a valuable wildlife habitat since they are not intensively cut.

A vast expanse of unimproved natural chalk grassland, Salisbury Plain is the largest area of this type in north-west Europe. Here the brown hairstreak increased as a result of scrub encroachment in the late 1960s following a reduction in the rabbit population due to myxomatosis. Prior to this the Plain was open grassland with little or no successional growth.

Much of the land was acquired by the army from 1897 for military training purposes and scrub management began in earnest from 1993 after a large part of the area was notified as a Site of Special Scientific Interest (SSSI). The entire area was subsequently designated under European law as a Special Area of Conservation (SAC) in recognition of the chalk grassland and species such as juniper *Juniperus communis*, stone curlew *Burhinus oedicnemus* and marsh fritillary *Euphydryas aurinia*.

Following the notification of the Sites of Special Scientific Interest (SSSI), numerous ecological studies were carried out and recommendations for future conservation lead to the production of an Integrated Land Management Plan in 2005. This was aimed at balancing the requirements of wildlife and the livelihood of tenant farmers with the needs of military training.

The plan was developed initially by a secondee from English Nature but laid the foundation for the conservation team on the Plain and crucially, it recognised that certain areas of scrub should be managed rotationally for specialists such as brown hairstreak and nightingale. The plan was a requirement to meet nature conservation objectives but was also

a statutory obligation of the European designations.

Recently the brown hairstreak has extended its range south of Amesbury towards Salisbury and east around Collingbourne Wood where wide field margins are left under the DEFRA Countryside Stewardship Scheme. To the north eggs have been found in Everleigh wood with clearings maintained as a training area for helicopter manoeuvres.

Previously, the butterfly was thought to be restricted to the Eastern side of Salisbury Plain where specific Defence Infrastructure Organisation (DIO) studies have been carried out in 1997 and 2007. However, it has now been found at numerous sites on the Central section west of the River Avon,



3 eggs from Milston Firs © Bulford Conservation Group

particularly on thickets around the Racecourse at Larkhill and woodland north of the Bustard Inn.

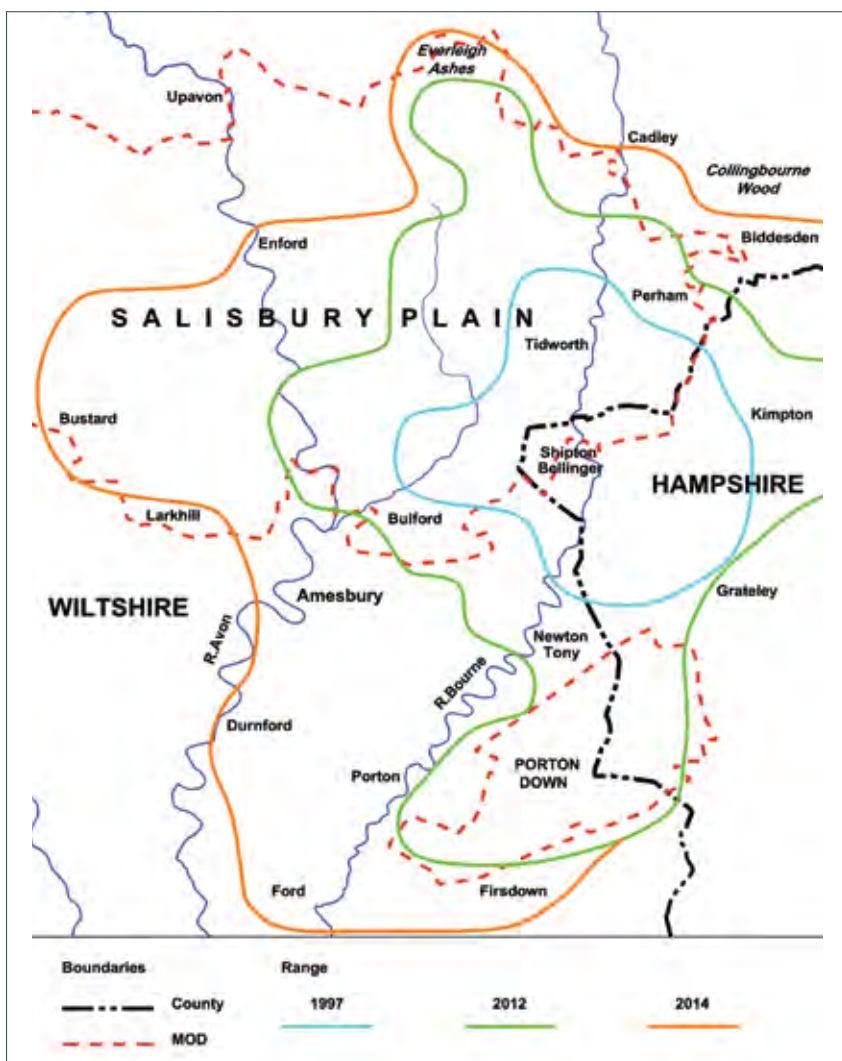
On the Western area a co-ordinated search in March 2014 by Aspire and Imber Conservation Group on Imber Ranges showed the butterfly to be present around Ranscombe Bottom and Dirtley Wood. These are steep sided valleys mainly covered in hazel woodland which was planted for use in making hurdles for the former Westbury Sheep Fair.

Brown hairstreak has also been located within the main garrisons on Salisbury Plain where grounds maintenance teams have retained blackthorn in thickets on grassland and woodland edges. It is common at Tidworth, Bulford and Perham Down with smaller numbers at Larkhill. This year it was discovered at the Land Warfare Centre at Warminster.

Areas within the garrison boundaries are managed by Aspire who work together with DIO to support the integration of management plan objectives and take into account local constraints such as planning control conditions.

Happily, on Salisbury Plain the brown hairstreak appears to be under no immediate threat and the population seems to have benefitted from appropriate management of the wider environment: providing safe havens that have allowed it to thrive and expand.

Mike Lockwood
Bulford Conservation Group



Distribution changes of the brown hairstreak in SE Wiltshire © Mike Lockwood

Army Basing Programme – Consulting for a Masterplan



Meeting the needs of the service families is paramount to DIO © Crown

The Army Basing Programme (ABP) will deliver the Government's 2010 Strategic Defence and Security Review commitment to bring all UK military units back from Germany by 2020 (with 50% back by 2015), and to move and re-role military units to implement the Army 2020 Plan. The last Brigade is planned to return from Germany in 2018/19 and relocate to Salisbury Plain. Following withdrawal from Germany, the Army will be almost completely re-based in the UK for the first time in many generations. These changes will provide savings and efficiencies for the Army and the Defence Infrastructure Organisation (DIO) as well as a sustainable military footprint, ensuring that it remains adaptable and ready to meet the security challenges of the future.

Under the Army Basing Programme, the army will maintain its UK footprint but with troops increasingly concentrated in key areas around Salisbury Plain, Edinburgh and Leuchars in Scotland, Catterick, Aldershot, Colchester, Stafford and Cottesmore and North Luffenham in the East Midlands. Focussing army facilities in areas of population will optimise the use of existing facilities and amenities, enable better

community integration and provide better potential for spousal employment. The Government has committed £1.64 billion to the programme to be invested in infrastructure across the UK, with additional funding for accommodation improvements. It will provide in the region of 1,900 new Service Family homes and more than 4,800 new bed spaces for single soldiers along with working, technical and training infrastructure.

The area that will see the largest increase in troop numbers is Salisbury Plain, as Salisbury Plain Training Area is the only place in the country that can accommodate the complex and demanding training needed to maintain operational effectiveness of the three high readiness Reaction Force Brigades.

Approximately 4,300 additional service personnel will move to the Salisbury Plain area by 2018/19, along with their families and dependents, which represents a net increase of approximately 7,600 to the current population. This requires extensive new build accommodation for single soldiers, construction or procurement

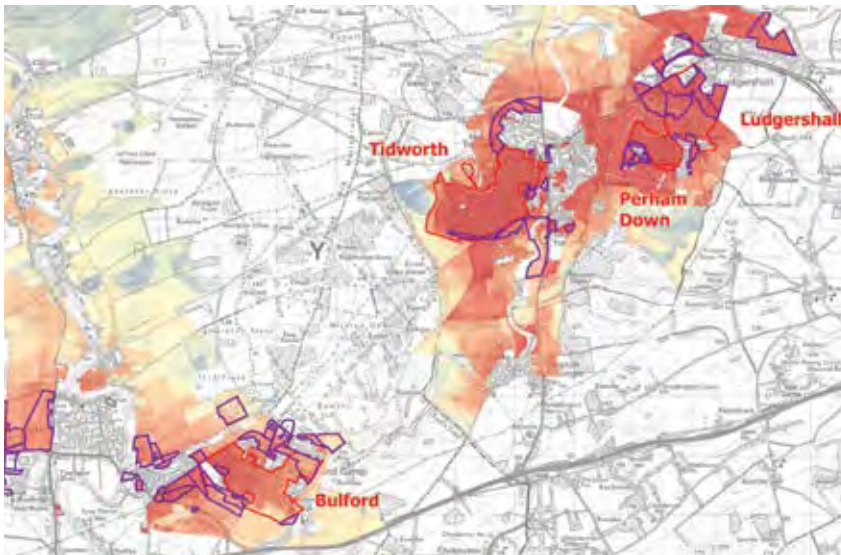
of some 1,200 new Service Family homes, additional mess facilities and technical accommodation including workshops, garages, stores and offices.

To deliver this ambitious programme, it is essential that the environmental and socio-economic effects of all the development proposals are considered from the outset at local and regional level, and are properly integrated into decision-making.

In Wiltshire, the MOD has worked closely with Wiltshire Council to assess the additional demands of rebasing on current housing, community and military training infrastructure, drawing up the strategic Salisbury Plain Masterplan to communicate the development proposals across the area and to set the context for future planning applications.

Selection of sites for military housing

To determine which areas should be put forward for Service families housing in the Masterplan, an approach of progressive site sifting and down-selection was used. The first stage involved a high-level sift of potentially suitable areas within a 10-mile radius of the garrisons at Tidworth, Larkhill, Bulford and Perham Down, excluding land covered by international and national level designations and areas at risk of flooding. The second stage used a Multi Criteria Analysis to assess each candidate site for suitability against a range of environmental, accessibility and military factors and to generate a 'heat map' which highlighted the candidate parcels in different colours according to their suitability. The environmental factors included landscape, biodiversity, historic environment, groundwater vulnerability and amenity value, whilst accessibility included socio-economic factors such



Salisbury Plain SFA heat map. The most suitable sites are shaded red, with less suitable sites shaded in progressively cooler colours © Crown

as proximity to existing community facilities, transport routes, green space and employment opportunities.

These candidate sites were consulted upon and then further refined to create the schedule of preferred sites put forward in the Masterplan.

Alongside the Masterplan, an Overarching Environmental Appraisal (OEA) was also produced. This was written to the same structure – and covered the same topics – as an Environmental Impact Assessment, but considered the potential environmental and community effects of all the ABP proposals across Salisbury Plain. The OEA recommended measures to avoid or mitigate the adverse effects identified and to enhance the positive ones. Key issues included the potential impact of additional traffic and the need to manage congestion, implement agreed access points and maximise sustainable transport by considering cycle and walking routes. Salisbury Plain is a largely open landscape of chalk grassland, studded with nationally-important heritage features, so the OEA assessed landscape and heritage effects and suggested ways in which the visual impacts of the proposed developments (particularly for the Stonehenge World Heritage Site) could be minimised or eliminated. It also considered effects on Salisbury

Plain's protected habitats and species. A wide range of detailed assessments and surveys were carried out to inform the OEA's findings and its recommendations.

A number of other detailed assessments were carried out as part of the master-planning process. Assessment studies, supported by sustainability appraisals, were used to evaluate the needs of incoming personnel and service families against the capacity of existing barracks, housing and supporting services. The implications on employment in the region and opportunities for dependents and Army leavers were also considered.

In conjunction with these internal decision-making processes, community and stakeholder engagement has been fundamental in shaping the proposals. The master-planning process was

supported by a programme of public engagement and consultation; detailed public engagement took place between February and April 2014 through a series of events and exhibitions, where the public were invited to comment on the proposals and express any concerns that they might have. Wiltshire Council also provided detailed information on their Military Civilian Integration Partnership website and in newsletters to Parish Councils within the Amesbury, Pewsey, Tidworth and Warminster area Boards. A further period of public comment on the Masterplan and OEA took place between May and June.

On 30th July 2014, Wiltshire Council's Strategic Planning Committee unanimously recognised the Masterplan as a key background document to be taken into account in the next phase of planning applications, and positive comments were made by local councillors on the MOD's approach and the way that the public consultation was conducted. DIO and the Army are now working closely with Wiltshire Council to take the Masterplan forward and to deliver the required infrastructure for the incoming troops.

ABP illustrates the value of close liaison with statutory bodies, industry partners and local planning authorities, and engagement with local communities, to shape proposals that can work for everyone and deliver places of distinction and enduring quality.

Terry Williams
Senior Environmental Planner
Defence Infrastructure Organisation



Stonehenge World Heritage Site © Dave Kjaer

Birds of Prey on the Fingringhoe Ranges



Marsh harriers in the mist at Langenhoe Point © Richard Hull

The Colchester Garrisons ‘back door’ training area consists of two sets of small arms ranges and a dry training area consisting of ancient semi-natural woodland and heathland which runs south down to the ‘Roman River’ a water course that feeds the nearby Abberton Reservoir. The majority of the site is open to public access and is an important recreational asset for the local community as the training area runs into the suburbs of Colchester. Fingringhoe Ranges on the other hand are slightly separated from the rest of the training area and occupy raised ground which dips down to the Colne Estuary. Here the safety templates of the ranges make use of the estuary and its associated habitats to create an extensive area of land that is not disturbed by recreational activity, and as such attracts wildlife that would otherwise not be present, especially the numbers of breeding marsh harriers.

These ranges, which consists of some 650ha of coastal grazing marsh, reed and sedge lined fleets and a large area

of salt marsh known as the ‘Geedons’ is part of the Colne National Nature Reserve. This unique marsh with the largest reed bed in Essex has Sites of Special Scientific Interest (SSSI), Ramsar, Special Protection Areas (SPA) and Special Areas of Conservation (SAC) status.

The primary interest of the estuary is the large numbers of wintering waterfowl it supports but the grazing marshes were also important for breeding waders and there are records of black-tailed godwits attempting to breed. However natural processes and limited grazing had seen the site



Short-eared owls over Langenhoe Marsh © Richard Hull

deteriorate with significant scrub invasion into the coastal grasslands. This has probably also impacted on species like skylark which like open habitats without trees and shrubs. Skylark is also one of the key species in the diet of hen harrier.

Over the last ten years or so the impetus has been made to restore the habitat with extensive scrub clearance and an agricultural tenant has been willing to graze the marshes with support from an agri-environment scheme. This action has started to re-establish the open conditions that are attractive to harriers and falcons.

The undisturbed reed beds attract large numbers of marsh harriers of which up to seven pairs nest annually, and in the winter months up to thirty roost in the Langenhoe Point reed bed. These majestic masters of the air feed almost exclusively on black-headed gull chicks, during the breeding season, from the nearby Rat Island, on which there is a colony of some 1500 pairs. Adult black-headed gulls, young coot, little grebes, marsh frogs, adders and grass snakes are also taken.

Winter sees the arrival of the much rarer hen harrier from Northern Britain and Scandinavia. In the 1970s and 80s up to eighteen roosted on the marsh, but recently three to four is more normal. Improvements to the open character of the area may help to increase hen harrier numbers though with climate change and less severe winters fewer birds appear to be pushed out of the Low-Countries and over to Britain. This is the only regular roost site in the county for these vulnerable species. The Fingringhoe Ranges are out of bounds to the general public, but fine views of these magnificent birds can be had from the nearby sea wall at East Mersea.

In recent summers, hobbies have bred and to watch them hunting for dragonflies over the marsh is a welcome sight. The wet ditches and meres are ideal habitat for dragonflies to breed and are unpolluted, protected



Male merlin with meadow pipit © Richard Hull

In recent summers, hobbies have bred and to watch them hunting for dragonflies over the marsh is a welcome sight

as they are from the more intensive farming by the ranges themselves. Up to six of these beautiful falcons have been observed in the air together on several occasions. Merlins on the other hand have declined over the past decade. Langenhoe Marsh could, in the 1980s boast a roost consisting of eight individuals, but now it is more like one or two.

Peregrines are often seen during the winter and there is usually one or two perched on posts on Rat Island for most of the day, waiting for the shorebirds to arrive at high tide.

Barn owls nest on the ranges and the sight of them hunting over the marsh, sometimes in broad daylight, is common-place. Their presence is more closely associated with conservation efforts here as nest boxes have been provided and the now lightly grazed grasslands support good numbers of their favoured prey species of small mammals. Short-eared owls sometimes breed and can be seen during the

winter months. There is also a resident pair of tawny owls and two pairs of little owls. Long-eared owls last bred in 2004.

Other birds of prey recorded in the area over the years have included honey buzzard, red kite, black kite, Montagu's harrier, goshawk, sparrowhawk, common buzzard, rough-legged buzzard, osprey, kestrel and red-footed falcon (four records).

Although significant effects of climate change cannot be managed, a combination of active conservation management and recording demonstrates how successful this management has been, especially with such good indicators of the health of the environment as our top bird predators at this amazing site.

Richard Hull

Conservation Group member and artist



Catcher butts at MOD Pendine © Crown

MOD Pendine – New Catcher Butts initiative saves all round

MOD Pendine is a unique Test and Evaluation (T&E) Range which is managed by QinetiQ under the Long Term Partnering Agreement (LTPA). The capability delivers world class operational and training support facilities to the UK Ministry of Defence (MOD).

Pendine Range is situated on the Western side of Carmarthen Bay in South Wales and has a land area of 20.5km² with a 9km shore line which extends out to 18km at low tide. The site is a designated Site of Special Scientific Interest and a Special Area of Conservation for its coastal habitats and shoreline.

The range is the NATO European Regional Test Centre (ERTC) and National Test Centre for small arms calibre weapons. The western range facilities include a complex of four ranges; two 50m tunnel ranges and two open air ranges, all of which direct fire out into the MOD Sea Danger Area (SDA). In 2012-2013 approximately 120,000 rounds of mainly lead-based ammunition were fired out of the West 2 tunnel ranges. The spent lead ammunition can stay relatively stable and intact in water for long periods of time but changes in sea conditions and tidal movement around Carmarthen Bay can lead to the dissolution and mobilisation of lead particles. Lead has

no known biologically beneficial role and increases in the concentration are potentially harmful.

QinetiQ strives continuously to deliver improvements to its environmental performance and sustainability. In 2012 QinetiQ presented a project to the LTPA to implement 'catcher butts' at the mouth of the West 2 tunnel range. The aim of the catcher butts is to prevent 95% of the spent ammunition entering Carmarthen Bay, therefore reducing the potential impact on the environment from range activity. A secondary major environmental benefit of the catcher butts means the spent ammunition collected can be disposed of through recycling. They also provide improved safety for QinetiQ's employees on the range as there is a decreased chance of ricochet - and the decrease in ricochet leads, in turn, to a reduced possibility of undergrowth and dune fires.

There is also an increase to the capability and resource time of the West 2 tunnels. Previously adverse weather conditions such as mist have prevented firing due to poor visibility into Carmarthen Bay SDA. With the catcher butts in place this is no longer an issue and firing can take place in the majority of conditions.

The two 14.5 ton catcher butts are mounted on mobile low loader trailers,

driven by marine grade winches and guided by sunken channels which run across the mouth of both tunnels on a hard surface area. The sunken channel system allows the butts to be moved laterally out of the way of the tunnels when not required. The low angle entrance of the butts allows the spent ammunition to be deflected into a circular chamber where it loses velocity and eventually drops into a collection area for recycling.

The project is on-going with the catcher butts 'going live' in November 2014. The project is a great success in collaboration between QinetiQ and the MOD for sustainability and environmental protection, with the potential for much wider application across the MOD.

Katie Martin
Community and Environmental
Liaison Officer
MOD Pendine



Aerial view looking out to sea © QinetiQ

Conservation at Ballykinler – A stakeholders perspective



A view from across the bay to Ballykinler © Maj Tony Canniford

As well as being home to a military base for over a century the protection afforded to wildlife at Ballykinler means that it is regarded among the most important conservation sites in Northern Ireland. I can hear you saying *“there can’t be much wildlife there, surely? All those bangs, explosions and people running all over the place – they’ve probably wiped it all out!”* Think again, there is more conservation management going on at Ballykinler, than you can shake a stick at.

Ballykinler is the sister site to Murlough National Nature Reserve as they’re actually part of the same extended sand dune system. Just like Murlough the dunes at Ballykinler are in an Special Area of Conservation and are designated as an Area of Special Scientific Interest and lies within the boundary of the Area of Outstanding Natural Beauty. These designations don’t come along just for the sake of

it, there has to be a reason for designating a site and Ballykinler sits side by side with many of our most important and notable wildlife sites in Northern Ireland.

A substantial amount of time and effort has been spent at Ballykinler working in partnership with local organisations such as Northern Ireland Environment Agency, Ulster Wildlife, National Trust and Butterfly Conservation. This work has made Ballykinler an example of best practice in terms of conservation on an active working site. The habitat supports a broad range of species that depend on sensitive conservation management. Important examples of birds, bats, seals, moths, butterflies, plants, mosses and beetles can be found.

It is worth noting that Murlough was ear-marked for forestry plantation in the 1950s and the existence of the Army

Camp at Ballykinler has safe-guarded hundreds of acres of important dune habitat for future generations.

A grazing regime is in place, using traditional breeds of cattle, which maintains good quality dune grassland and extensive areas of rare dune heath habitat. Scrub and bracken control is being carried out as part of a long term plan to maintain these open habitats and create conditions for a range of invertebrates, including the scarce marsh fritillary butterfly. Surveys of birds, bats and moths continue, as well as the future establishment of additional species-rich grassland habitat under the Jubilee Meadows project.

Seals can be spotted on the beach at Ballykinler where there is far less disturbance from bathers, boaters, canoeists and other recreational activities. The seals have become habituated to the bangs and explosions associated with military training. They have much more fear of humans up close. The same goes for the thousands of wading birds, gulls and terns that decide to spend their time at Ballykinler at high tide. The site provides a haven and refuge for some of the most threatened species in the British Isles.

The site is hugely significant for biodiversity at the local, regional and national level. Ulster wildlife would be in a much poorer state if this site was covered wall-to-wall in pines, housing or even a golf course.

Andrew Croy
Ulster Wildlife

Strensalls **flagship** ponds



Strensall Training Area is one of the best sites for ponds in the UK © Crown

Strensall Training Area incorporates several small arms firing ranges on the edge of the village of Strensall, which is approximately six miles North-east of York. To the north of the range complex, lies the danger area and dry training areas on an area of lowland heathland, known as Strensall Common.

Changes in agriculture and forestry practices during the 19th and 20th centuries led to the loss of much of the heathland and wildlife-rich ponds that once extended across the Vale of York. The acquisition of the land at Strensall by the War Office in 1884 has protected it so that Strensall Training Area is now an important nature conservation site designated as Strensall Common Special Area of Conservation and Site of Special Scientific Interest. It has diverse vegetation including wet and dry heath, woodlands and wetlands. There are a variety of uncommon plant species present including petty whin *Genista anglica*, marsh gentian *Gentiana pneumonanthe* and narrow buckler-fern *Dryopteris carthusiana*. The entomological interest

of the site is considerable and includes rare bugs, moths (it is one of the few sites in the UK for the rare dark bordered beauty moth *Epione vespertaria*) and flies. Vertebrate fauna is also well represented with reptiles and amphibians including large populations of great crested newt *Triturus cristatus*, common lizard *Lacerta vivipara* and adder *Vipera berus* and a healthy population of water voles *Arvicola terrestris*.

It is also one of the best sites in the UK for ponds. The ponds at Strensall vary in size, depth and permanence, and support a wide range of plants and animals. Of particular note are the mud snail *Omphiscola glabra*, pillwort *Pilularia globulifera*, marsh stitchwort *Stellaria palustris*, and a collection of rare invertebrates. Strensall's wetlands also support several other plants that are very uncommon in the region, occurring in only one or two sites: lesser water-plantain *Baldellia ranunculoides* is found in track ruts, slender sedge *Carex lasiocarpa* and lesser skullcap *Scutellaria minor* in Kidney Pond, and greater bladderwort *Utricularia vulgaris* has also

been recorded. All these species require clean water and unimproved habitats, and all continue to decline as land is drained, temporary ponds deepened or filled in, and water pollution affects most of the country.

The United Kingdom holds a substantial proportion of the global population of pillwort; it was found in 250 10km squares but now only in a handful of scattered locations, it is declining rapidly across its European range. Pillwort grows in shallow waterbodies with fluctuating water levels and grazing. Changing water levels and the action of the hooves of grazing animals keep other plants at bay, allowing often thick carpets of pillwort to form. A complex of ponds allows pillwort to persist in an area when pond conditions change; pillwort easily colonises new ponds within the same grazing unit.

There are a variety of pond types present including the larger, deeper ponds which hold water all year and include Kidney Pond and the ponds behind the stop butts, with shallow



Mud snail © Paul Baker

features such as New Pond and the scrape near Kidney Pond (Strensall Pillwort Pond) which hold water seasonally. There are also low-lying areas which sometimes flood seasonally. New ponds quickly become valuable habitats, for example the Strensall Pillwort Pond was colonised by mud snail, pillwort and stoneworts within 2-3 years.

Strensall Common's ponds are important as they are fed by high quality clean water. They are essentially rain fed with no connection to ditches or other running water which could bring in pollution. They are also surrounded by high quality semi-natural habitats which buffer them from agricultural or other diffuse pollution.

A list of the best ponds, known as Flagship Ponds, was originally drawn up as part of the UK Pond Habitat Action Plan. The Freshwater Habitats Trust, formerly known as Pond Conservation, is developing the Flagship Ponds Project to ensure sites across England and Wales are protected, and Strensall is one of them, starting in 2015. The project was introduced in last year's Sanctuary magazine, Issue 42, pages 48-49.

Freshwater Habitats Trust's vision is *"that all threatened freshwater plants and animals have recovered and developed sustainable populations, the UK has a functioning network of freshwater habitats; and people value freshwater habitats and their wildlife. We deliver our conservation aims through our expert staff and our conservation, community, research and policy work"*.



Pillwort *Pilularia globulifera* © Naomi Ewald

The Trust is aiming to run a three year project to support the long-term sustainability of over seventy Flagship Ponds, and has sought funding from the Heritage Lottery Fund to do this. The objective is to ensure that at least seventy ponds in England and Wales are supported to have the following:

Information and knowledge available to manage the ponds successfully and maintain their quality and key species:

- An effective management plan
- Regular monitoring for key species and pond quality
- Funding to support management or habitat creation if needed
- Ideally, an early warning system (e.g. regular checks of the site), to prevent inadvertent damage

The Defence Infrastructure Organisation and Freshwater Habitats Trust are putting together a plan to maintain and enhance the value of this amazing site for wetland species. The ecological aim of the project is to secure and increase the populations of the Priority Species such as pillwort and mud snail and ideally the regionally uncommon plants too. To achieve this, additional populations will be encouraged in adjacent ponds. Habitat management requirements will be identified and consideration may be given to additional pond creation and if considered appropriate, plants might be translocated. Training in identification and survey techniques will also allow interested people to contribute to a monitoring programme and an early warning system that can spot threats to the site as early as possible.

Becca Williamson
Freshwater Habitats Trust

Moira Owen
Ecologist
Defence Infrastructure Organisation

Sustainability at the heart of the Lend Lease - **Redevelopment of Beacon Barracks**



New signage showing the scale of the redevelopment sites © Lend Lease

This Defence Infrastructure Organisation and Lend Lease redevelopment project is being delivered as part of the BORONA Programme. This aims to close Rhine Garrison, Münster Station and Celle Station in Germany and move 1100 soldiers and their specialist equipment from two signal regiments to Beacon Barracks MOD Stafford in the summer of 2015.

The redevelopment comprises twenty eight new buildings and the refurbishment of seven existing buildings. The site has been broken down into five self-contained construction sites:

- Residential accommodation: single living accommodation (SAQ Site)
- Mess and four individual accommodation blocks (A Site)
- Offices, warehouses, stores and garages (HQ Site)
- Physical recreational facilities (7 sites)
- Offices and hangars (5 sites)

The key fundamental principal was agreed to embed sustainability considerations into all decision making from the outset. Both preventative and precautionary approaches to decision making have been adopted in order to manage any associated risks to the environment.

One prominent environmental risk from the development is to the local water resources. Beacon Barracks overlays a secondary aquifer and borders a principal aquifer. In addition, a watercourse (Kingston Brook) flows north to south through the centre of the site and is a major tributary of the River Sow. In order to avoid pollution, the entire site has been considered through the development of a Water Management Plan. This includes best-practice oil, fuel and chemical storage and handling such as the use of integrally banded fuel tanks, drip trays and well-stocked oil and chemical spill kits. Sediment control has been addressed through the use of silt fencing during works located within close proximity to the brook.

Devising a concrete wash water strategy proved complex for such a large and sensitive site. Wash waters are highly polluting, with a high pH (11-12), high suspended solids and other trace materials. However, by engaging with local concrete suppliers, the innovative 'Concretesock' is to be used as standard in conjunction with a 'no wash-out on site' policy. The Concretesock fits over the discharge chute of a delivery vehicle, encapsulating the end. This prevents the loss of concrete in transit between the batching plant and the site, eliminating water pollution risks. In addition, washing out at the batching plant permits the washout water and aggregates to be recovered for re-use, maximising resource efficiency and minimising process waste.

A second prominent environmental risk is to the local ecology. Beacon Barracks supports a number of protected and notable species which are unavoidably affected by the project proposals. These include:

- Badgers *Meles meles*

- Great crested newt *Triturus cristatus*
- Common pipistrelle bats *Pipistrellus pipistrellus*

Other potential ecological constraints include anecdotal evidence of the presence of water vole *Arvicola amphibius* on Kingston Brook and the presence of mature trees throughout the site with the potential for nesting birds.

As such, the project incorporates integral habitat mitigation and enhancement measures in order to preserve, protect and restore the ecologically rich land. These include:

- Ecological surveys before site work started
- Identification of periods of the year to avoid disturbing protected species and habitats
- Translocating protected species
- Creation of new or enhanced habitats such as rough grassland habitat in undisturbed areas of the site
- Creation of log piles and refugia for amphibians and invertebrates
- Installation of bird boxes, bat boxes and a barn owl box

The site has an excavation (cut) and reuse (fill) earthworks strategy which involves the reuse of approximately 83,240m³ of site derived material. A Materials Management Plan (MMP) has been produced in line with the requirements of the Contaminated Land: Applications In Real Environments (CL:AIRE) Definition of Waste Code of Practice. This demonstrates that site derived material is a non-contaminated, non-waste and therefore is safe and suitable for use. The project is also using the industry best practice WRAP Aggregate Quality Protocol for the production of aggregates from inert demolition arisings to produce high quality and value construction materials to reuse on site.

The project is committed to achieving a minimum level of recycled material



The Lend Lease Project Team opting for pedal power © Lend Lease

content of >20% and where possible, procure materials from local sources. For example, blockwork will contain at least 60% by volume of recycled material in the aggregate. Where the project is unable to prevent waste, the project is currently achieving >98% diversion from landfill.

As part of meeting DREAM Excellent rating for all new buildings, the Green Guide to Specification will be used as guidance on how to make the best environmental choices when selecting construction materials and components. The project is specifying a proportion of building construction elements as 'A' or 'A+' Rated. In combination, these strategies have substantially reduced the volumes of virgin material used in the works along with the carbon and embodied energy associated with transportation, quarrying and disposal. The project is also harvesting rainwater during construction for use in water intensive processes such as boot washing and dampening down.

The project is undergoing full FSC Project certification, administered by Lend Lease's strategic partner; BM Trada. This means that 100% of temporary and permanent timber will be supplied to the site with a full FSC Chain of Custody in order to demonstrate Lend Lease's commitment to the use of wood and wood-based products from responsibly-managed forests.

A Community Investment Plan has been developed in partnership with the MOD which involves implementing initiatives that will leave a lasting legacy after the redevelopment has been completed. Projects include the provision of a memorial stone, talks to the local schools and facilitating a Community Day on site.

The project team is taking part in the Staffordshire County Council 'Inspiring New Travel Options' project, funded by the Department for Transport. The Lend Lease team are to be supplied with six pool bicycles (and safety equipment) in order to encourage a modal shift away from the car for local journeys both on and off site. The project will also provide regular bicycle training, maintenance and travel advice. This initiative will promote employee physical and mental health and wellbeing as well as reducing carbon emissions, noise and vehicular congestion on the site.

The Lend Lease redevelopment of Beacon Barracks will leave the MOD with a long term legacy and a showcase facility in which sustainability has been embedded into every design and construction decision.

Louise Webster
Environment and Sustainability Manager
Lend Lease

The UK National Tree Seed Project

Safeguarding juniper for future generations



The team at Bulford, Wiltshire © Forest Research

Last autumn, Shelagh McCartan, a seed scientist at Forest Research, met up with volunteers from Defence Infrastructure Organisation ecologists Julie Swain and Dominic Ash, Landmarc's Sarah Hicks and Mervyn Grist (Bulford Conservation Group) to collect juniper berries at Bulford, Wiltshire. This population of juniper has been the focus of a major conservation project by MOD over the last twenty years and as a result is one of the few sites in the UK.

The collecting effort formed part of the UK National Tree Seed Project, which is being overseen by the Royal Botanic Gardens, Kew's Millennium Seed Bank, and has been made possible by financial support from players of People's Postcode Lottery. The broad aim of this project is to collect seeds

from tree species within each seed zone including lowland populations, so as to conserve the genetic diversity of the species. These seeds are then banked at Kew's Millennium Seed Bank and made available for conservation and research.

The target list includes fifty species such as common juniper *Juniperus communis*. These species have been selected and ranked on criteria such as native status, conservation rank, prevalence in the landscape, and vulnerability to pests and diseases. The Forestry Commission is a key partner, providing advice on target species and help with collecting seeds.

Juniper supports a host of unique fungi and insects, which include the juniper pug moth *Eupithecia pusillata*, juniper

shield bug *Cyphostethus tristriatus*, and juniper berry mite *Trisetacus quadrisetus*, for part or all of their life-cycles. The berries also provide a source of food for birds especially thrushes like redwing, which in turn are important dispersers of juniper seeds. However, many juniper populations are struggling to regenerate naturally. This is largely due to fragmentation of the countryside by intensification of agricultural use and the loss of the less intensive pastoral use of the countryside in the past hundred years, as well as poor seed quality and seed predation.

More recently, juniper populations have been under threat from a fungus-like pathogen, *Phytophthora austrocedrae*, which causes severe dieback. Although juniper is listed as 'least concern' in the



Juniper bushes at Bulford, one of the largest lowland populations in England, which is managed by the MOD © Forest Research



A good collection of juniper berries © Forest Research



Gnarly old juniper bush © Forest Research

IUCN Red Data Book, it is subject to UK Biodiversity and Species Action Plans. This is due to the severe decline in juniper populations during the past fifty years and more. In Great Britain, juniper is widely but unevenly distributed, and is usually associated with the chalk downs in England or the highlands in Scotland. Populations are now small and fragmented particularly in southern England but also now in upland areas.

The collection required not only determination and resourcefulness but also thorough planning to ensure that the juniper berries were of good quality and representative of a population. This was particularly important as there was a narrow window (mid-October to mid-November) to collect juniper berries from as many seed zones as possible. Permission's were obtained from the landowners and the relevant

statutory conservation agencies on protected sites without which the project would not have been possible. Secondly, volunteers were recruited to collect juniper berries from populations across Scotland and England. Usually, the volunteers were met on site and provided with a good overview of the logistics involved in collection. This was particularly important as the populations differed not only in size but also density and ratio of male and female bushes, which in turn affected the amount of juniper berries available for collection. In most cases, access to the population was relatively easy. At Bulford, for instance, there are thousands of bushes, which makes it one of the largest lowland populations in England. In addition, the scrub is well managed, providing good access to bushes. But in some cases, it was more difficult with only a handful of juniper

berries to show for a great deal of effort. Lastly, good biosecurity protocols were critical to prevent cross-contamination of infected and non-infected populations. This involved working from low-to high-risk populations, removing debris from boots, and using an appropriate disinfectant on footwear. Overall, several kilograms of juniper berries were collected from twenty four populations (7 in Scotland, 4 in north England and 13 in south England) last autumn. These juniper berries were sent to Kew's Millennium Seed Bank for processing to extract the seeds, which were then banked for future conservation and research efforts. This autumn, we will be collecting more juniper berries from remote populations in England, Wales and north Scotland!

Last but not least, this collection was a team effort, which would not have been possible without the advice and help of individuals from Buckinghamshire and Milton Keynes Environmental Records Centre, Cumbria Wildlife Trust, Lake District National Park Authority, Landmarc Support Services, Ministry of Defence, Natural England, National Trust, Scottish National Heritage, Scottish Wildlife Trust, and Yorkshire Dales National Park Authority.

Dr Shelagh McCartan
Seed Scientist
Forest Research



Map showing juniper berry collections for 2013 © Forest Research



Mosquito management on the wetlands of Akrotiri

Mosquito breeding habitat © Pantelis Charilaou

Since the connection of the former small island to Cyprus mainland, Akrotiri has been associated with extensive wetlands.

During the last century a big part of the wetlands was drained and reclaimed into agricultural land and the Kourris River, the main water source to the area, was dammed in 1987. However, there are still extensive areas of standing water around the salt lake.

The wetlands of Akrotiri have a high conservation value, but at the same time provide suitable habitat for mosquito breeding, as water is essential for their larval and pupal stages.

The conflict between the control of mosquitoes and nature conservation became evident in the 1950s, when malaria was eradicated from Cyprus by applying a very effective pesticide, at a considerable cost to the environment. Now, the particular pesticide, dichlorodiphenyltrichloroethane (DDT),

is banned and a more integrated approach is applied to control mosquitoes and reduce the health risks associated with vector-borne diseases. At the same time, this process takes into account conservation requirements. This holistic approach was reviewed and formalised three years ago, considering the use of larvicides and adulticides, biological control, reduction of mosquito breeding resource, public education, administrative measures and monitoring.

The starting point was the principle prescribed in international literature and management practices which state that the most appropriate reduction of mosquito related risks can be carried out at the larval stages when the larvae are spatially concentrated. At this stage, mosquito control is more effective and at the same time less risky to the environment. The consideration of suitable larvicides narrowed down two feasible options, the synthetic bacterial agent *Bacillus thuringiensis var israelensis* (Bti) and the insect growth regulator

methoprene. Bti is a bacterium highly toxic to mosquito larvae via ingestion and methoprene prevents metamorphosis into adult mosquitoes through hormone mimicking.

A desktop risk analysis showed that Bti has lower risks on non-target species than methoprene. It is generally a preferred control agent as it has a shorter residual activity targets a wider range of larval stages and is potentially toxic to fewer non-target species than methoprene. Safe use of methoprene depends on careful management of its application to keep doses to the minimum levels, which also reduces the risk to non-target invertebrate species. Rotational use can also be an advantage, as it could reduce larval resistance as well as the risks to non-target species from either agent. A vital element of any larvicide programme is continuous monitoring and evaluation. The current larvicide programme, applied by the Joint Services Health Unit (JSHU), is based on methoprene, with a continuous effort to improve resources and effectiveness. Occasional



Water is essential for mosquito larval and pupal stages
© Pantelis Charilaou

aerial spraying is carried out by services of the Republic of Cyprus (ROC) who use Bti to cover large areas which are inaccessible for application on the ground.

The consideration of adulticides was based on the fact that they are generally less effective and less environmentally friendly than larvicides; they have a local and temporary effect subject to the dispersal of adults at the flying stage and have an impact on the environment. Adulticiding is now applied via fogging in residential areas away from wetlands if public health is at significant risk, although in exceptional cases where a very high risk to public health is proven, adulticiding can be used in other areas as a temporary last resort measure. JSHU are

using Aqua-K-Othrine as an adulticide, whose active chemical is the non-specific synthetic pyrethroid deltamethrin. This, like all adulticides, can have local and short effectiveness in problem areas. It is not persistent and bioaccumulation risks on non-target species at higher trophic levels are low. However, it appears to be toxic to fish and aquatic life and cannot be used directly over or adjacent to water bodies or water courses.

Another opportunity for mosquito management we are exploring at Akrotiri is the use of biological control focusing on the indigenous, euryhaline (able to survive in a wide range of salinities) fish *Aphanius fasciatus*. This species, which is in itself an important conservation feature, protected under Annex II of the Fauna-Flora-Habitat EU Directive, is expected to contribute significantly to the mosquito control at the larval stages. Traditionally, another fish species, *Gambusia affinis*, has been introduced in several wetlands in Cyprus, including Akrotiri, as a mosquito control agent. It is now understood, however, that this alien species can have significant adverse effects on *Aphanius fasciatus*.

In terms of reduction of the resource for mosquito breeding, the Sovereign Base Area (SBA) Environment

Department is promoting a water level management plan, which includes maintenance of drainage canals and habitat management.

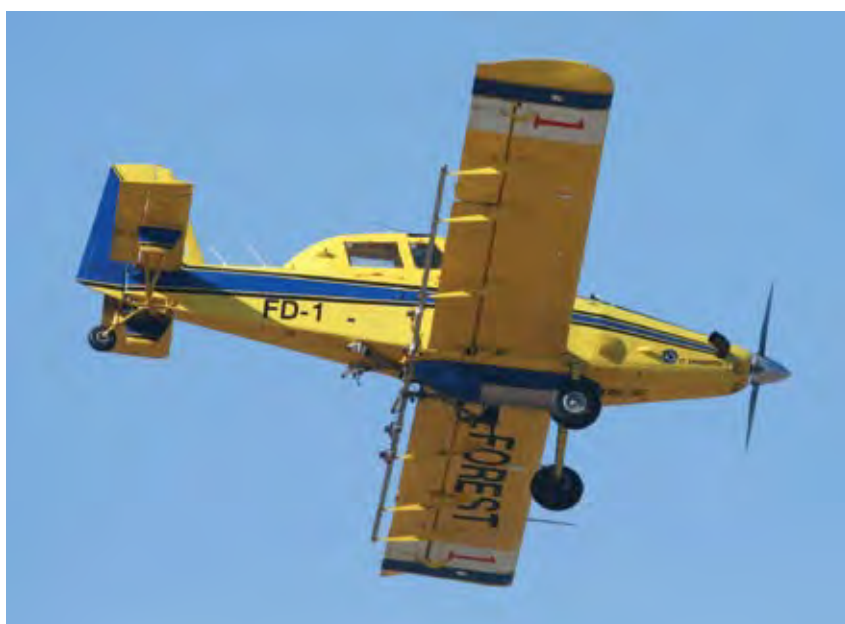
Public education includes measures that residents can take to minimise exposure to mosquitoes and the risk of disease. JSHU and Area Office Akrotiri, in co-operation with ROC and local authorities, have been actively involved to inform both the military and civilian communities in the area.

An important, often underestimated or even ignored dimension is administrative decision-making for development and activities. There is an increasing pressure to build closer or even within wetlands without due consideration to nuisance and health risks from mosquitoes. As a result, complaints and pressure from residents and land users are increasing, to take more drastic and environmentally adverse measures.

This situation is exacerbated by climate change which has been very evident in Cyprus during the last few years, part of which is rainfall later in the year when temperatures are higher and conditions more favourable to mosquito breeding.

The cornerstone of correct mosquito management in the future is the continued sharing of knowledge and effective co-operation between stakeholders. It is vital to know the mosquito species in the area and understand their biology and ecology. It is also important to share knowledge and resources with the ROC and to involve local authorities. A very positive step forward has been the formation of a joint mosquito control committee between services of the SBAs and the ROC.

Pantelis Charilaou
SBAA Environment and
Conservation Officer
HQ SBAA Episkopi



Occasional aerial spraying on areas inaccessible for ground application © Pantelis Charilaou

Castlemartin - A grassland make-over

In 2013 an unused, unloved triangular piece of grassland received a much deserved makeover.

The grassland, bordered on two sides by roads and on the other by the Castlemartin Camp wire security fence, was mown at regular intervals throughout the year but received no other attention.

In 2010 however, its popularity started to increase due to the creation of the new Castlemartin Range Trail (CRT) (see Sanctuary Number 40). This 10km bridleway, funded by the Welsh Assembly Government, cut across the triangle of grassland and the presence of an adjoining large stone bus stop provided a prime location for an interpretation panel and Range Trail leaflet distribution box. The Trail provides an off-road alternative route to the Pembrokeshire Coast National Trail when live firing is taking place on Castlemartin Range. The CRT was recently designated as part of the All Wales Coast Path.



Finished meadow in bloom September 2013 © Lynne Houlston

The flower plug area was also fenced to prevent nibbling by rabbits



Willing National Park Ranger rotovates soil © Lynne Houlston

Also in 2010, an on-line competition for projects linked with access and conservation saw a partnership created between the Bumblebee Conservation Trust (BCT), Pembrokeshire Coast National Park Authority (PCNPA), Natural Resources Wales (NRW) and Defence Infrastructure Organisation. Our project was to change the intensive management of grassland alongside and neighboring the CRT to provide habitat to support one of the few remaining populations of the shrill carder bee in the UK. The CRT provided an ideal opportunity to link these newly created favourable habitats of the bee together. The public voted for the project unanimously and we were awarded €30,000 (see Sanctuary Number 41).

The money paid for a machine to mow and bale the vegetation, interpretation panels, leaflets, promotional events and seed harvesters.

An area covering 10.5ha of species rich grassland is now under favourable management along the CRT, including some larger field areas which the tenant farmers manage. This habitat not only provides a rich source of nectar and pollen in a continuous strip, but is also managed so that different areas are cut at different times ensuring there is a continuous source of forage available throughout the year. Some areas have also been enhanced through the addition of locally collected wildflower seed.

The bus stop grassland area is mown twice a year; early in the season and in late summer when any resident flowers have died back. The residual vegetation was left for a few days, to allow any flower seeds to drop to the ground, and then baled and removed, which would help to reduce the nutrients in the grassland and encourage the flowers to spread.

In 2013 it was decided that more could be done and a plan to transform part of the grassland into a wildflower area to further improve the habitat for pollinator species was written.

Two areas were marked out separated by a grass path that visitors could walk along. With the help of a colleague from the PCNPA and some willing National Park voluntary wardens we removed the turf and rotovated the soil. The turf was transported one mile away to be turned into compost by a group of adults from ESTeam, a community based organisation who provide work experience, training and education to people with learning disabilities and mental health issues.

Two areas were chosen and, following advice from the Ministry of Defence Conservation Group, one was filled with turf transplanted from a floristic location within Castlemartin Range; as chosen by a group member from NRW. The second area was planted with 1200 native, pollinator friendly, flower plugs by children from the local primary school, Stackpole VC Primary. Two classes from the school spent a total of three hours planting the plugs and using bamboo cane markers to space



Six spot burnett on field scabious © Crown



Volunteers from ESTeam transplanting turf to be turned into compost © Lynne Houlston

the flowers evenly apart. Seventeen flower species were planted including field scabious *Knautia arvensis*, common knapweed *Centaurea nigra* and lady's bedstraw *Gallium verum*. The two areas will be monitored to assess how successfully the transplanted turf and planted plugs survive and spread the best and which provides the longest supply of nectar for the pollinators. The flower plug area was also fenced to prevent nibbling by rabbits.

ESTeam were then tasked with designing, producing and installing two wooden benches alongside the flower meadow to allow visitors to relax and enjoy the area. The wood was purchased from a local producer in Pembrokeshire.

Later in 2013 the fencing was removed and the wildflower areas will be managed in the same way as the surrounding grassland, with the hope that the flowers will spread.

In early 2014, in order to provide additional nesting habitats for

bumblebees and other pollinators, 520 locally native whips were purchased to extend a hedgerow along the edge of the wildflower area by 120m. National Park voluntary wardens planted the whips along the original Pembrokeshire hedge bank and species included hawthorn *Crataegus monogyna*, hazel *Corylus avellana*, crab apple *Malus sylvestris* and dog rose *Rosa canina*.

The funding for the BCT project ended in 2012 but surveys will be carried out to assess the changes in grassland management and to record any bumblebees seen. A pyro-sensor on the CRT records user numbers and proves that the trail is popular and walkers and horseriders are regularly seen.

Lynne Houlston

Castlemartin Ranger for the Military Training Estate
Pembrokeshire Coast National Park

Exercise Tally Ho! The excavation of a Spitfire on Salisbury Plain

"I decided to jump for it which I did with great success. It was all very exciting for a first engagement, especially coming down by parachute which really was not at all unpleasant."
 Paul Baillon, Pilot of Spitfire P9503, 609 Squadron, 1940

On October 27th 1940, towards the end of the Battle of Britain, Spitfire P9503 was hit by machine gun fire from a marauding German bomber. As its pilot, Paul Baillon, realised that his stricken aircraft would not be able to return to Middle Wallop he decided to bail out. He landed near Upavon and his Spitfire crashed, being lost for many years. In the summer of 2013 however it was found once more.

Some 10,000 military aircraft have been lost over the UK during the 20th century – all of these are covered by the Protection of Military Remains Act of 1986. Of these only about a fifth have been recorded on heritage databases, which means we are missing a unique archive of early military aircraft, as well as the stories behind their loss. One such story was uncovered as part of an award-winning project which used archaeological techniques to improve

practices in aviation excavations - and help inform English Heritage guidance on Military Aviation Crash Sites.

During World War II on October 27th 1940, after only one year in the Royal Air Force, Pilot Officer Paul Baillon, a Spitfire pilot, was forced to bail out from his aircraft, near Upavon Airfield, after damage to his oil tank by enemy fire. Although the crash site was initially investigated in 1940 and again in 1985, the Spitfire was not fully recovered until Defence Infrastructure Organisation (DIO), participants from Operation Nightingale, and volunteers including Andy Saunders, an expert on Spitfires, and members of Bulford, and Larkhill and Westdown Conservation Groups went to investigate as part of Exercise Tally Ho! – named after the distinguished Spitfire squadron's motto. DIO and The Rifles established Operation Nightingale in 2011 to use



Pilot Paul Baillon © Crown

archaeology as a means to boost the recovery of battle-injured service personnel returning from Afghanistan.

Drawing on information from the 1985 work, and a close study of vegetation, the team laid out a 16m squared area for excavation. The dig began by stripping the turves by hand and setting them aside to replace later. The excavation continued manually, with an RAF Air Mobility Wing low-loader present, which should be part of crash-site project design.

As the dig continued the impact crater became strikingly visible. All elements of the airframe and engines were removed and provisionally matched to that of a Mk1a Spitfire. The items were all plotted, recorded and photographed in situ before lifting. As the team dug down they revealed a previously undisturbed aluminium oxide layer and had to wear protective face masks. And at a depth of around one metre, parts of the pilot's seat and the fuel gauge were found.



Unearthing the crash site, insert showing silhouette of spitfire © Crown

The engine and part of the airframe were cleaned to remove the worst of the soil, and then coated with WD-40 to aid preservation. Further cleaning was carried out by Wessex Archaeology prior to conservation and display. Finally, individual small items were bagged according to standard archaeological practice.

Perhaps the most remarkable outcome of the dig was to find the Spitfire's silhouette, clearly outlined by hollows in the chalk. Further debris had been scattered over a large area, but the spread was evenly spaced around the crater made by the engine's impact.

Careful archaeological work revealed new information about Spitfire P9503, now publicly documented in the County Historic Environment Record. The team recovered elements to confirm that at least part of the plane had been built at the Folland aircraft factory at Hamble, Hampshire.

Applying archaeological standards for aviation excavation meant that an innovative programme of conservation and display has been established. If these techniques are now applied to other less-disturbed sites, it could result in much more exciting finds.

No further clues about the cause of this crash or the encounter with the Luftwaffe which took Spitfire P9503 down were discovered. The accounts of the pilot and his colleagues remain the only evidence of the air battle, though



The human story behind modern archaeology, Rosemary and Richard discussing her father and the important role he played during WWII © Crown



Operation Nightingale volunteers cleaning the findings © Crown



Identifying the finds © Crown

the earlier work on the site may have removed some crucial information. The team has used all the resulting finds to show primary school children and those attending the Chalke Valley festival in Salisbury the remnants of an actual Battle of Britain airframe, and to discuss the importance of the summer 1940. For the project team, one of the most powerful elements of the excavation was the on-site presence of the pilot's daughter, Rosemary. She was born after the death of her father who was shot down and killed in November 1940. Rosemary said:

"I am just so pleased if experiences like this excavation helps veterans to reintegrate either into military or civilian life."

The components of the aircraft will be incorporated in a 1:1 scale rebuild of the aircraft, undertaken by the pilot's old school, Ratcliffe College in Northamptonshire. These endeavours, and those of Operation Nightingale, will ensure that we now have a well-preserved record of this crashed historic aircraft and its final resting place.

Richard Osgood
Senior Archaeologist
Defence Infrastructure Organisation

Implementation and Sustainability Supporting Army Energy Month



AUM Angela Ellison working with site personnel at Glencourse Barracks © Crown

A dedicated partnership between the newly introduced network of Area Utility Managers (AUMs) and Industry Partners to support the implementation of behavioural change campaigns is fundamental to achieving the Ministry of Defence's (MOD) Greening Government Commitment to reduce estate-related carbon emissions 25% (from a 2009/10 baseline) by 2015. This has presented a challenging but rewarding task to the MOD, which, through demand reduction and partnerships has strengthening the resilience of the Defence Estate.

An integral part of the Defence Infrastructure Organisation (DIO) Utilities team, AUMs influence energy consumption across the MOD estate with the dual purpose of saving money and driving down energy consumption in support of the Greening Government targets.

One such opportunity through which the AUMs were able to support and champion energy savings was the Army Energy Month (AEM) campaign, driven by the Army's Chief Environment and Safety Officer (CESO). There was a strong desire to translate the short-term influence of the campaign into an enduring success, recognising the necessity for a successful campaign to ensure a sustained impact on energy usage.

AEM itself encouraged simple steps to save energy – which we can all adopt – such as ensuring all computers and monitors were turned off when not needed, and lighting discouraged during daylight hours. To further amplify these messages, posters and activities were organised to help communicate the message of AEM across the estate.

At Glencourse Barracks, Scotland, AUM Angela Ellison worked with site personnel to identify and deliver training to promote energy awareness. At Chetwynd Barracks, England, AUM Karen Harrison supported a campaign to reduce energy consumption in a large training centre. The building has 900 lights and it was frequently observed that lights were being left on whilst the building was unoccupied. Action was taken to ensure lighting was switched off when not required and the resulting savings from this and other efforts at Chetwynd Barracks during AEM amounted to £2,438 (10% of the average monthly electricity bill). These positive behaviours have endured beyond the month-long campaign.

The AUMs have also helped facilitate and influence behavioural change, through the development of their own Seasonal Energy campaigns. These



GM Support and PriDE presenting potential savings © Crown

campaigns target specific actions that can be adapted in response to changing weather conditions such as opting for additional layers of clothing during the winter months instead of simply turning the heating up.

Case Study - Joint working enabling night set backs

Reducing consumption by matching building heating settings to match occupancy is a constant challenge. With sites predominantly being stated as occupied as 24/7, are there any opportunities for savings? Can change occur with transient and on-site personnel, who need to be convinced of the benefits but are far removed from the cost of utility bills? The answer is yes, they can. It may take some persistence, but whatever the situation, in most cases savings can be teased out and achieved.

This was demonstrated at Wellington and Hyde Park Barracks in London. Although both sites are busy, 24/7 establishments, the Industry Partner PriDE and their BEMS contractor knew that savings could be made by reducing the temperature at night.

What appeared to be a simple solution turned into something quite challenging as any change is not always warmly received. With concerns around personnel working early or late shifts and the heating system itself, discussions had to take place to iron

out issues and reach a mutually sensible agreement.

“The tipping point seemed to be when the London (Area Utility Manager) AUM was in post” stated Eunice Mabey, Energy and Environment Manager for PriDE. *“Having a DIO member of staff on site to help liaise and answer questions regarding the night set back proposal really helped in achieving our goal!”*

With site personnel, DIO AUMs, PriDE and the BEMS contractor working together, the night set back at Wellington and Hyde Park Barracks was successfully completed. Heating was reduced between the hours of 00:00 to 05:00 at Wellington and 00:00 to 03:00 at Hyde Park. The change was implemented in December 2013, and over the six weeks that followed, the utility data was analysed. Comparing



AUM presentation to army © Crown

the gas consumption from the previous year and normalising the data by the weather, actual savings over the six-week period equated to £10,758.

Working closely together has enabled success and given encouragement to others that small changes can aggregate into something much bigger, and achieve significant savings for our customers whilst also reducing energy consumption.

Finally, the lessons learned during the development and delivery of the campaigns will inform and help future energy saving initiatives. Ultimately this challenge to create a lasting impact from behaviour change campaigns can only be sustained for so long on individual enthusiasm alone, which is why the support network between AUMs, Industry Partners, and users to share experience, materials and skills is key to the successful delivery of the MOD's energy reduction commitments.

Aaron Brown
DIO Utilities
Defence Infrastructure Organisation

Eunice Mabey
Energy and Environment Manager
for PriDE

Making Woodland Work



Thinned oak woodland at DM Kineton © Crown

CarillionAmey (CA) are responsible for providing grounds maintenance on the Regional Prime Central contract on behalf of the Defence Infrastructure Organisation (DIO). Working in partnership with DIO Forester Jez Kalkowski CA have developed a number of projects, where they are not only able to generate funds from sustainable timber harvesting for the MOD, but also continuously improve the DIO woodland estate and ensure natural regeneration and diversification of the woodland habitat. This also complies with DIO policy and in turn with the United Kingdom Forestry Standard (UKFS).

Many of the MOD establishments contain substantial woodland areas, the strategic management of this woodland resource is through the DIO Forestry Department, however, in order to add value to their contract, which only stipulates a health and safety responsibility for woodlands, CA agreed a timber harvesting plan with DIO to help deliver the long term woodland management requirements.

In March 2011 they implemented a woodland harvesting programme at two establishments, Pontrilas Army Training area, (Hereford) an area of 87ha of planted or semi ancient woodland of various quality and species mix and Defence Munitions (DM) Kineton (Warwickshire) a 1,060ha site with sixty compartments of which 30% of the area is woodland.

CA, working with a number of forestry contractors, removed and thinned 30% of the trees through selective felling of unfavourable trees (too small, too large, too close together, poor form etc).

The whole process was designed to create a more natural species mix and habitat through subsequent natural regeneration in line with MOD Forestry Policy and the long term forest plan.

In 2014 a further coppice area will be cleared and a rotation system established using a lime and hazel mix; to help enrich the habitat for fauna such as dormice, bees, bats, moths, butterflies and bird species.

Areas of over mature coppice were returned to traditional coppice standard woodland, through coppicing and felling in selected compartments to leave one single stemmed tree as a 'standard' every 10-20m. This is being carried out as a staged operation on a third of the woodland at a time. The thinning will also encourage higher timber value in future years by encouraging natural regeneration and eventually, more oak trees. CA secured a felling licence for five years at DM Kineton to allow for the continuation of the woodland thinning operations.

CA's innovative approach to adding value to the MOD woodland estate at Hereford and Kineton has seen these sites benefit both financially from the generation of circa £100,000 in revenue from the felled timber and sustainability from the woodland regeneration.

Phil Camp
CA Regional Landscape Manager

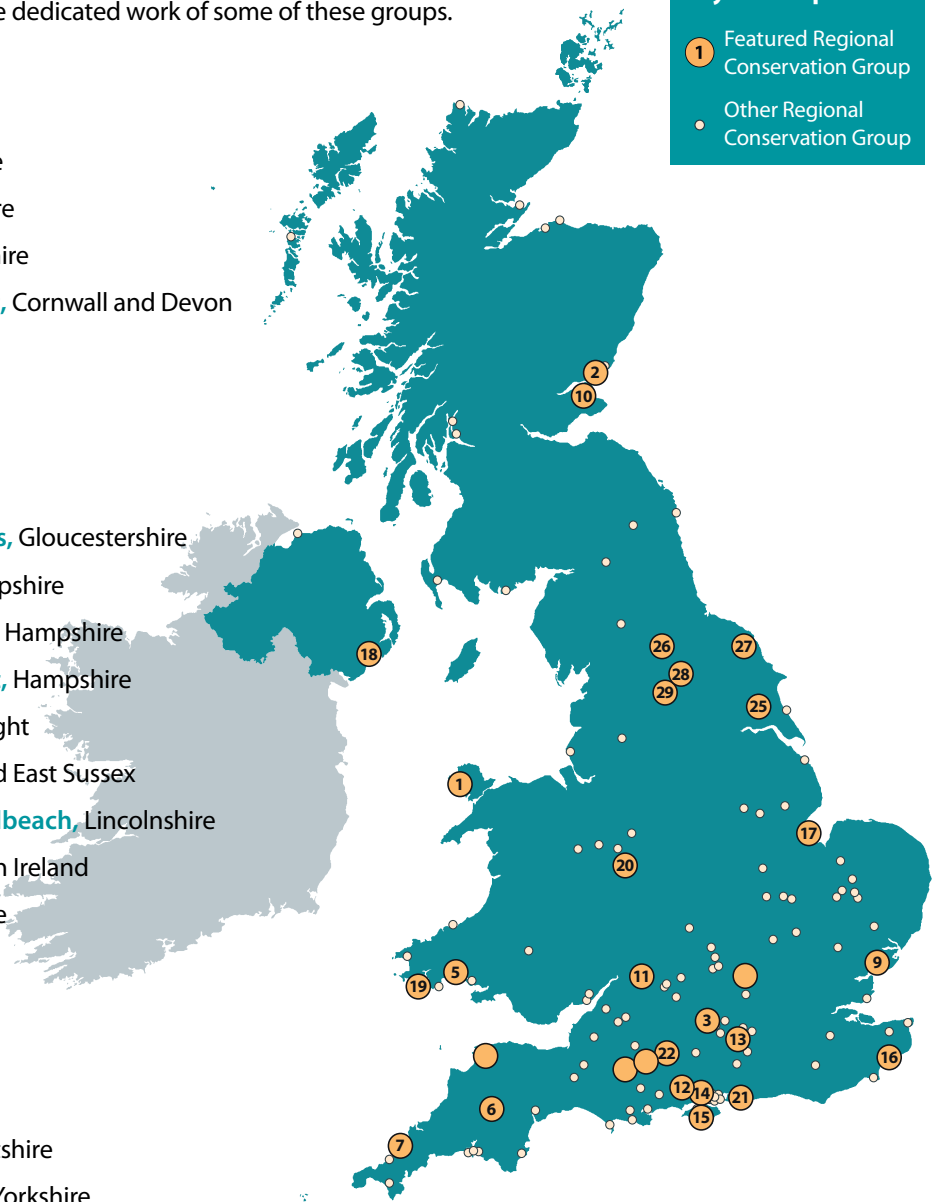
Around the Regions with the Conservation Groups

There are over 124 Conservation Groups operating across the MOD. The following section provides an update on the dedicated work of some of these groups.

1. **RAF Valley**, Anglesey
2. **Barry Buddon**, Angus
3. **AWE Aldermaston**, Berkshire
4. **RAF Halton**, Buckinghamshire
5. **MOD Pendine**, Camarthenshire
6. **DIO SD Training South West**, Cornwall and Devon
7. **Penhale**, Cornwall
8. **RMB Chivenor**, Devon
9. **Fingringhoe Ranges**, Essex
10. **RAF Leuchars**, Fife
11. **Duke of Gloucester Barracks**, Gloucestershire
12. **DCPG Southwick Park**, Hampshire
13. **DIO SD Training South East**, Hampshire
14. **Defence Munitions Gosport**, Hampshire
15. **Newtown Ranges**, Isle of Wight
16. **DIO SD Training SE**, Kent and East Sussex
17. **ATR Air Weapons Range Holbeach**, Lincolnshire
18. **DIO SD Training NI**, Northern Ireland
19. **Castlemartin**, Pembrokeshire
20. **RAF Cosford**, Shropshire
21. **Thorney Island**, West Sussex
22. **Bulford**, Wiltshire
23. **Imber**, Wiltshire
24. **Larkhill and Westdown**, Wiltshire
25. **DST Leconsfield Carrs**, East Yorkshire
26. **Catterick Training Area**, North Yorkshire
27. **RAF Fylingdales**, North Yorkshire
28. **Ripon Parks**, North Yorkshire
29. **Strensall Common**, North Yorkshire
30. **Senne Training Area**, Germany
31. **British Forces Gibraltar**, Gibraltar

Key: UK map

- 1 Featured Regional Conservation Group
- Other Regional Conservation Group





Spotlight on...

Atomic Weapons Establishment, Aldermaston, Berkshire



Grim's Bank (Scheduled Monument) © Crown

The Atomic Weapons Establishment (AWE) is located at three sites in West Berkshire; Aldermaston, Burghfield and Blacknest. The AWE sites are owned by the MOD and operated and maintained through a 'government owned/ contractor operated' (GOCO) arrangement with AWE Management Ltd under a 25 year contract that started in 2000.

AWE has played a central role in national defence for more than 60 years and is responsible for the design, build, maintenance and decommissioning of the UK's Trident warheads as well as undertaking seismological research in support of the Comprehensive Test Ban Treaty. The largest site is AWE Aldermaston which covers

approximately 300ha. Formerly a wartime airfield, this site now provides advanced research, design and manufacturing facilities. AWE Burghfield, a former munitions factory, occupies around 90ha and is responsible for the final assembly and maintenance of the warheads and their decommissioning. The seismological research is undertaken at AWE Blacknest situated at Brimpton Common west of Aldermaston.

Since taking up my post a few years ago I have been working with a group of enthusiastic and knowledgeable staff to assist me in delivering AWE's conservation objectives. It is only recently that I have decided it is time to semi-formalise this arrangement and

re-establish the conservation group. My aim in doing so is to provide a body of interested and competent staff that can spread the message of the importance of conserving our ecology whilst reducing the company's reliance on external contract support, thereby reducing costs.

In addition to me, some of the members of the conservation group hold appropriate licences from Natural England enabling us to annually survey the population of great crested newts that breed in an old pond system on site. We also host three species of bat which roost in various structures and the varied habitats are favoured by nesting birds, most notably black redstarts and woodlark. There is an



Conservation group members working on wildlife area of local school © Crown

extensive badger sett in a quiet corner of site and the lowland heath, itself a vanishing habitat nationally, is a good place to see adders and slow worms.

A lot of the work I am required to do is in support of construction and refurbishment activities. A recent example is the translocation of a population of grass snakes from an area which is due to be developed as part of a flood alleviation scheme. This activity will be repeated this year in addition to riparian mammal surveys for the same project. In addition to this I am trying to increase the number of surveys which aim to improve our knowledge of the ecology of the site. To this end we are currently undertaking a breeding bird survey, a specific survey for black redstarts and a survey for damsel and dragonflies. This is because only a road separates an on-site pond from Decoy Heath, a Site of Special Scientific Interest where no fewer than 23 species of these insects have been recorded. Also, when time allows, we try and use the skills of the conservation group to help the local community, most recently trying to breathe some life back into the wildlife area of a local school that had been neglected for some time.

AWE's sites also contain some interesting heritage assets ranging from the Iron Age, World War II, through to the Cold War. Arguably the most

important of which is Grim's Bank, an archaeological monument consisting of several separate lengths of earthworks which run for over 3km in Berkshire. The southern end of the monument lies within the AWE Aldermaston site and is thought to be the best preserved section, with the bank surviving to a height of 3.3m and a ditch to a depth of 0.9m.

Despite being a Scheduled Monument and therefore legally protected, very little is known for certain about Grim's Bank. Based on earlier archaeological investigations it was thought that the monument was a defensive boundary for the 5th century AD settlement

associated with the Roman town of Calleva Atrebatum (Silchester). However more recent work, based partly on the results of pollen analysis, has suggested an earlier date in the late Iron Age. Although the lack of dating evidence makes it hard to be certain, the full story is likely to be a combination of these theories. It is probable that from the later Iron Age through to at least the end of the Romano-British period, Grim's Bank formed part of a complex of large landscape boundaries, perhaps originally for tribal demarcation, later reused to define land holdings associated with the Roman town of Silchester.

Being within the AWE fence line means the monument continues to be well protected and it is managed in accordance with guidelines established in consultation with archaeologists from West Berkshire Council and English Heritage. In addition to its heritage value, the area around Grim's Bank is ecologically rich. The mix of open heathland and pine woodland provides a home for reptiles such as adders and slow worms, and glow worms can be seen around the bank on summer evenings.

Mr Piran Borlase-Hendry
Senior Environmental Specialist
Ecology and Heritage
Atomic Weapons Establishment



Two conservation group members surveying for great crested newts © Crown



Anglesey RAF Valley



Damaged sea wall Cymyran Beach RAF Valley © Crown

RAF Valley is situated on the Isle of Anglesey - Ynys Môn, North Wales. Located in an Area of Outstanding Natural Beauty (AONB) RAF Valley is surrounded by eleven Sites of Special Scientific Interest, two Special Protection Areas and two Special Areas of Conservation.

The storms that battered Britain last winter impacted heavily on RAF Valley and its local environment. The storms left widespread structural damage and severe flooding in their wake. A particularly sad aftermath of the storms were the large numbers of dead sea birds, mostly razorbills and guillemots, washed up along the shoreline of nearby Cymyran Beach. RAF Valley contributed to a nationwide survey by working in close partnership with RSPB Wales to help identify the numbers, locations and species of these sea birds.

Cymyran and Crigyll Beaches, just beyond the Station boundary,

experienced serious sand erosion, beach defence damage and a large build up of waste along its shoreline and dunes. The fight back to help return the beach to its former beauty began in earnest on the very first week back following the Christmas stand-down. A very successful Station beach clean event was held on 8th January 2014, effectively removing a large proportion of the accumulated waste. In addition, Friends of Anglesey Coastal Path organised two separate litter sweeps of Cymyran and Crigyll during March 2014, an event which was supported by volunteer personnel from RAF Valley and Isle of Anglesey County Council.

April 2014 marked the second anniversary of RAF Valley's agreement with the local authority to 'adopt' a section of the Isle of Anglesey Coastal Path; this path is a 200km route that circumnavigates the island, passing through the largest designated AONB in Wales. The renewal of this agreement

reaffirmed RAF Valley's continued commitment towards nature conservation and our enduring partnership with Isle of Anglesey County Council in managing local environmental protection concerns.

So what next for 2014? Well there are plans for another beach clean event in July, a plan in place to repair the sea defence wall and in the autumn exciting plans for a volunteer project to uncover and preserve an important piece of RAF Valley history, the old Battlefield HQ. This old bunker, built into what is known locally as 'Tacan Hill', has over the years become completely overgrown and hidden by foliage. So who knows what undiscovered treasures may await our intrepid band of Indiana Joneses once they get in there!

Robert A Hughes

Station Environmental Protection Advisor
and Coastal Path Project Officer



Rubbish collected during the beach clean © Crown



Angus

Barry Buddon



Barry Buddon Open Day May 2014 © Crown

We had a very productive two days at the Barry Buddon Training Centre's (BBTC) Nature Weekend in May 2014 where, with the help of Zero Waste Scotland and Angus and Dundee Cadets, managed to clean 200m of the Barry beach, filling 160 bags with all sorts of debris for removal.

We then had the pleasure of hosting Bob McCurley and the Angus and Dundee Bird Club with over 80 members attending.

The bird watchers headed for the coast and the Monifieth reed bed where a variety of birds were seen; most notable the red throated diver, eider and sandwich terns. Upon arriving at the reed bed; the call of the sedge warbler was picked up and then to our delight the reel of the grasshopper warbler was clearly heard. This was an unexpected treat enjoyed by all who could make out the unfamiliar reeling bird. Also in the same area was reed bunting!

We made our way to the Barry Loch / Yeomanry Pond area where we came across green hairstreak butterfly, a first for Barry Buddon. In the same area we added orange tip, peacock and several green veined whites. These were quickly forgotten when we discovered a very big surprise waiting for us in the shape of another first for Barry Buddon, a female emperor moth.

Our day list had now reached a very respectable 61 bird species, including nine migrant species newly in from their winter quarters in South and Mid Africa including blackcap and wheatear. Five butterflies and the same number of moths were also recorded. All this added up to a highly satisfying Open Day success story and all present indicated they had thoroughly enjoyed their day out at BBTC.

BBTC took centre stage at the Commonwealth Games (CWG) in July when it hosted all of the shooting

events, including clay, full bore, pistol and small bore events.

Talking about the Games, Lt Col Peter Hollins, Commander DIO SD Training for Scotland and Northern Ireland, said:

"Barry Buddon training centre is proud to have been able to support this significant international sporting event. The event also enabled us to forge and develop new relationships between ourselves, the wider DIO and our Industry Partners and demonstrated how well we work under pressure. I can't thank my team enough!"

After the Games ended the team worked closely with the CWG venue manager to ensure that there was an effective hand back of the areas that had been used. Plans were also put in place to make sure that any remediation work on the Site of Special Scientific Interest was carried out effectively.

Capt (Retd) Harry Roy
Training Safety Officer
BBTC



The Commonwealth Games comes to Barry Buddon © Crown



Buckinghamshire

RAF Halton



Pyramidal orchid © Sgt Steven Kelly

We are so fortunate at RAF Halton to benefit from some quite special areas of conservation which perhaps the majority of personnel from around the community don't even know exist.

An area on camp known as 'Happy Valley', is perhaps the Station's best example of chalk grassland and the long grasses are actually carefully

managed to ensure they provide the best potential to encourage a greater diversity of plants and animals. Also, as RAF Halton has been under military occupation for over a century now, this has resulted in the protection of these areas on the Station from other more intensive land uses, such as modern intensive livestock grazing and pesticides and fertiliser application.

Chalk grassland, although relatively common in the Chiltern Hills has been in decline over the past few decades in the UK. Therefore it is the aim of the conservation committee to ensure that these areas are protected and enhanced by sympathetic management techniques. Chalk grassland is renowned for orchids; they depend on the presence of fungi in the ground to develop. Their seeds carry no food reserves of their own for germination and growth, hence at first their relationship with fungi is parasitic. This relationship decreases with orchid maturity.

For the past couple of years, the Station Conservation Officer has been monitoring the orchid population in Happy Valley and on the Station boundaries. Each year it is so pleasing to see the management techniques paying off. This year, the area was inundated with an impressive population of aptly named pyramidal orchids *Anacamptis pyramidalis*. The population is so imposing, that it almost resembled a carpet of purple through the long delicate grasses.

In amongst the pyramidal orchids, occasionally you may also pick up on the aromas of the fragrant orchid *Gymnadenia conopsea* and see the lilac

common spotted orchid *Dactylorhiza fuchsii*, which is obvious with its unusually spotted leaves. Another orchid which is also becoming more common is the bee orchid *Ophrys apifera* which can mainly be seen on the banks behind the old Corporals' Club. This quirky species got its name from its bee like flowers. These are thought to have evolved over time to greater attract pollinating bees. However, now the right bees do not occur in the UK and this species is self-pollinating.

A first for the records, this year the common twayblade *Neottia ovata* was also seen, perhaps not so impressive, but good news for the orchid population.

The best time to get out and see the orchids is usually from June to July, with their best display towards the end of June. These orchids are wild flowers; hence they should be admired where they are growing and not picked to take home. It is also recommended to go and see the orchids of Aston Clinton Ragpits. There they boast ten species of orchids compared to RAF Halton's six. Nevertheless, the populations here are certainly on the up, here's hoping for a Military Orchid next year!

Emily Haddock
Station Safety Health and
Environment Advisor
RAF Halton



Carmarthenshire MOD Pendine



Dune erosion caused by tidal surges © QinetiQ

MOD Pendine is a unique Test and Evaluation (T&E) Range in Carmarthen, South Wales which is managed by QinetiQ under the Long Term Partnering Agreement. Located within a Site of Special Scientific Interest and Special Area of Conservation due to its natural coastal features and anthropogenic modifications, MOD Pendine houses a plethora of flora and fauna.

Since reforming in 2012, the conservation group now boasts a strong membership and meets biannually to discuss past, current and future site conservation topics and surveys.

Last year we embarked on a significant scrub management plan, mapping the flora of the site and identifying areas of treatment required to restore the dune habitats and encourage re-growth of rare flora. Through surveys and historical knowledge, several excellent maps have been produced that show the extent of scrub across the site, as well as highlighting the location of rare or invasive plants that need to be managed. Scrub encroachment was

identified by Natural Resources Wales (NRW) as one of the most significant threats to the fixed dune grasslands across the site and last year was the first phase of a long term programme to reduce the overall extent of scrub, and sea buckthorn in particular. Over 8.5ha of the sea buckthorn *Hippophae rhamnoides* was grubbed out and burnt. A follow-up chemical treatment will be required in future years to restore the dune grasslands.

Additional management to restore the dune slack habitat and the fen orchid *Liparis loeselii* is being modelled on a similar project at Kenfig Nature Reserve with the collaboration of the Kenfig and Pendine staff. The Defence Infrastructure Organisation (DIO) and NRW are also working with the local farm tenants and the Welsh Government to deliver better grazing regimes and to reduce the extent of winter grazing, which can cause damage to the dunes.

MOD Pendine felt the full force of the winter storms in 2013, with all of its 11km of coast line being affected. Prior to the storms there were 50

warning signs along the 11km sea front and we estimate over half of them have been washed away by the sea.

The large beach warning sign and its supporting structure has been ripped from its concrete base with its whereabouts currently unknown. Tidal surges and large waves eroded large sections of the dunes and foreshore. The high water also brought large amounts of detritus above the high water mark, covering slip ways and entering the dunes. A clean-up and repair programme is on-going.

Unfortunately the bees that we had sited at MOD Pendine did not survive the winter due to the harsh conditions.

Headway is being made in surveying flora and fauna as part of the Integrated Rural Management Plan. The Deer Defence Management Team for DIO came to MOD Pendine to survey the sika deer *Cervus nippon*. They observed two herds in the area, totalling 27 animals with a mixture of hinds, calves and stags. Bird surveys undertaken by the Carmarthenshire Bird Club documented a large number of birds including Arctic skua *Stercorarius parasiticus* and goshawks *Accipiter gentilis*.

Katie Martin

Community and Environmental Liaison Officer



One of the familiar faces amongst the dunes © Crown



Cornwall and Devon

DIO SD Training South West

Penhale Training Area is located approximately five miles south of Newquay in Cornwall and consists of 350ha of sand dunes let to Cornwall Wildlife Trust. Over the years, the Wildlife Trust employed Sarah Taylor as a warden to manage the site and make people aware of the special qualities of the area. Sarah has been a strong supporter of the MOD Conservation Group, the SAC Management Group, and a regular contributor to the Sanctuary Magazine. However, in 2013, Sarah left the Wildlife Trust and we would like to thank her for the work that she has done for the MOD over the years. The post has been taken over by Jon Cripps, who is welcomed by all those involved in the management of the Training Area.

The Conservation Group at Antony, Cornwall, have been busy bees - almost literally as they have been developing a scheme to use a recently redundant rifle range floor to promote the use of the area by Cornish black honey bees, the original bee of the British Isles. The grass on the range has been cut regularly for approximately 100 years, but not fertilised, so it is very herb rich. The scheme will include the installation of hives to help save the remnant population.

On the cliffs across the other side of Plymouth Sound in Devon, MOD DIO staff have been working with English Heritage to protect the historic Plymouth defences at Staddon Heights Training Area, whilst still enabling its use for military training. The defences include Palmerston Fortifications from the 1860s, former coastal batteries, a pre-WWI anti-submarine mine establishment, a complete set of rare



Staddon Heights target butts wall which will become a scheduled monument © Oliver Turl

WWII barrage balloon anchor stones and a huge 250m long, 14m high former rifle butts wall.

On Dartmoor, the MOD have been heavily involved with environmental work. The conservation group has had site visits to Willsworthy to view a new fence installed by Landmarc (the MOD's commercial partners), to protect the range from cattle, and assist commoners manage their livestock.

The MOD have also been working with RSPB, Natural England (NE) and Dartmoor National Park Authority (DNPA) to safeguard one of the UK's highest conservation priority birds, the ring ouzel. Part funding by MOD has enabled RSPB to study the breeding success of the ring ouzel, and MOD are working with RSPB, NE and the local farmers to improve nesting sites.

The MOD have completed their rolling five yearly archaeological condition survey of Okehampton Ranges, and it has been found that the condition of the archaeology has been improving. This is a trend that is happening across the Dartmoor Training Areas.

Finally, DNPA and the MOD have been working closely on a number of environmental projects which contribute towards the Dartmoor National Park Management Plan. At the launch of the new Management Plan, DNPA presented an award to the DIO Training Area Safety Officer - West Devon, Capt (Retd) Ian Jarvis RN, in recognition of the co-operation and support provided by the MOD.

Nigel Sharpe
Senior Estate Surveyor
Defence Infrastructure Organisation



Cornwall

Penhale



Grazing at Holywell headland © Jon Cripps

Penhale Dunes Site of Special Scientific Interest and Special Area of Conservation (SAC) covers around 620ha of sand dune, beach and coastal grassland. The MOD and Haven Holidays are the major land owners both holding Higher Level Stewardship agreements which amount to 460ha.

Partnership working with Haven, the MOD, Landmarc and Natural England works very well and SAC management meetings are held bi-annually.



CWT Penhale Group which include members of the MOD Conservation Group © Dave Thomas

The MOD Conservation Group also meets regularly inputting into the management of the dunes. Conservation group members Dave Thomas and Ian Bennallick recently led a very well attended wild flower walk, attendees really appreciating the chance to explore normally inaccessible areas of the dunes.

The different ownership of the dunes brings about different challenges, but from a habitat management point of view the approach is similar. Grazing has been the main tool for management over the last year. Gifting of a farm in South East Cornwall to Cornwall Wildlife Trust (CWT) and the need for grazing at Penhale brought about favourable circumstances for CWT to purchase a small herd of North Devon cattle. The cattle currently spend late summer to early winter with calves a foot on coastal grassland at Holywell headland, the northern boundary of the SAC, and then return to CWT's organic farm. They have had a noticeable effect on the site really opening up the sward and pushing in under stands of blackthorn scrub, which will aid removal by hand. This, coupled with strategic scrub control with a tractor mounted flail and flail

collector will help achieve a more favourable ratio of scrub to species rich grassland. We have had fantastic swathes of thrift *Armeria maritima*, spring squill *Scilla verna*, common bird's-foot trefoil *Lotus corniculatus* and kidney vetch *Anthyllis vulneraria* this year which is an indication that it is working.

The yearling cattle returned to site early this year to improve food sources for the pair of choughs *Pyrhacorax pyrrhacorax* that are again trying to nest in the area. To the south of Holywell headland is Ligger Point, another grazed area. This time with Shetland ponies on loan from Natural England's Lizard reserves. Again they have done a fantastic job grazing the headland opening up the vegetation through the winter months and shrugging off the mightiest Atlantic storms. We hope to further increase the grazed area by installing pedestrian gates on the coast path either side of Holywell Headland so the coastal frontage can be grazed and by creating a new compartment in a scrubby area of MOD land.

Cornwall College Newquay continues to be involved at Penhale monitoring reptile tins and dormice within MOD land. We hope to set up annual flora monitoring with help from the conservation group and the college so we can assess the impacts of grazing long term.

Jon Cripps

Penhale Dunes Ranger
Cornwall Wildlife Trust
and MOD Penhale Conservation Group



Devon

RMB Chivenor



Small elephant hawkmoth © Chris Maple

RMB Chivenor is located off the A361, approximately two miles south of Braunton in North Devon. The site is approximately 5m above sea level and is bordered to the South and East boundary by the Taw River Estuary a Site of Special Scientific Interest. The Tarka Trail runs along the North and to the West there are water inlets, marsh and farm land. The estuary has a wide tidal range, which at low tide exposes large areas of mud flats, salt marshes and sandbanks; via these, it supports many flora and fauna, both resident and migratory. Within the RMB Chivenor boundary lies a mix of habitats including herb rich grassland (the old airfield) and water bodies, both standing and temporary that form the driver training area.

RMB Chivenor has a long standing conservation group and during a recent meeting it was decided new surveys and research were needed on site to help show conservation was progressing; as part of this work, moth surveys were undertaken.

Rare moths recorded

The 18th June 2013 provided perfect conditions for moth trapping. Mr John Breeds, former warden of Braunton Burrows (North Devon Biosphere Reserve, adjacent to the site), and Dr Rob Wolton of the Devon Moth Group set up three MV lights and two actinics. The following is an account of the more notable species:

A cream-spot tiger *Arctia villica* was first to the lights. Followed by eight bordered sallow *Pyrrhia umbra*; this is uncommon in Devon and rare in North Devon.

Four small china-marks *Cataclysta lemnata* were recorded; previous records are few in North Devon.

John identified a reddish light arches *Apamea sublustris* a species he had seen in France previously. This is a very rare moth in Devon with just a handful of previous records, most a hundred years old.

Four individuals of a previously unrecorded species in this area and very uncommon in Devon, were caught and after consulting with Mr Barry Henwood (also of the Devon Moth Group) they were identified as obscure Wainscots *Mythimna obsoleta*.

The final notable moth was a gelechiid micro *Metzneria metzneriella*, another new vice-county record. In all, 63 species were recorded (with a strange pug yet to be identified). Among these were four species of hawk-moth – poplar, eyed, elephant and small elephant; who says moths are not beautiful!

Importantly, the rare and uncommon moths we found are all either associated with grassland or standing water, not with scrub. Bordered sallow larvae feed on rest-harrow, reddish light arches on various grasses, *M. metzneriella* on knapweed, obscure Wainscot on common reed, and interestingly the small china-mark has aquatic larvae which feed on duckweeds.

In conclusion, the survey presented interesting and unexpected findings showing that Chivenor is indeed a very good environment/habitat for the development of moths. As the areas of open, herb rich grassland and the ponds and ditches are managed sympathetically to enhance wildlife, it is hoped that future projects will show a similar success.

Sian Flaherty
Environmental Protection Officer
RMB Chivenor



Reddish light arches © Chris Maple



Essex

Fingringhoe Ranges

The sea walls and remaining coastal grazing marshes of Essex harbour some of Britain's rarest bees. Most of these marshes have been converted to arable farmland, but the MOD's Fingringhoe Range retains much of the rich wildlife associated with this threatened habitat.

As well as its long list of wetland birds and scarce dragonflies, the marsh is home to several scarce bees. Most remarkable, is the aptly named 'long-horned bee' *Eucera longicornis*. This furry ginger bee is distinguished by the exceptionally long antennae in the male. Although it is said to feed from the flowers of a wide range of plants, the Essex populations seem to be very strongly associated with meadow vetchling *Lathyrus pratensis*. Males were observed 'patrolling' patches of this plant along the inner slope and folding of the sea wall, and occasionally stopping to take nectar from the flowers. Females also seemed to collect pollen exclusively from the same plant species. The bee is said to nest in burrows constructed on bare or sparsely vegetated ground, but, owing to limited access to the site, the nests have not yet been located.



Moss carder bumblebee *Eucera longicornis*
© Ted Benton



The aptly named 'long-horned bee' *Eucera longicornis* © Ted Benton

A scarce and declining bee of southern England, it had been recorded in Essex only once since the late 1960s until several were observed along a stretch of sea wall on 26th June 2012. The continued presence of the species was confirmed in 2013 and it is hoped that it will be possible to carry out further studies in 2014.

The Essex marshes hold populations of several rare 'carder' bumblebees, including the 'shrill' carder, the brown-banded and moss carders. Before 2000 the shrill and brown-banded carders were found at a few sites along the lower Thames Estuary, while the moss carder, which is believed to tolerate cooler and damper climates, was found on a few stretches of sea wall along the coast. New development along the

Thames estuary has destroyed several of the habitats for the shrill and brown-banded carders, but luckily they have, since the early 2000s, spread up the Essex coast along the sea walls. So far, the shrill carder bumblebee *Bombus sylvarum* has spread as far north as Mersea Island, and so it is hoped that it will soon colonise nearby Fingringhoe Range. Meanwhile, the scarce (UK Biodiversity Plan priority species) moss carder bumblebee *Bombus muscorum* was found on the range, alongside the long-horned bee, in 2013.

Ted Benton
Conservation Group member



Fife

RAF Leuchars



The northern marsh orchid © Sarah Stone

Change is in the air as the Leuchars estate transitions from RAF to Army control in April 2015 and on a more personal level as a 'newbie' to the environmental protection and conservation worlds I have had to hit the ground running.

One of my first tasks in post was the annual Beach Clean of the Eden Estuary Site of Special Scientific Interest (SSSI). Initially, and mistakenly, I was under the impression that I had to calculate the tide times and after a frustrating time of adding hours to days I was delighted to discover this was the forte of the Fife Ranger, Randal Strachan, and I didn't have to worry about miscalculating and holding a Beach Clean at high tide!

A successful Beach Clean was subsequently held on a lovely day in August with nearly a ton of plastic waste collected by 13 military and civil service volunteers from the Leuchars Conservation Group (LCG); fingers are now crossed that we are able to squeeze one more Beach Clean in before the RAF ensign at Leuchars is finally lowered.

My time in post has also highlighted to me some of the wonderful flora and fauna that thrive on the Station. This includes the rare and beautiful northern marsh orchid *dactylorhiza purpurella*, which has a flower spike covered in densely packed bright purple flowers.

Additionally, the Station Headquarters is home to a maternity roost for pipistrelle bats which seems to be expanding with recent additional satellite roosts found in nearby accommodation blocks.

The LCG has also continued to work closely with local conservation groups, and this year a call was made by the Fife Coast and Countryside Trust (FCCT) for sightings of grey squirrels to be reported to them, as the Earls Muir SSSI, which borders the Leuchars estate, is home to the native red squirrel. Fortunately the sightings established the only greys in close proximity were a small group in the nearby Earls Muir Castle grounds.

It is also great to see work undertaken a few years ago continue to enhance the local amenities such as a nature trail established in Leuchars village. This is particularly pertinent to RAF Leuchars as the trail features the railway sidings that transported goods to Supply

Squadron before the route was closed; the tracks and sleepers remain to capture the imagination.

To conclude, I have learnt a lot in this past year and luckily for me I have had some wonderful sources of support: my predecessor KC Campbell, the late and missed Gordon Johnstone, the staff at CESO (RAF), the local FCCT and some longstanding LCG volunteers. I believe the final legacy of RAF Leuchars within the conservation remit is a fantastic relationship with the local environmental protection and conservation groups and I am sure the Army will pick up the baton and continue the good work.

Sharon Callaghan
Conservation Officer
RAF Leuchars



Leuchars railway sidings and nature trail © Sarah Stone



Gloucester

Duke of Gloucester Barracks



The grassland survey underway © Crown

After its first year of hard work, our newly set up conservation group is delivering improved biodiversity and sustainability at Duke of Gloucester Barracks (DoG Bks), South Cerney in South East Gloucestershire. In June 2013 the first meeting of the DoG Bks conservation group took place and was well attended. There are also various internal and external organisations that have contributed time and expertise to the various projects. The objective of the group was to make a positive impact on conservation and biodiversity at DoG Bks thus creating environmental resilience and a sustainable ethos for the entire military and civilian community.

From the outset, plans and ideas were discussed for a woodland walk route incorporating the planting of commemorative trees, education and information boards, activities for families and children and the identification of baseline data essential for future planning.

Gloucestershire Farming and Wildlife Advisory Group came and conducted a site wide grassland survey. This survey allowed us to formulate a plan to create and restore the valuable and nationally diminishing habitat of lowland calcareous grassland. This grassland is very herb-rich in a local context, with lady's bedstraw, common bird's-foot trefoil and hairy violet.

Gordon Kirk, regional representative for the British Trust for Ornithology has carried out a number of bird surveys; the last survey was carried out at DoG Bks over five years ago. In the first survey, he found many species were still present and thriving, we are now looking for the rarer tree sparrows that were previously seen at DoG Bks. Further surveys are planned for the winter months and records are being sent to Bird Track.

We have had a team in to check our buildings for the presence of bats with a view to a full survey taking place.

A reptile and amphibian survey has also been carried out in order to gain baseline data for the areas around DoG Bks; grass snakes have already been seen under the tin sheeting.

We are planning a commemorative planting of a pair of black poplar, the nationally endangered tree. The Conservation Volunteers, an external volunteer organisation is planning to visit us and assist with small projects in the near future.

The conservation group is not the only part of the environmental work being carried out; the station has successfully used the Environmental Management System and the Commanding Officer's Safety, Health and Environment and Sustainable Development Action Plan to great effect, delivering improved sustainability and environmental performance. Utility usage is regularly monitored and efficiencies have been made to lighting, building insulation installed and boilers upgraded, all helping to make savings.

The construction of a no-cost waste and recycling centre on site has increased recycling from less than 1% to 53% in less than a year. Water consumption on site has also been reduced with the lowering of the stations water pressure.

This year the group is proud to have been selected as Sanctuary Award runner up under the Environmental Projects category.

SSgt Paul Staley
29 Regt RLC
Duke of Gloucester Barracks



Hampshire

DCPG Southwick Park



Southwick Park Lake © Ken Law

Covering over 5.5ha and nearly 1km long, Southwick Lake is one of the MOD's hidden treasures located at Southwick Park just north of Portsmouth. Southwick Park was requisitioned by the government during World War II and compulsorily purchased in 1950 from the Thistlethwayte family who continue to own and manage the surrounding 2,850ha estate. Now home of the Defence College of Policing and Guarding, the MOD estate extends 112ha and comprises of a secure technical and training site containing Southwick House (famous for its historic association with the Supreme HQ Allied Expeditionary Force's co-ordination of the 1944 D-Day operations by Ramsay, Eisenhower and Montgomery – the original Chad Valley manufactured map still hangs frozen in time at H-Hour), the surrounding Southwick Park Naval

Recreation Centre and Southwick Lake - maintained and operated by the Royal Navy and Royal Marine Coarse Angling Association.

The Association has been involved with the lake since 1972 and Ken Law, the Water Manager, together with his willing team of volunteers (in conjunction with the Environment Agency and Hampshire and Isle of Wight Wildlife Trust) have undertaken a considerable amount of work to conserve the amenity and its immediate surroundings. This has involved a significant amount of clearance work in the lower canal and 'Rooks Pond' area to increase the flow of the River Wallington.

Work has also been undertaken to remove dead and decaying trees from around the lake, not only to improve

the fishing experience and safety, but also to encourage and enhance the habitat for the varied mammal, bird and insect communities. New reed beds have been created and waterlilies have been introduced in the main lake. The Association is working closely with the Southdown National Park Team to enhance the water vole population. Frequent visitors to the lake include kingfisher, moorhen, heron, cormorants, buzzard and red kites. Numerous bird and bat boxes have been strategically placed, and routes to assist eel migration created.

The anglers have invested over £15,000 of their membership subscriptions into the project during the last five years and has spent untold man-hours creating and maintaining a fantastic fishing lake in a very beautiful and natural part of Hampshire. The way forward is to continue the current water management strategy and implement a programme of further improvements that will enhance the lake and its surroundings for anglers, the multitude of other visitors and the wildlife. It should be mentioned that there is no recognised public access, however, if people wish to visit the Recreation Centre for a round of golf or English Heritage's Augustinian Priory (AD1145-53), the lake is within sight!

Phil Greaves
Senior Estate Surveyor
Land Management Services
Defence Infrastructure Organisation



Hampshire

DIO SD Training South East



Silver-studded blue *Plebejus argus* © Iain Perkins

Silver studded success at Bramshott

Bramshott Common training area in East Hampshire has become a haven for endangered butterflies thanks to the active site management which has proved to be very much to their benefit. It is a really varied site with 28-30 butterfly species recorded there in a typical year. The open areas are extensively mowed each winter. This is essential to remove encroaching trees and scrub to ensure that the wildflower species can emerge and prosper.

The colony of silver-studded blue *Plebejus argus* butterflies is of national importance. This is a Red Data List species, amongst the most threatened of British butterflies. In 2010 and 2012 Bramshott Common had the highest recorded day count of any site in the UK. During the peak of their flight

season, the ground shimmers with blue butterflies, an amazing wildlife spectacle!

The silver-studded blue has a very interesting life cycle and lays its eggs at the base of heather plants. The caterpillar hatches out and feeds on the heather and develops a symbiotic relationship with black ants. The caterpillar secretes honeydew which feeds the ants and in return, the ants protect the caterpillar. The caterpillar normally pupates within the ants nest, and when it hatches into a butterfly, it crawls to the top of the heather plants and pumps up its wings in the sunshine.

Only the males of the species are blue, the females are brown. Its average life is only 3-5 days although it can live longer. It definitely has breeding on its mind during this time! It is an extremely

sedentary species, often not moving more than a few metres from where it emerged making it very site bound and unlikely to naturally colonise any new sites. Lowland heaths are extremely vulnerable to attack from colonising species like birch, gorse and scots pine which can quickly shade out and destroy the heathland.

Two other Red Data List butterflies are also thriving here; the dingy skipper and the grizzled skipper are spring species which have prospered as the annual mowing has enabled carpets of spring wildflowers to bloom, i.e. wild strawberry, violets, tormentil, primroses and birds-foot trefoil.

This success demonstrates how a balance can be reached between management for nature improvement and management for military purposes. The Longmoor Conservation Group is an important interface between the MOD and people interested in wildlife. I have been attending the group for several years and am really impressed at how a positive approach can produce measurable local wildlife benefits.

It is now one of the finest 'off-chalk' butterfly and wildflower sites in the South of England. With continued active management by the MOD, it will hopefully remain so for many years to come.

Arthur Greenwood

Longmoor Conservation Group member



Lt Col Bishop and Matt Dowse release the juvenile sand lizards © ARC

Sand lizard introduction on Longmoor

On Thursday 12th September 2013 a group of 50 rare sand lizards *Lacerta agilis* were given the VIP treatment at Longmoor Camp. The two month old lizards were escorted by Lt Col Dickie Bishop, Kathy Stearne of Natural England and Matt Dowse of Amphibian and Reptile Conservation (ARC) to Palmer's Ball, an area of lowland heath on the Longmoor training estate. Here they were gently ushered into their new home where it is hoped they will breed in due course and help to secure and extend the range of this iconic species on the Longmoor estate.

The selected area had been specially prepared for the sand lizards by ARC with management of invasive scrub and bracken, and the mechanical exposure of bare sand. These patches of bare sand will form the egg laying areas that are essential for this species once they reach maturity (they also incidentally benefit many rare invertebrates including heath tiger beetle). The release area is some distance from the nearest sand lizard colony and, given their limited dispersal ability, it is unlikely that the species would have naturally colonised it without assistance. ARC manage Palmer's Ball and several other areas on the Longmoor estate under a licence

granted by Defence Infrastructure Organisation. The area around Longmoor Camp forms Woolmer Forest Site of Special Scientific Interest, a nationally important site for reptiles and amphibians with the unique distinction in Britain of having 12 of the 13 native species present (all bar the pool frog which was only recently granted native status). ARC's conservation work on site is funded by a Natural England Higher Level Stewardship grant.

The hatchling sand lizards had been bred in captivity by a group of zoos and notable experts in order to repopulate areas of heath and dunes where they have previously become locally extinct. The captive breeding forms part of a Recovery Plan for the sand lizard which is a rare and protected species in Britain notified under the European Union's Bern Convention. The sand lizard was considered to be on the brink of extinction in the Weald in the 1970s with just four small populations extant. Thanks to re-introductions they are now present on 27 heathland sites from Hampshire to Kent, but on-going, appropriate site management is always necessary to maintain these colonies.



Male sand lizard in breeding condition © Iain Perkins

Rob Free and Matt Dowse
Amphibian and Reptile Conservation
and Longmoor Conservation Group



Hampshire

Defence Munitions Gosport



Grizzled skipper enjoying the glades © Crown

During March 2011 Kevin Cooper the Environment Manager at DM Gosport contacted the Million Ponds Project Team to enquire about the potential to create ponds on the site. The Million Ponds Project, of which the MOD is a partner, is a national project which aims to reverse the loss of ponds by creating a network of new ponds across the UK.

A site visit from the Freshwater Habitats Trust (formally Ponds Conservation Trust) was arranged to assess the suitability of the land and discuss potential locations. A suitable location was found in the non-explosive area, on the site of the old golf course which is no longer used due to the general wet condition of the area during winter time.

After detailed planning and consultation with the Freshwater Habitats Trust, contractors, the local authority and the Wildlife Trust, planning permission was granted and the project could move forward.

Over a two week period, seven ponds were excavated, all of differing sizes and depths; this mix of profiles creates slight habitat variations, attracting a variety of flora and fauna. The main aim was to enhance the area for frogs, grass snakes and great crested newts. The newts were recorded living in an adjacent pond. The spoil from the excavation was used to create banks around the ponds to afford some shelter from wind and predators. During the construction of the ponds, a local archaeological expert was present in case historical artefacts were unearthed. Although several artefacts were found, including pieces of smoking pipe and fragments of pots, there was nothing of significance and thankfully no 'big bangs' were found.

The ponds have now begun to realise their potential and several species have been drawn to the area and are enjoying the ponds. These include mainly herons and egrets, whilst ducks and swans have also been sighted.

Several dragonflies and butterflies have also been reported during this summer.

On Friday 14th March Caroline Dinenage, Gosport MP visited DM Gosport to walk through the Bedenham Grasslands, which now boast five butterfly glades. Representatives from DM Gosport's Grounds Maintenance Team One Complete Service (OCS) and Mike Gwilliam from the South Hants Butterfly Society also attended.

Caroline was briefed on recent management activities, which aim to further improve the glades and enhance butterfly and moth habitat. The glades provide perfect conditions for butterflies and are home to a vast range of species including grizzled skipper, white letter hairstreak and the moth *Coleophora vibicella*, all of which are included in the UK Biodiversity Action Plan and are thriving in the grasslands area. The management aims to maximise the botanical diversity within the grassland and maintain a mosaic of short and long grass conditions. Encroaching scrub that could shade out the habitat has also been removed.

The site is important in a local context, as there are few areas of extensive unimproved grassland on the Gosport peninsula. Ongoing surveys will be carried out along the glades to monitor butterfly and moth populations.

Kevin Cooper
Environment Manager
Defence Munitions Gosport



Isle of Wight

Newtown Ranges



Newtown Range Conservation Day bird ringing demonstration © Crown

It is difficult not to talk about the atrocious weather we have had over the winter period, but what is worth mentioning is the dedication of our Group Ornithologists John Willmott and Bob Green who have battled the elements to complete the monthly Wetland Bird Survey on the training area. The results are recorded and passed on to BTO/RSPB and the local county record centre.

A successful open day and wildlife walk in May provided an opportunity for interested members of the public to see what we do here as well as to show them around the range and training area to see our excellent flora and fauna. Members of the conservation group were on hand to act as guides and answer questions on their area of expertise.

The osprey has been sighted in the Estuary, busy fishing, fattening up before migration and hopefully taking note of the nesting platforms erected the previous year.

We are in the process of putting together a collection of over 80 photographs of different moths taken

by Barry Angell, the Conservation Group entomologist. All the moths were trapped on the range. The dormouse population are doing well, a total of 9 juveniles were recorded when clearing the 40 bird boxes we have in Locks Copse and surrounding areas. Not such good news for the blue and great tit families with 31 boxes unsuccessful. We think it might be related to the bad winter and spring. Interestingly wood mice have decided to take up residence in the boxes, some 11 nests were noted.

Our AGM was held in November. It was nice to see a full house with representatives from the National Trust, Natural England, Hampshire and Isle of Wight Wildlife Trust (HIWWT), tenant farmer, Local Council Ecology Officer, Defence Infrastructure Organisation ecologist and other members from our conservation group. The meeting was chaired by Col (Retd) Chris Booth Deputy Chief Executive SE RFCA . This excellent forum discusses current activity on the Island, reports from the year and plans for the future. During this meeting our mammal expert Richard Grogan HIWWT informed us that the brown hare population on the

Island and certainly on the training estate at Lambsleaze and Elmsworth is doing well. There was a dip in their numbers which caused some concern. Richard has compiled a report into the hare habitats and behaviour on the Island.

The Rookery which occupied the oak trees over the main entrance to the site for several years has moved! Hurray... they and their mess will be sadly missed; the rooks never seemed to miss the Camp signs when the nesting season was in full swing.

Sightings of red squirrel during the autumn and winter were rare. One explanation maybe that there was plenty of food in the copse with acorns and hazel nuts to store away for the winter. Our two legged friend from last year, Stumpy, has not been seen to date, we hope he has survived the winter and look forward to seeing him later in the spring.

Maj (Retd) Dave Maidment
Range Officer and
Training Estate Manager



The displays highlighting the biodiverse flora and fauna of Newtown Range © Dave Maidment



Kent and East Sussex

DIO SD Training South East



The unique Lydd Holmestone hollies © Crown

Across the Cinque Ports Training Area (CPTA), the spread of ash die-back *Chalara fraxinea* has been dramatic. Over 100ha of woodland are now showing signs of the disease.

The majority of mature ash coppice appears to be infected as was shown by a lack of foliage in upper crowns. Defence Infrastructure Organisation (DIO) forester SE organised a *Chalara* workshop at CPTA in September 2013. The attendance on the day was high and participants from all over the UK including DIO, Forestry Commission and Commercial Partners.

The workshop provided a forum for discussion between forestry and other disciplines regarding future management and enabled woodland managers an opportunity to identify the symptoms out in the field.

The CPTA and Pippingford Conservation Groups remain active and have carried out ecological surveys across the estate. Lydd Holmestone hollies were visited by the CPTA group to view improvements following concentrated

rabbit control. The browse line on many hollies has recovered and some re-generation was evident. Additionally the visit was an opportunity for Sean Clancy of the Sussex Emerald Moth Partnership Project to inform the group of the work in progress on adjacent land (the RSPB Reserve and nuclear power station) to monitor and encourage this Red Data Book species *Thalera fimbrialis*. Following the visit, a bid was submitted to enable the inclusion of MOD as a funding partner. Arpinge Range was also visited by the group and guided by Peter and Alfie Gay, plants recorded included woolly thistle *Cirsium eriophorum*, man orchid *Orchis anthropophora* and hound's-tongue *Cynoglossum officinale*. April 2014 saw the British Bryological Society visit Lydd Ranges. Despite the arid nature of the range, a good selection of mosses and liverworts were recorded including *Bryum torquescens* and *Lophocolea semiteres* both new to the vice-county of East Kent (although the latter is an introduced liverwort from the southern hemisphere first found in

Europe in 1955). The Society was also impressed by the quantity of the moss *Tortella flavovirens* in the coastal zone.

On the tenanted estate, a special mention must go to Rod and Helen Vincent who at the end of 2013, following semi-retirement, relinquished 129ha of CPTA pasture. For over 40 years they produced quality beef cattle on chalk downland (including Arpinge Range) which due to their good stewardship has encouraged important assemblages of rare and scarce species. The land has been successfully re-let by DIO Land Management Services (LMS) and as the new licensees already farm other designated sites within CPTA, the future of these sensitive areas looks assured despite the uncertainties over agri-environment schemes.

With the recent UK winter floods ensuring that coastal protection remains a priority, the production of detailed design proposals by the Environment Agency (to protect Hythe and Lydd complexes) are underway with MOD contributing to the funding. Ground investigations have been carried out and options for protection are expected in 2016. Habitat surveys have been undertaken and agreement on mitigation will be required. In April 2014, CPTA and LMS staff visited Medmerry RSPB reserve in West Sussex, guided by the Agency and Tim Callaway (RSPB), to look at a recent coastal re-alignment scheme to inform on the implications of any similar proposal at Lydd.

Richard Goslet
Land Management Services
Defence Infrastructure Organisation



Lincolnshire

ATR Air Weapons Range Holbeach



Damaged bridge caused by tidal surge © Graham Wall

Holbeach Conservation Group oversees the salt marsh on the west bank of The Wash between the rivers Nene and Welland and has 576ha of green marsh with four to five times this amount of mud reaching out to low water mark depending on the state of the tide.

The group members consist of the Defence Infrastructure Organisation Conservation Team, the local council, the wildfowling clubs that rent the shooting rights over the mud (from the Crown Estate) and green shore (from the MOD). The group regularly updates each other on what is going on either on the range or in the local area. The subjects discussed vary from range usage to marine shell fish and bird counts as well as local developments affecting the area such as wind farms and tidal gauges.

The period from August 2013 to spring 2014 was far from quiet; with the

wildfowling being the eyes and ears of the group, and with all the wet weather and tidal surge, there was plenty to report.

Firstly the salinity of the marsh was down due to all the rain water coming from inland forcing a change in the plant life that grows on the green shore. It also affected all the marine life from green shore crabs to the young fish nurseries of the creeks and pools causing them to move further out to where the salinity was more to their suiting. Lowering of the salinity means there is far less food for the wading birds and in return less food for the raptors so the whole natural balance of the marsh changes. This puts pressure on the birds as they become more spread out and harder to accurately count.

During last Decembers tidal surge, the water was as flat as a millpond in the

North West corner of The Wash and with a good two metres of sea wall on the range to keep the water at bay, we had some protection before swift action would have been deemed necessary. The rodents that live on the green marsh congregated on banks built to take the sting out of a rough sea before it hits the sea wall. When the walls were washed away or covered by the tide the animals had to swim and many did not make it. To our surprise the bodies of two stoats were found; all the local predators must have had easy pickings that night.

The aftermath of the surge tide caused a great number of birds to leave the marsh and travel inland, those that were left changed their patterns and until the spring they had not settled back into their usual pattern of life. The common gulls are back on their colony this spring and going about their business as usual and we have a bridge to repair ready for the next big tides.

Graham Wall

[Head Marsh Warden](#)

[Holbeach Wildfowling](#)

[Holbeach Conservation Group](#)



Northern Ireland

DIO SD Training NI



WWI practice trenches at Ballykinler © Crown

WWI Trenches Ballykinler

In recent months we have witnessed the identification of previously lost or forgotten World War I training landscapes across the UK, many of which still remain as part of wider Ministry of Defence training estates such as, the Browndown trenches highlighted in March 2014 in Hampshire. Northern Ireland is no exception and as part of a wider project of archaeological investigation into British WWI training camps in Ireland we have identified what is believed to be a comprehensive network of WWI practice trenches at Ballykinler.

In 1914, Ireland became a hub of military activity for the raising and training of three Volunteer Divisions of Kitchener's New Army; thousands of these recruits passed through Ballykinler which to date has been well identified as the main training camp for the 107th Infantry Brigade of the 36th Ulster Division. The focus of the current project is to understand the development of the wider camp and ranges at Ballykinler, its use and the level of training provided to new recruits, including the suitability of the training as a precursor to the reality of War and where possible to identify men who may have originally dug the

practice trenches. The archaeological recording and documenting of the physical remains of the trenches on the camp will hopefully go some way to further inform this narrative which is presently a rather absent chapter in the historical knowledge of the camp.

The outcome from the analysis of recently flown LiDAR, commissioned by the Ministry of Defence will be evaluated alongside more traditional methods of archaeological investigation in an effort to detect related WWI features on the training estate landscape, later producing a substantial visual and historical catalogue of the chronological development and use of Ballykinler 1914-18. It is also hoped that through combined efforts of myself and the archaeological team at Queen's University Belfast, Centre for Archaeological Fieldwork (QUB/CAF), the Northern Ireland Environment Agency (NIEA) and the DIO SD Training NI that the excavation and subsequent reconstruction of a section of the trenches can be undertaken, allowing future generations of servicemen and women in addition to schools and other community groups an opportunity to explore and experience the WWI trenches first hand. The discovery and future representation of these features at Ballykinler will help to bring part of Ireland's history and involvement in the WWI into the public domain for generations to come.

Heather Montgomery
PhD Student
Queen's University Belfast



The majestic barn owl © Dr Lewis

Barn owls in Northern Ireland

Barn owls in Northern Ireland are being given a new lease of life thanks to the work that the Ballykinler Conservation Group are doing with Ulster Wildlife.

Staff at Ballykinler have been working with conservation experts to construct and erect twelve bespoke barn owl nesting boxes to provide additional nesting sites within the training estate including the Todds Farm complex, Strip Woods and in Beston village.

John Willesley from Ulster Wildlife has been heavily involved and explained that barn owls are being threatened by extinction with as few as fifteen breeding pairs left. The nesting boxes will hopefully encourage the birds to come onto the training estate to nest, as we already know they hunt up and down the tree belts and at the back of the ranges. What is encouraging is that once barn owls take up residence in nesting boxes they come back year after year, so hopefully this project will be a success as we have a local breeding pair not far from the training centre.

Major Tony Canniford, Senior Training Safety Officer for Ballykinler Training Centre said:

"Whilst SD Trg NI's priority is to support our armed forces as they prepare for operations, Ballykinler is a diverse training area, which also offers a number of secluded locations, ideal habitat and hunting grounds for barn owls to live and breed. We are hoping that by working together with the Ulster Wildlife Trust on this project that we can help to increase the numbers of this iconic bird."

Fiona Weir
BFBS NI

Ballykinler hosts a stage of the Inaugural St Patrick's Coast Horse Endurance Race

The staff at Ballykinler have also been busy supporting the first International St Patrick's Coast Horse Endurance Race held on Saturday 26th April, along with over 40 other local landowners.

They all opened up their gates to allow access and welcomed over 100 horses and riders participating in the event over distances of 16km to 120km. Meticulously planned and hosted by the Irish Long Distance Riding Association the event, which started

at Downpatrick Racecourse, meandered through the beautiful South Down countryside along tracks, fields and three of the counties' breathtaking beaches.

With horses starting on the course at 0700hrs, a number of BTC staff volunteered to support this event, which was an outstanding success. The route followed the recently opened Permissive Way, which normally allows local residents to walk along a path around the perimeter of the training area and down on to the Ballykinler beach. By the removal of a number of gates, horses and riders had the opportunity to pass through this area and out onto the Ballykinler beach for an uninterrupted 3km stretch of sand and water, with the mountains of Mourne as a backdrop, before passing onto the neighbouring fields. The marshals spent twelve hours on the ground and I cannot start to imagine how tough it must have been on the horses and riders. Helping to facilitate this event has been a good community engagement opportunity and enhances the MODs reputation in NI.

Maggie Haigh
DIO SD Trg NI



Rider on St Patrick's Coast Horse Endurance Race © Gillian Wheeler photogilly.com



Pembrokeshire Castlemartin



Grey seal pup © Lynne Houlston

Pembrokeshire Ranges Conservation Group (PRCG) has been active for over 40 years and covers Castlemartin, Penally, Manorbier and Templeton Ranges. The group is involved in the annual monitoring of numerous species of flora and fauna as well as performing additional surveys when necessary.

Castlemartin Range

In 2013 surveys of green winged orchid *Orchis morio*, moonwort *Botrychium lunaria* and goldilocks aster *Aster linoxyris*, recorded stable populations and surprisingly, a survey of fen pondweed *Potamogeton coloratus*, found it to be in four new locations; on an easterly extension across the range. Fen pondweed is included on the IUCN Red List as being of least concern due to its widespread existence, but it can be vulnerable to the loss and degradation of its habitat.

2013 was the best year for grey seal *Halichoerus grypus* pup births since recording began in 2004. Normally an average of 25-30 seal pups are recorded, but between August and

October 39 were born across Castlemartin Range. The population in South West Wales is the most southerly population in Europe and the grey seal is one of the least common species in European waters.

Only eight pairs of chough bred across the range in 2013 (19 pairs in 2003) though they did manage to fledge 22 youngsters. There are ten pairs nesting at present.

In January 2014, 25 young, grafted apple trees were planted in Brownslade Orchard. The cuttings had been taken in 2013 from the fifteen remaining old apple trees in the orchard and attached to rootstock. At least ten of the original trees have been lost since 2003 due to a lack of management; however the introduction of a mowing regime, pruning and the prevention of entry by livestock should ensure the future of the orchard. Three of the original varieties were identified from the fruit last year (Bramley's Seedling, Mere de Menage and Ribston Pippin) and it is hoped that the remaining species can be identified in the future.

Due to the intensity of military training across Castlemartin during July 2013 and it being a hot, dry month, there were numerous fires caused by the heat of the tracer rounds within the ammunition fired. The size and location of the fires was mapped and a total of 292,394m² was burnt during the month and will continue to be closely monitored. Although fires can be devastating for any egg, larvae or young present, it can also promote the regeneration of vegetation.

Penally Range

In the summer of 2013 I decided to count the heath spotted orchid *Dactylorhiza maculate* population growing in the middle of Penally Rifle Range. Previously mapped but never counted, members of the PRCG were amazed when the number of flowering spikes counted was 17,062. This is a locally notable species, however it was only classed as a secondary feature in the Integrated Land Management Plan as it was thought that the majority of the orchids were hybrids (heath x common spotted). Photographs taken during the 2013 counts suggest that this may now not be the case.

The MOD changed the mowing regime of the orchid patch in the 1990s to benefit the orchid population and to allow the population to flourish. This has been a huge success and future checks will hopefully reveal the true identity of these orchids!

Lynne Houlston
Authority Ranger
Pembrokeshire Coast National Park



Shropshire

RAF Cosford

Although RAF Cosford may not have the vast open spaces or the beautiful coastline of many of the sites across the Estate it does have a dedicated (albeit small!) band of guardians of the countryside! The Cosford Conservation Group has been established for over ten years now and the members have a broad range of interests from birds, bats and bees to mammals and plants and everything in-between.

It was back in 2009 that we took part in the Million Ponds Project and created a small pond in a mixed-species coppice that lies between the Respirator Testing Facility and the High-Ropes Training Area, a little bit of wilderness nestling in amongst the military infrastructure. Rather than 'stock' the pond with specimen or non local flora or fauna, it was literally left to its own devices and has now become the home to a multitude of species and an essential part of the wider habitats of many visiting species.

The group use the nearby hide to record bird species (uploading the records to Bird Track), have undertaken water quality surveys (using the OPAL protocols) and also carry out regular amphibian surveys there. No great crested newts at this site though, although great to see they are still thriving on the far side of the runway. It is a great stress-reliever to get out of the office and spend half an hour down there just observing the comings and goings of our local wildlife.

Fulton Block (a Grade II listed building dating from 1938 and used by thousands of trainees passing through N°2 School of Technical Training) has long supported a number of honey bee



Local inhabitants of the pond making their great escape during the survey © Martin Noble

colonies. Unfortunately they do have a habit of breaking out of the cavity walls through air vents and into classrooms and cause a little angst amongst both instructors and students alike. Several swarms have been relocated to the hives we have next to the pond. In addition, we have several resident bat populations across the camp, including a pipistrelle maternity roost site that also makes the most of Fulton Block.

It would be remiss of me if I were to close this update without a note of thanks to one of our most stalwart members in the guise of Sqn Ldr Graham Lee. Graham has been an active member throughout much of

the history of the group and gives much of his time and money and effort too...in support of the work of the group. Graham is due to retire (for the second time) in the very near future and his commitment and influence will be sorely missed by all here at RAF Cosford. Thank you Graham, for everything that you have done for all the residents of Cosford, be they wild or otherwise!

FS Martin Noble
Conservation Group
RAF Cosford



West Sussex

Thorney Island



Gun emplacement converted into a bird hide © Ann Davies

Thorney Island is within the Chichester Harbour Area of Outstanding Natural Beauty. The airfield at Thorney was built in 1938 for fighter aircraft, which were involved with the Battle of Britain. RAF Thorney Island was subsequently transferred to RAF Coastal Command for the protection of shipping and other various roles. Thorney Church cemetery contains both British and German graves.

Thorney now houses Baker Barracks and is occupied by two regiments of the Royal Artillery. Many of the original World War II buildings and infrastructure are still in use. Smaller, redundant structures, often on the periphery, have either disappeared or are being increasingly submerged and undermined by invasive vegetation. An exception is a rectangular brick emplacement, which possibly housed light anti-aircraft equipment.

This is now topped with a wooden structure and used as a bird hide.

Between 2004 and 2007, Chichester Harbour Conservancy co-ordinated a major Heritage Lottery funded project, 'Rhythm of Tides'. This included learning more about the history and archaeology of the harbour. One of the outcomes was the establishment of a monitoring programme and for the last seven years Chichester and District Archaeology Society (CDAS) has carried out condition assessments for each of the fifteen smaller WWII sites on Thorney. An annual report is provided by CDAS to the Conservancy and the MOD.

As at spring 2013 the bird hide was being regularly maintained and one or two sites had been cleared. However, a majority of the sites were deteriorating at an increasing rate with invasive

vegetation taking a hold. Working with volunteers from the Friends of Chichester Harbour, and the company SSE, the Conservancy led a series of work parties to tackle the priority sites with eight cleared during 2013. This showed significant dedication by the volunteers as the weather was generally horrendous.

CDAS will continue with the monitoring and the Friends of Chichester Harbour are ready to undertake further work parties. The Conservancy's Education team are now using Thorney Island's WWII features as part of a tour for school groups studying WWII history.

Ann Davies

Chairman Chichester and District Archaeology Society (CDAS)



Wiltshire Bulford



Unearthing one of the Saxon skeletons © Crown

The End of Beowulf

*Then the Geat people began to construct Beowulf's barrow
a mound on a headland, high and imposing,
a marker that sailors could see from far away,
and in ten days they had done the work.
It was their hero's memorial; what remained from the fire
they housed inside it, behind a wall
as worthy of him as their workmanship could make it.
And they buried torques in the barrow, and jewels
and a trove of such things as trespassing men
had once dared to drag from the hoard.
hey let the ground keep that ancestral treasure,
gold under gravel, gone to earth,
as useless to men now as it ever was.*

Beowulf (translation by Seamus Heaney)

From 2012 to 2014 Exercise Beowulf worked to recover the archaeological remains from a Bronze Age barrow on Salisbury Plain that were being disturbed by badgers at an alarming rate, hence the site being placed on the English Heritage 'At Risk' list. The project team was composed of local volunteers (including several from the Bulford conservation group), professional

archaeologists from Wessex Archaeology, Landmarc Support Services, DIO, and serving personnel including those from The Rifles and on 'Operation Nightingale'.

The excavations have now yielded 75 Saxon skeletons which would otherwise have been lost amongst the burrows with only the occasional find

being brought to the surface by the badgers. Many of the graves were accompanied by wonderful grave goods showing a range of 6th century AD artistic talents – from gilded button brooches (such as seen on the Sanctuary cover) through to glass and amber beads and brooches, some of which are Roman 'heirlooms' or curios. Appealing to military team members perhaps were the numerous finds of weaponry and artefacts associated with warrior identity – shields, knives, spears, drinking vessels and in 2014 a wonderful sword with gilded bronze fittings, beads and a bone handle grip.

The artefacts are being conserved prior to their eventual deposition at Devizes Museum and will be subject to a publication report. The skeletons will undergo further analysis – a study of their teeth hopefully telling us whether these people were local Wiltshire folk, East Anglians, or even migrants from the European continent.

Having tried several methods, over many years, to end the disturbance to the monument, in this instance excavation seemed the only respectful way in which to deal with the archaeology. The mound is now restored and future badger activity will not denude our understanding of this important site.

Richard Osgood
Senior Archaeologist
Defence Infrastructure Organisation



Wiltshire

Imber



Brown hares are often seen on the western side of Salisbury Plain © Iain Perkins

For the Imber Conservation Group (ICG), 2013-14 has been a year of continued progress in many areas with some notable successes. Amongst these have been; the series of well attended familiarisation walks and a Warminster Danger Area Bio blitz organised by Andrew Bray; the re-emergence of limited scrub clearing in support of conservation projects as a major activity, effectively led by Andy Palmer; the installation of swift boxes in Tilshead water tower by the Owl and Raptor Group.

The ICG Ornithology group supported PhD student Jenni Taylor with her whinchat surveys and continued their annual winter (before dusk) hen harrier survey to identify potential new roosts in the west with teams braving the cold.

Imber Church continues to be popular with further work being done to maintain the churchyard, all under the overall direction of Neil Skelton.

The church really is attracting a lot of interest these days particularly at Easter and Christmas.

ICG assisted DIO with the 'Horseshoe Vetch Project' that undertook experiments to establish best practice for the translocation of this larval food plant for the adonis blue butterfly, which involved seed collection, sowing, (both in-situ and off-site) and transplanting plant-plugs and fully grown plants to enhance the butterfly's distribution across the Plain. A similar project that involves members collaborating with Natural England and Butterfly Conservation Trust (Wiltshire Branch) is now underway to collect seeds and grow cowslip plant-plugs to plant out to promote the duke of burgundy in an area where scrub was recently removed.

We have seen a welcome return of moth nights with Michael Smith, our longest serving member (part of the original group in 1977) and county

recorder of micro moths, arranging a hunt for Brighton Wainscott over four weekends in summer 2013. Alas this 'thought to be extinct species' was not found, though over seventy other species were recorded in one evening - a highly commendable total reflecting the quality of the habitat. Of particular interest was the presence of the very attractive garden tiger and declining lappet.

Species recording is as important as ever and 2013-14 saw an improvement in our performance (over 3500 individual records) using our website, this is sent onto the DIO ecology team to assist with the management of Salisbury Plain and also shared with the Wiltshire Biological Records Centre and other specialist organisations nationally.

The ICG would like to express its thanks to Landmarc and Aspire Defence for their support over the last few years – it makes such a difference when income is very limited.

STOP PRESS: The award of the Silver Otter to our Owl and Raptor Group is richly deserved, and we are thrilled. We are delighted too that the Individual Award has gone to Paul Castle, an award that also recognises years of valuable ornithology in support of all three conservation groups on the Plain. Finally, the Op NIGHTINGALE Award to Richard Osgood will please all those volunteers across the Plain who do so much for archaeology, both ancient and 'modern'.

Lt Col (Retd) Mike Jelf
Chairman
Imber Conservation Group



Wiltshire

Larkhill and Westdown



Dark green fritillary on tuberous thistle © Dick Clayton

After a fine summer and autumn in 2013, the winter brought continuous heavy rain over long periods on Salisbury Plain. Many of the slow winterbourne streams on the Plain became wide, fast flowing rivers which have flooded many of the surrounding villages. This has had a significant effect on the wildlife in low lying areas.

The new LWCG Chairman, Tony Rowlands, arranged a successful Ecology Day in July to explore Penning Down. Tony treated members to a masterly explanation of the origins of Salisbury Plain and its geological and agricultural history from the Cretaceous Period to the present day. The botanists identified several interesting downland plants including tuberous thistle *Cirsium tuberosum* and squinancywort *Asperula cynanchica*.

Many butterflies were seen including dark green fritillary *Argynnis aglaja* and marbled white *Melanargia galathea*. After a picnic lunch, members were given a barn owl ringing demonstration by Maj (Retd) Nigel Lewis and then visited the Great Bustard project.

The Archaeology Sub-group under Mark Khan has been very active excavating a Spitfire Mark 1a that crashed at Upavon Airfield in October 1940 following an attack by a Messerschmitt Bf110. This project is part of Operation Nightingale, a project to provide recovery and learning opportunities for soldiers returning from Afghanistan. Significant parts of the aircraft were recovered by the team, which included members of 5 and 6 Rifles and the RAF.

The Ornithology Sub-group had a very successful year trapping 2679 birds of 39 different species at Westdown; the highpoints were a great reed warbler and a pallid harrier in September. Many early nests failed but once the warm weather arrived in June, replacement clutches and second broods were very successful and the breeding season continued through the summer into the autumn.

It turned out to be a record year for juvenile birds caught and ringed, but the downside was the late season; we were still catching young birds well into October, many of which were underweight and unlikely to survive the rigors of migration.

Already in 2014, good numbers of breeding tawny owls, little owls and kestrels have been found on the Plain with high egg counts. It is still early for

barn owls but it is hoped that they also will do well this year.

Members have continued to contribute to the DIO Salisbury Plain Butterfly Survey during the year, concentrating on the priority species including the chalkhill blue. DIO aim to produce a Butterfly Atlas showing the distribution of species on the Plain.

Finally, yet another year of lengthy wet weather spells has probably taken its toll on the native roe deer on the Plain, reports Deer Manager Matt Wilcock. In April the deer were still showing their dark greyish winter coats. Unlike 2013, the winter has not been so cold for the deer, but the heavy rainfall must have affected the populations' ability to forage. Roe deer spend almost 24 hours a day in some form of food gathering activity whether it be actively foraging and feeding, or just ruminating. A severe change in weather may have a profound effect on their important feeding cycle. The Deer Management Sub-group will continue to observe and record effects on the fecundity rate during the year.

Lt Col (Retd) Richard Clayton
Conservation Group Secretary



Male roe deer © Crown



East Yorkshire

DST Leconfield Carrs

Following up on an earlier lead, the BBC Countryfile team made contact with the conservation group to plan a programme around activities and projects taking place at the Defence School of Transport (DST) Leconfield, in East Yorkshire.

After much discussion and a site visit, we decided to feature the balance of nature with what is a very busy training area, along with Operation Turtle Dove, bird netting, and some innovative deer surveying.

The team, including presenter Julia Bradbury were with us for three days, and whilst ferrying the researcher to where the filming was taking place, we had to wait patiently for a roe doe to cross the road. Ironically this would prove to be the best opportunity to see any of the deer during the visit.

Julia was hosted by a number of instructors, giving both her and viewers a flavour of the myriad of vehicle types and terrain on the site. She also spoke with Comdt DST Col Rob Peacock about recent events in Afghanistan relating to these vehicles.

Chris Tomson from the RSPB was interviewed regarding Op Turtle Dove. The turtle dove *Streptopelia turtur* is our only migratory dove species and numbers are in serious decline, due partly to persecution during its migration through Europe and Africa as well as lack of habitat and food during their short breeding season. Op Turtle Dove is a RSPB project to try and improve the birds fortunes by offering expert advice on improving habitat and food sources. DST Leconfield has ideal habitat for these birds, and is fortunate



Turtle dove *Streptopelia turtur* © Dave Kjaer

to have had them returning to the site for a couple of years. During the interview one could be heard purring from a nearby tree, but remained camera shy throughout, much to the frustration of the BBC crew.

The programme also featured bird netting and ringing from a team comprising members from all four services. Lt Col Roger Dickey, Gp Capt Martin Routledge, Lt Cdr (Retd) Julia Springett, and Chief Petty Officer Mark Cutts, set up the nets over a couple of days and managed to ring quite a few birds including whitethroat and long tailed tit.

Then onto the main event, utilising the infra-red camera on board a Sea King helicopter to track the location of the deer population, in an exercise lovingly labelled as Op Bambi by Sqn Ldr Stu Gwinnutt, OC E Flt 202 Sqn RAF.

The operation continued on the ground with instructor Jason Figgitt and a number of willing volunteers accompanying the BBC crew using Lucie 2 night vision goggles. The conservation team had recorded

great success prior to the visit, but on the day were beaten by atrocious weather conditions.

Meanwhile Dr David Chesmore and I were attempting to conduct some moth trapping. Whilst we featured briefly on the footage from the Sea King, our efforts were again thwarted by the weather, although the advantages of Lucie goggles were noted for future events.

Later in the year I hosted a bat survey by Geoff Wilson and members of the East Riding Bat Group. Using bat detectors we started surveying around the site buildings first, picking up both pipistrelle *Pipistrellus pipistrellus* and soprano *Pipistrellus pygmaeus*, then moved out onto the training area, where we identified daubentons *Myotis daubentonii* skimming the lakes, and a lone noctule *Nyctalus noctula* flying high.

Alan Bakewell MCM
Conservation Officer



North Yorkshire

Catterick Training Area



Lapwing chick about to be ringed © Crown

Reasonably clement weather as opposed to the cold, wet and windy springs of the past few years have brought real benefit to the wildlife and natural environment at Catterick. Lush grasses and plentiful wild flowers have sustained a variety of insects, which in turn have provided a welcome food source for many young mouths during a productive nesting season. Numbers of occupied nest boxes have been better than average and more importantly productivity in the nest boxes has been significantly higher.

Frogs and toads have spawned in large quantities and were noted leaving the ponds as transformed beings, in droves, early in July.

Botanically it has been tremendous with hundreds of orchid spikes in evidence and other less widespread species appearing in areas where they had never been seen before. Members of the conservation group and the Foxglove team have been out walking trails with some of the best butterfly and dragonfly results in recent years.

Moth trapping has taken place on a weekly basis with some very satisfying results and new or rarely-recorded species in the egg boxes. The number of species of moth recorded now is 503.

On the bird ringing front it has been a productive year although there was an obvious lack of adults early on and some of the smaller warblers took a hit during a really wet spell in late May/early June. It doesn't take much to flood out chiffchaff and blackcap nests, and the willow warblers and garden warblers suffered a similar fate. Young black grouse have been seen in small groups, meadow pipits and skylarks are thriving, and the success of tawny owl and kestrel nest boxes has more than doubled what they achieved last year with more than 50 of the former and 60 of the latter being ringed. Lapwing have been more abundant than in recent years and the range bases have seen five species of waders breeding well.

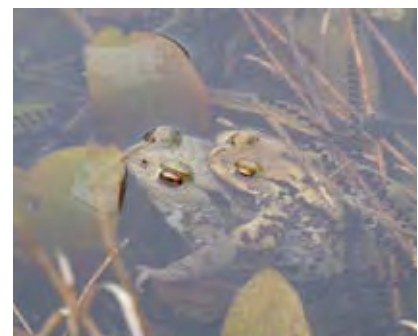
The conservation group's aspirations to produce a book on the History of

Catterick Training Area was conceived several years ago and finally this idea has become a reality. With the support of DIO funding and the establishment of an editorial team the book has now been published.

Entitled 'From Farms to Arms – The History of Catterick Military Training Area', the book is richly illustrated throughout with archive photographs, military maps and images of the remarkable Dales landscape in which the training area is situated. The book will be available at a break-even price of £10, which will cover the cost of the printing. The hardback publication running to 136 pages is designed to meet three objectives: to commemorate the centenary of World War I, to mark 100 years of military training at Catterick, and to celebrate the achievements of the Catterick Conservation Group.

The book is available on request from the Executive Officer, DIO SD Trg North at Wathgill and cheques should be made payable to 'DIO SD Trg North Fund'.

Maj (Retd) AJ Crease
Deputy Commander
DIO SD Trg North



Toads making the most of the warm spring © Crown



North Yorkshire

RAF Fylingdales



RAF Fylingdales © Mike Kipling NYMNP

Landscape at Heart

In September 2013, over 100 people from across the UK met in the North York Moors National Park to talk about landscape, discussing what it means to people and how it inspires.

Delegates representing the UK's 15 National Parks as well as Areas of Outstanding Natural Beauty and other conservation organisations including Natural England and the Environment Agency, visited iconic places in the North York Moors to consider their significance to the landscape of the National Park.

One group headed to RAF Fylingdales and the neighbouring moorland of the same name, to look at the different layers of history which make up the landscape – from prehistoric to the present day – and to discuss whether they are equally important and how they should be managed.

Fylingdales Moor is managed by the Hawk and Owl Trust purely for wildlife and public enjoyment. At first glance it seems to be a place relatively untouched by man, but an extensive fire in 2003 revealed both previously unknown prehistoric rock art and 20th century military activity. Jugger Howe on Fylingdales Moor was one of the principal static firing ranges of World War II and unexploded shells are still found on the site today. Shell craters pock-mark the landscape and aerial photographs show the surface criss-crossed with tank tracks.

These signs of our military past were contrasted with the current defensive need for RAF Fylingdales. The group enjoyed a very informative visit to the base; learning about its dual function as a ballistic missile early warning system and in tracking space debris and felt there was still an overriding need for it. They also heard about the positive

working relationship that RAF Fylingdales has with the North York Moors National Park Authority and the good work carried out to conserve and enhance the protected moorland surrounding the base.

There was much discussion around the potential conflicts between the desire to preserve the natural beauty of a place like the North York Moors and a national need for defence infrastructure. The group also considered whether arguably iconic military structures could contribute to an area's sense of place.

Looking at what remains of previous military activity on Fylingdales Moor, in some cases little more than a concrete base, they discussed how something which may harm one person's enjoyment of what they see as a wild landscape, to another – an archaeologist for example – is an important marker of our social history.

Andy Wilson, Chief Executive of the North York Moors National Park Authority, said: *"Whereas National Parks elsewhere preserve supposed wildernesses, many having displaced indigenous peoples in an attempt to free the land of human influences, Britain's National Parks have led the way in showing how vibrant, lived-in landscapes can be both protected and evolving."*

Kevin Phillips CMIOSH, MIIRSM
Station Safety and Environment Advisor
RAF Fylingdales

Rachel McIntosh
Communications Officer
North York Moors National Park Authority



North Yorkshire Ripon Parks



Tawny owl ringed on 16th October 2013 at the Copse © EDRG

The cold, late spring of 2013 delayed vegetation growth at The Dubb, a small, seasonally wet area of willow and hawthorn. But with the warmer weather, the willows grew rapidly, well above the level of the mist nets used by members of East Dales Ringing Group (EDRG). With agreement from Natural England (the site is part of the larger Ripon Parks SSSI) and MOD, an enthusiastic team descended in early December 2013 to coppice the willows on the eastern boundary. This was complemented by a further visit in January 2014 when some larger, unmanaged willows were finally brought under control. Shorter willows with vigorous growth are more

attractive for both feeding and nesting to migrant breeding species, such as willow warbler, blackcap and chiffchaff. Additionally, resident breeding species such as reed bunting will benefit from the management. We await the 2014 breeding season with anticipation.

Water levels in The Dubb delayed the start of ringing activities in summer 2013 – thigh waders would have been required to access several 'rides' where mist nets were positioned! Late summer and early autumn saw large numbers of warblers passing through the area on migration, working their way through the adjacent woodland. Between late July and early October 79

chiffchaffs were ringed (the greater majority being juveniles). Interestingly, several ringed at The Dubb in mid-August, were still present, two weeks, even a month later, taking time to put on fat for the long journey to Africa (some chiffchaffs now over-winter only as far south as Cornwall!). Fewer willow warblers were caught in 2013, just 48 (compared with 70 in 2012), numbers being affected by the delayed breeding season. Finally, a late blackcap was ringed on 29th October, caught in the adjoining copse, amongst a catch of thrushes, using 'elevator nets'.

The elevator net poles (copied from a Swedish example), designed to be able to hoist mist nets high into the tree canopy, were positioned in a hawthorn copse adjoining The Dubb. When operating at full capacity, depending on available manpower, six 18m mist nets can be used, radiating in three different directions.

Target species were migrant thrushes, which arrive from Scandinavia in mid-October to over-winter in the UK and are particularly attracted to the open pasture of Ripon Parks for feeding once the berry crop has been depleted. Between mid-October and mid-December, 278 redwing were ringed, with a supporting cast of 11 blackbird, 9 song thrush and 4 fieldfare. In total, 424 birds were caught using the elevator nets, including a lesser redpoll ringed in Nottinghamshire in January 2013.

Jill Warwick
Ripon MOD Conservation Group and
East Dales Ringing Group



North Yorkshire

Strensall Common



Willow warbler with food at Strensall Common © Peter Reed

Strensall Common is the only English site for the dark bordered beauty moth, a Red Data Book species. It flies by day, mainly in July, and over the last few years numbers have declined, both on a monitoring transect and also elsewhere on the site. Eggs are laid on creeping willow, a low-growing shrub, where they overwinter before hatching in May about the time that the willow produces its new leaves. The caterpillars are ready to pupate by late June, a cocoon is formed in the leaf litter at ground level, and after about three weeks the new adult emerges.

In recent years there has been a very striking decline in creeping willow, in both number and size of plants, in most areas of the Common, and it is very likely that this is the main reason why moth numbers have suffered. There is no firm evidence for what is causing the willow's reduction, but

grazing and recent very hard winters, or a combination of these, are possible candidates.

The introduction of some fenced areas to protect the food plant from grazing is being considered. These 'exclosures' would be placed in areas where the moth still occurs, and they need not be very large. Trials have been undertaken by Butterfly Conservation, rearing creeping willow in cultivation with a view to supplementing the plants in the exclosures. The initial results are very promising. Cuttings were taken from naturally growing willows at Strensall, and 36 of 60 cuttings taken in winter were successful; rather fewer summer cuttings succeeded. Many cuttings flowered within one to two years. Plants are either male or female, and the females produced seeds following cross-pollination by bees or other insects. Fresh seeds were placed

on damp compost, and high levels of germination occurred within a day, which suggests that viability of seeds might decline rapidly in storage.

The bird-life of Strensall Training Area is continually monitored by the local Conservation Group and in 2014 the annual survey was carried out in late May, when good numbers of the usual resident and migrant breeding species were recorded. Although cuckoos are declining in other parts of the country, good numbers were again frequent, re-confirming the suitable management of the site for this evocative summer visitor. A pair of buzzard were also regularly seen and the black-headed gull colony on the 'butt pools' appeared to be thriving, which is very encouraging for an inland breeding colony. Good numbers of warblers, finches and skylarks were found although stonechats have not yet returned since their disappearance in the hard, snowy winter of 2009/10.

Woodlark at the northerly edge of their range are also present with about four pairs each year. Long-eared owls can be elusive and not recorded every year but in early June three young were located by their characteristic 'food-begging' call in the pines and some young tawny owls were also heard. The training area is also frequented by passage migrants and hen harrier and great-grey shrike have been seen in recent winters.

Terry Crawford
Lepidopterist

Peter Reed
Ornithologist
Strensall Conservation Group



Germany

Senne Training Area



Senne heather © Crown

This year marks the 30th anniversary of the formation of the 'Environmental Working Group - Nature and Military in the Senne Training Area'. Its mission: to conserve the variety of habitats within the training area, protection of the rich diversity of wildlife and rare species that live in the Senne whilst optimising military training activity.

The Environmental Working Group meets annually and is chaired jointly by the Commander of the British Military Training Estate in Germany, the Head of Environment for the Detmold District Government and the Heads of the Federal Forestry and Estate Management Departments in North Rhine Westphalia. Other members come from the British Forces, Federal Authorities and local environmental agencies, together with voluntary specialists including a botanist, entomologist, ornithologist and hydrobiologist that provide expert advice to the managers of the estate.

In addition to advising on the stewardship of the training area, the

Working Group assists with nature conservation measures, including the mapping of flora, fauna and habitats, the maintenance and development of these habitats and the specific protection of species.

Before the 1980s, information on nature in the Senne was somewhat sparse, due mainly to restrictions on access to military land. However, with the formation of the Working Group, a systematic mapping of the training area began to obtain comprehensive and current data on the quantity and quality of species and habitats. All types of flora and fauna were examined, along with the monitoring of heath, grassland, forests and streams.

The characteristic open areas of heath and grasslands that make-up this historic and cultural landscape were formed by a thousand years of livestock farming on poor, sandy soils and protected from ever more human pressure as a result of military activity over the last one hundred years or so. A principle goal of the Working Group is

to ensure that the maintenance of the land, while primarily in support of military training, continues to sustain the diverse, indigenous fauna and flora adapted to these open area habitats by, e.g. the introduction of heath sheep and the control of forestry succession.

In addition, the group assists in meeting obligations inherent in Natura 2000 nature conservation designations, as well as responsibilities arising from other National or European environmental law, such as the Water Framework Directive leading to the removal of artificial reservoirs from the Senne (see Sanctuary 2013).

The Working Group has applied measures to support endangered species, erecting specialist nest boxes for owls and bats, platforms for storks and establishing steep banks on streams to help kingfishers. Fields are also set-aside and areas fenced to conserve orchids and other rare plants, such as arnica, juniper and the rare pasqueflower.

The Environmental Working Group can be justly proud of its last 30 years and is another example of the excellent cooperation that exists between the British Forces, Host Nation authorities and local conservationists. It is further proof of how military activity along with sustainable environmental practice serves to protect and enhance nature on military training areas.

Mark F Johnson MSc
Land Management Services
Defence Infrastructure Organisation



Gibraltar

British Forces Gibraltar

This has been a successful year in Gibraltar; since the launch of the conservation group and signing of the Integrated Rural Management Plan (IRMP) last year there have been regular quarterly meetings allowing key parties to openly discuss a wide range of issues. This has involved visits around the estate including most recently a trip into REME Caves (old MOD workshops and stores). This has strengthened the relationship between the MOD, the Government of Gibraltar and NGO's of Gibraltar; in fact it has been noted by the Government how beneficial this forum has been.

To gain a better understanding of the ecology and historic estate and enable further delivery of the IRMP, the MOD commissioned surveys and whilst we are currently awaiting the results of these base-line surveys – early indications look positive including several extremely rare plant species having strong holds in the area.

A single plant of a fern very rare in the region, *Asplenium sagittatum*, was found growing on a rock face at Glen Rocky; only one record of this plant in Gibraltar exists, recorded in the 1960s.



Barbary partridge © Clive Finlayson (Gibraltar Museum)

Rock Gun artillery battery, located on the north face of the Rock of Gibraltar holds the most important population of Gibraltar saxifrage *Saxifraga globulifera var. gibraltarica*, and therefore its stronghold globally. All stands were mapped, with over 600 plants recorded. The limestone cliffs and rocky outcrops provide the perfect habitat for many other interesting plant species such as Gibraltar campion *Silene tomentosa*.

Findings such as these build on our understanding of the estate within

Gibraltar and its importance for protected species, habitats and buildings of importance which make this charismatic part of the Mediterranean unique.

In addition, the MOD is hoping to assist the Government of Gibraltar on its project to improve the breeding success of the barbary partridge *Alectoris barbara* within the Peninsula; the barbary partridge is the National Bird of Gibraltar. On an undisturbed part of the MOD estate the Government of Gibraltar, working with the local NGO (Gibraltar Ornithological and Natural History Society), plan to release barbary partridge's, as part of a captive breeding programme, into a small enclosure to enable normal behaviour whilst providing limited supplementary feeding. We are looking forward to seeing this project in action and hopefully more breeding partridges within Gibraltar as a whole.

Nicolas Andrews-Gauvain
Environmental Advisor
Overseas Environmental Team
Defence Infrastructure Organisation



Woodbine cigarette packet found during an archaeological base-lining survey of the MOD estate in Gibraltar - illicit smoking was as much of an issue then as it is now © Melissa Conway, Ramboll Archaeologist

CONSERVATION TEAM UPDATE

Richard Brooks Principle Conservation Manager



Dominic Ash © Crown

Congratulations Dominic

We would like to congratulate DIO Senior Ecologist Dominic Ash on his nomination for the Chartered Institute of Ecology and Environmental Management (CIEEM) Outstanding Professional Award and being highly commended for his contribution to nature conservation in the UK.

Since joining the MOD in 1995, Dominic has applied his deep understanding of ecological processes and excellent field skills to further the conservation of military training areas, most especially Salisbury Plain Training Area.

He has used this knowledge to determine mitigation strategies for EclAs, EIAs, Habitat Regulations Assessments and SSSI assents for hundreds of projects.

Dominic is a bird specialist and has worked closely with the RSPB and other parties on the Wessex Stone Curlew Project to improve the breeding success of these birds which are now increasing in numbers.

His personal commitment means he has undoubtedly 'gone the extra mile' to promote biodiversity and increase our understanding of wildlife across the MOD estate.

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

The Infrastructure Professional Services Conservation and Environmental Planning Teams provide in-house expertise to DIO and the wider MOD by providing specialist advice and guidance in the fields of:

Access and Recreation

- Technical and legal support on access and recreation legislation and management of the public on the MOD estate. Provides part of the 'Safe Place to Train' assurance

Forestry and 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 to support 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

Sustainable Development Support and Environmental Planning

- Advice and support regarding the implementation and integration of sustainable development and environmental planning best practice into estate management

The Conservation Team 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 2015 Sanctuary magazine and to consider putting forward projects and individuals for the 2015 Awards.

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.



Lydd Ranges © Crown

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.

Operational Development and Coherence

The ODC Infrastructure Professional Services (IPS) team provides professional support to the MOD. IPS acts as a focal point for all environmental needs and enquiries across the estate providing a dedicated team of professional experts in a variety of environmental disciplines.

DIO Infrastructure Professional Services

Building 21
Westdown Camp
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Salisbury SP3 4RS
Tel: 01980 674704

IPS Natural Environment Team

Tel: 01980 674820

IPS Historic Environment Team

Tel: 01980 674718

IPS Sustainable Development Support

Tel: 01980 674866

IPS Environmental Planning Team

Tel: 01980 674665

IPS Access and Recreation Team

Tel: 01980 674782

IPS Scottish Environmental Liaison Team

Tel: 01383 648042

IPS Forestry Team

Tel: 01980 674766

SD Energy, Utilities & Sustainability Team

The SD 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 2423

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



Knapweed Broomrape © Crown

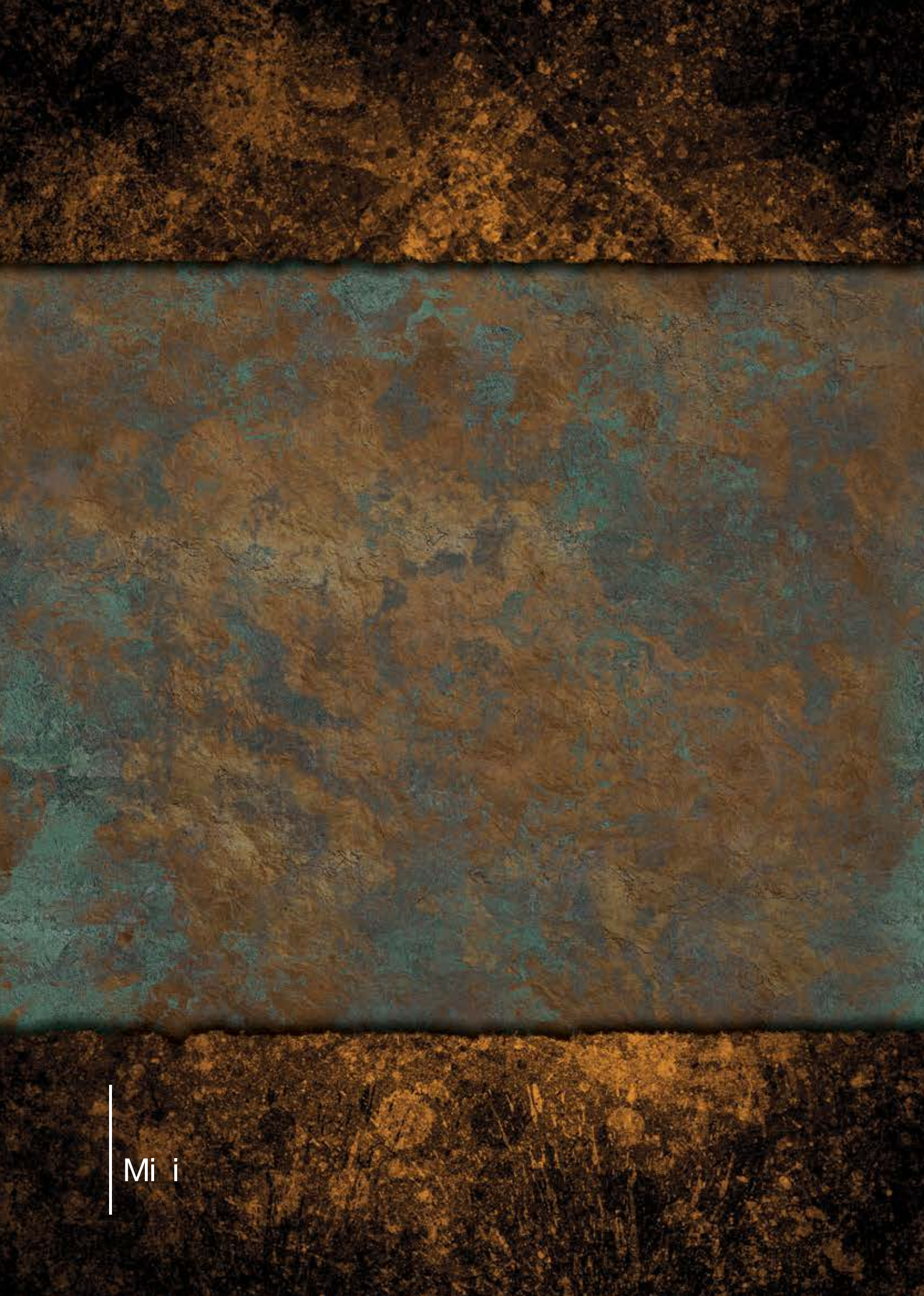
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Sennybridge Training Area © Crown

Cover image: A 6th Century Anglo-Saxon button brooch. The artefact depicts the snarling face of a possible warrior in a helmet and is made of copper alloy, covered in gold leaf. The brooch was one of a pair found in the grave of a young, high-status, female who also had the remnants of a cosmetic brush, square headed brooch, rings and bead necklace with her. This brooch was found during the excavation at Barrow Clump, Salisbury Plain.



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