SANCTUARY

THE MINISTRY OF DEFENCE CONSERVATION MAGAZINE

Number 40 • 2011

Defending Development

Recreating the Contemporary Operating Environment

Satellite tracking gannets

Bempton Cliffs, East Yorkshire

Help for Heroes

Tedworth House

SANCTUARY

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Cover image credit
Winner of Conservation Group Photography Competition
Melita dimidiata © Miles Hodgkiss

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

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

Conservation Group **Photography Competition**

King penguin at Paloma Beach © Roy Smith

This is the second year of the MOD Conservation Group photographic competition and yet again we have had an excellent response with many wonderful and interesting photos. The Sanctuary board and independent judge, professional photographer David Kjaer **(www.davidkjaer.com)**, had a difficult choice but the overall winner was a superb close-up photograph taken by Miles Hodgkiss, a member of Imber Conservation Group, of mining bees *Melitta dimidiata* exhibiting a rarely recorded drone roosting behaviour on Salisbury Plain. This extraordinary image fully deserves the pride of place on the front cover of this years Sanctuary!

The runner up, which can be seen on the back cover, was a barn owl captured in flight, framed beautifully by an old window. This photograph has great initial impact and a lovely image to take! The image was captured by Hugh Clark from Pippingford Park Conservation Group.

Highly commended was the photograph above of a king penguin at Paloma beach, Falkland Islands, taken by Roy Smith from Falklands Conservation Group. Apparently, there is a story behind this, the penguin came out of the sea walked towards the photographer and posed for a few minutes to enable this photograph to be taken. It then turned tail and walked back into the sea!

This years competition has been a great success and we shall be running the competition again next year, so keep your cameras at the ready!

Foreword by **Andrew Manley**
Chief Executive Defence Infrastructure Organisation

I am delighted to have the opportunity to contribute to Sanctuary as it reaches a milestone with its 40th edition. I continue to be impressed by the range of activities undertaken by the Department to support the stewardship of the MOD estate and to sustainably manage our Defence activities.

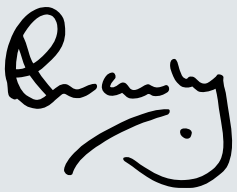
This edition comes at an important time for the Ministry of Defence. The results of the Strategic Defence and Security Review are transforming the way MOD does its business, including the management of its estate. Sustainable development is an essential part of these changes and delivering Defence in the most effective, efficient and sustainable way is one of the key priorities in the Defence Plan. Over the next couple of years, we will see a transition as the newly-formed Defence Infrastructure Organisation manages the estate and the next generation of estate contracts with our industry partners.

I would particularly like to draw your attention to the articles "Defending Development", "Taking Flight over the Wash" and "Avoiding Collateral Damage", which show some of the ways we are integrating an evolving military requirement with the sustainable management of the estate to directly support operations such as Afghanistan and Libya. I am glad to see *'Working in partnership'* as a theme for this edition; it has been a key approach within the MOD for many years. It is essential at every level of Defence business, whether on operations, or working with the estate suppliers; from projects to reduce energy consumption to initiatives to protect valuable wildlife with non-governmental organisations such as Pond Conservation; and to the largely unseen, yet hugely important, individual contributions of the MOD Conservation Group volunteers. The articles in this edition show both the range of partners who help the MOD to manage the estate and the myriad of projects underway for its stewardship. My thanks go to our estate suppliers for their generous sponsorship of this edition.

The photography competition for the Sanctuary front cover had some excellent entries from Conservation Group members. The winning image, showing some rare mining bees *Melitta dimidiata* on Salisbury Plain, shows that the MOD estate continues to support and protect important wildlife as well as delivering the Defence requirement. It also highlights the ongoing enthusiasm for what I consider to be a superb and unique part of the government estate. I would also like to congratulate the Sanctuary and Energy Award winners and runners up - their enthusiasm and drive sets a standard for others to follow.

Andrew Manley, Chief Executive Defence Infrastructure Organisation
© Crown

Finally, my thanks go to the production and design team for another superb edition. I hope you will enjoy reading the 40th edition of Sanctuary magazine.



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The **Sanctuary Awards**

The aim of the Sanctuary Awards is to recognise and encourage group and individual efforts that benefit 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 2011 Awards were divided into four categories: Environmental Project, Heritage Project, Sustainability Project and Individual Achievement. The winners of each category are considered for an overall winner and receive the coveted Silver Otter for one year.

The Sanctuary Award Board

The Sanctuary Award Board for 2011 were from Defence Infrastructure Organisation: Martin Coulson, Deputy Head (Policy), Alan Mayes, Deputy Head (Secretariat), Pippa Morrison, Senior Policy Advisor, Ian Barnes, Principal Environmental Advisor and from the Joint Nature Conservation Council Marcus Yeo, Chief Executive who acted as external judge.

ENVIRONMENTAL PROJECT AWARD **WINNER** **SILVER OTTER WINNER**

Castlemartin Access Project

Bullslaughter cliffs on Range East Castlemartin Range © Crown

The Castlemartin Access Project was instigated following consultations on improving access to the range led by Defence Training Estates Headquarters and the Access and Recreation Team from Defence Infrastructure Organisation's Environmental Advisory Services. The Castlemartin Range Trail (CRT) was created to provide a 10km stretch of multi-user path around the northern boundary of the range thus enabling users of the Pembrokeshire Coast Path to remain off-road at all times. Prior to its existence users were forced to use dangerous narrow lanes around the ranges. The multi-user trail can be used by walkers, horse riders and off-road cyclists and has the added benefit of giving great panoramic views of the range and the Castlemartin coast; and by linking with existing rights of way the CRT also provides a circular route around Range East during non-firing periods.

The Award Board was enormously impressed by the achievement of the team and the wide engagement support from the local community. The excellent outcome of this project exemplifies MOD's commitment to public access where safe and appropriate and provides public access, local community and biodiversity benefits. It has achieved bringing the military authorities, Defence Infrastructure Organisation, the Welsh Assembly Government, Countryside Council for Wales, the National Park, our tenant farmers, our contractors and the community together to a position of agreement. The judges also noted that the route has quite rightly earned a place in the *"All Wales Coastal Path"*, and is a very worthy overall winner.

To find out more about this project please see the article on pages 10 - 12.

Lyserry gate with flowers and red flag © Crown

ENVIRONMENTAL PROJECT AWARD **RUNNER UP**

Cadet150 Tree planting project

The cadet movement as a whole (Army Cadet Force, Combined Cadet Force, Sea Cadet Corps and the Air Training Corps) comprises 131,000 young people and 25,000 adult volunteers in over 3,000 locations the length and breadth of the UK and 2010 marked the 150th anniversary of the MOD-sponsored cadet forces. As part of the cadet movement's commitment to the development of good citizens and work in the community, a partnership was formed with the Woodland Trust to plant 150,000 native trees all across the UK over the course of the Cadet150 celebrations. The first plantings took place in autumn 2009 and the final target was reached in April 2011.

The Award Board was impressed by the way the Cadet Forces have worked in partnership with the Woodland Trust, landowners and local communities to plant a phenomenal 150,000 trees around the UK. This is an excellent example of young people working together and is to be applauded for the positive messages in the local communities and in media coverage. The judges also recognise that a new world record of planting 20,436 trees in one hour was set during this project – a great achievement.

Cadets dig in, only 149,999 trees to go! © Crown

ENVIRONMENTAL PROJECT AWARD **HIGHLY COMMENDED**

Cawdor Barracks Conservation Project

Cawdor Barracks Conservation Project is now in its fourth year and aims to continually improve its contribution to all conservation matters within Cawdor site. Projects include skylark surveys, habitat improvement to benefit the shrill carder bee, creation of wildlife wood piles and grazing in partnership with the National Trust.

The Award Board was impressed by the initiative of the team to build relationships with the Bumblebee Conservation Trust, National Trust, and Birch Utilities, and the success in minimising costs that this delivered. The judges also noted the dedication shown by the team and by Rhodri Kemp, in particular, over the last four years of this ongoing project.

Captain Karen Thomson (Unit Safety & Environmental Advisor) with the National Trust after releasing the ponies © Crown

SUSTAINABILITY AWARD **WINNER**

DIO and Debut - RM Instow Site Development

Solar panels one of the projects many energy saving measures © Debut

The aim of this project was to provide new vehicle dip tank facilities, living accommodation, catering amenities, armoury, magazine stores and to demolish existing structures that were no longer required. The main role of 11(ATT) Sqn at Instow is to develop and trial beach plant, recovery vehicles, landing and raiding craft. The establishment also trains personnel in waterproofing and deep fording of vehicles. The new training facilities at Instow have sustainability at their core; from design through construction and subsequent operation; careful integration of energy and resource saving design ensured the building kept its environmental impact to a minimum and reduced overall running costs.

The Award Board was enormously impressed by the use of multiple energy efficient methods in the design, together with energy saving practices during construction, despite the team being challenged by two floods and a deep freeze. The judges recognise the programme management of this project to ensure that waste from demolition was utilised on site, and that the achievement of 94% diversion from landfill rate was no mean feat. The judges also note that the majority of new materials were procured from within a 50 mile radius.

To find out more about this project please see the article on pages 50 - 51.

SUSTAINABILITY AWARD **RUNNER UP**

Debut Services Bunds Project

Separator in action © Debut

The build up of rainwater within traditional oil storage tank bunds has been an area of risk to the MOD on the Regional Prime Contract South West for several years. A study was undertaken to assess the existing arrangements in place to remove bund water using tankers, which proved expensive and logistically awkward. Debut and the Defence Infrastructure Organisation have developed a mobile oil water separation plant that removes hydrocarbon contamination from bund water to enable clean filtered water to be disposed of through existing drainage infrastructure.

The Award Board was impressed by the way the project dealt with a multiple site problem of disposal of contaminated water. This is an excellent example of a sustainability project working to minimise environmental impacts. The judges commend the innovative use of the mobile separation plant to filter the water and note the proactive approach of emptying bunds as a result of a forecast of heavy rainfall.

SUSTAINABILITY AWARD **RUNNER UP**

Joint Supply Chain Service Bicester Pallet Waste Recycling Project

Joint Supply Chain Service (JSCS) Bicester is one of the two main defence warehousing and distribution sites and generates a huge amount of waste packaging every year including thousands of storage pallets. Sorting damaged pallets had been delivered in-house but changes within JSCS made this no longer practical.

Through the commercial team, the General Manager negotiated a local agreement with Alford Pallet Recycling (APR) for the sorting and removal of unserviceable pallets and scrap wood for recycling from the Garrison. Key to this agreement was that APR had to sort the waste and provide labour and transport at no cost to the authority. As part of an ongoing waste management programme at Bicester a number of new practices have been introduced to boost recycling and divert waste from landfill by 31 per cent against a target of five per cent.

The Award Board was impressed that the problem of waste pallets was turned from a cost into an income by the team working with a local recycling company for their disposal. The judges recognise the way that this simple solution has lead to further waste collection on the site and a consequent reduction in waste to landfill of 1500 tonnes and over £30,000 saved in 12 months.

A simple solution to reduce landfill © Crown

SUSTAINABILITY AWARD
HIGHLY COMMENDED

Turner Estate Solutions Integrated Welfare Facility at RAF Leuchars

The aim of this Project was to provide a Fit for Purpose, modern, centralised welfare facility for the Community Support Team at RAF Leuchars. The new community centre houses the Community Development Team, Padre, HIVE, Soldiers, Sailors, Airmen and Families Association and the Health Visitor, as well as offering multi-use activity space, external and internal play areas and a multi-faith prayer room. Located beside the nursery and multi use games area, the centre is accessible to both Service families and the wider community.

Internal play area at RAF Leuchars © Crown

The Award Board was impressed by the construction of an environmentally compliant community centre, incorporating various energy-saving methods in the design. They recognised that the project was delivered ahead of schedule and is looking toward an *"excellent"* Defence Related Environmental Assessment Method rating. The judges also noted the use of offcuts from the construction work to build bat boxes to offset disturbance from proposed future development plans.

HERITAGE PROJECT AWARD **WINNER**

Defending the Past, Cape Wrath Training Centre

Be very scared! © Crown

The aim of Defending the Past (DtP) a partnership project between Defence Infrastructure Organisation (DIO) and the Royal Commission of the Ancient and Historic Monuments of Scotland (RCAHMS), was to cultivate a mutual understanding of the cultural heritage of the military training area by the local community and with the troops who come to Cape Wrath to train.

A number of initiatives were used to engage all partners, including:

- Children from Kinlochbervie High School designing new ration packs for the soldiers after being given a standard MOD-issued ration pack.
- Designing a new milestone to replace the missing 8th mile marker on the 11 mile long public road running through the range from the ferry slipway on the Kyle of Durness which dates back to the mid 1830s.
- National photography competition to generate imagery for a set of playing cards with an environmental theme that could be handed out to troops using the training area.

The Award Board were impressed with this interesting community project, the strength of engagement with local schools and the team's promotion of Cape Wrath through the many media channels. The Award recognises the enthusiasm and dedication of the project team and commends the relationship that was built up with RCAHMS. The judges also note the team were successful in securing DIO funding and a Heritage Lottery grant for the project, which was vital to its success.

To find out more about this project please see the article on pages 18 - 19.

HERITAGE PROJECT AWARD **RUNNER UP**

World War 2 Wrecks in the Eastern Solent

Alison clearly in her element © Crown

The overall aim of the project was to investigate World War 2 wrecks in the Eastern Solent with a connection to the maritime invasion of Normandy 1944 (Operation NEPTUNE - the maritime phase of Operation OVERLORD – the invasion of Normandy by sea and the liberation of France). Alison Mayor from Southsea Sub-Aqua Club led a team of recreational scuba divers to investigate a number of wrecks in the area believed to have a D Day connection. The project developed in two phases. Phase one was to survey and record the wreck site known as the Tanks and Bulldozers (near Selsey Bill West Sussex), identify the vehicles and find out how they came to rest on the sea bed. Phase two was to look for, survey and identify the wreck of the Landing Craft tank from which the vehicles were lost.

The Award Board were impressed by this very practical project with a military history connection, and with the hard work and dedication of the team carrying out this work in their spare time over the past three years. The Award recognises Alison's tenacity and initiative in developing new skills to research and document the area and to progress the project. The judges also note that the sites have been adopted by the Southsea Sub Aqua Club under the 'Adopt a Wreck' scheme, and that English Heritage is expected to bring a test case to protect the Tanks and Bulldozers under the 'Ancient Monuments' legislation.

The underwater world of tanks and bulldozers © Crown

INDIVIDUAL ACHIEVEMENT AWARD **WINNER**

Robert Tolley

Robert Tolley © Debut

Robert Tolley, Environment and Sustainability Manager for Debut Services (South West) has shown excellent leadership and implementation skills and the judges wish to thank him for the tremendous achievement of raising awareness and changing attitudes towards the environment and sustainability. His initiatives have produced a number of 'firsts' from the first biomass boiler on a military establishment, to the first green sedum roof on an industrial military building, and his efforts in reducing waste and improving recycling that achieved a 70% reduction in waste to landfill. Robert organised Sustainable Solutions days for staff, clients and suppliers, and has involved the local community by forging links with a local school and college.

He has also organised Community Days which have involved 484 volunteers giving 3872 hours to activities such as refurbishing Hospice gardens, creating safe play areas for children with learning difficulties, and building tern nests. Robert's enthusiasm and hard work are exemplary.

By sharing his experiences and best practices around the region and by inviting representatives from other Regional Prime Contrators to conferences he has also raised awareness across the wider Defence estate.

Biomass boiler on a military establishment © Debut

INDIVIDUAL ACHIEVEMENT AWARD **RUNNER UP**

Helen Clark

The Award Board were impressed with Helen's dedication and determination shown in her commitment to spread the word on sustainability across the defence housing estate through the MODern Housing Solutions (MHS) contract. She has developed close working relationships with her company's consultant ecologist to formulate approaches to protected species, with her supply chain, and the Defence Infrastructure Organisation Accommodation team to establish a joint working group to enable delivery of sustainable initiatives. Her motivation has not waivered and the Award recognises her success in implementing a wide range of small scale projects by involving the local community in activities such as litter picking, shrub and bulb planting, and communal garden projects.

The judges also note that MHS won the Most Sustainable Private Sector Organisation in the Sustainable FM magazine 2010 Awards - an excellent result and recognised by MHS to be as a result of Helen's activities.

Helen Clark © Crown

INDIVIDUAL ACHIEVEMENT AWARD **HIGHLY COMMENDED**

Kevin Teesdale

On behalf of the MOD the judges wish to thank Kevin Teesdale, from the Military Dog Section of Catterick Barracks in Bielefeld, Germany, for his hard work over the last 14 years to preserve the wildlife areas on the Catterick estate in Bielefeld. During this time he has recruited, organised and motivated countless volunteers who have freely given up their time and effort to maintain and manage the fishing lake, memorial garden, pond and beehive conservation area.

Kevin Teesdale the conservationist © Crown

ENERGY AWARD **WINNER**

PJHQ Sustainable Development Team

Permanent Joint Headquarters, Northwood is responsible for the planning and execution of overseas operations and has over the past five years undergone a major redevelopment. Sustainable development principles including carbon management and energy efficiency have been incorporated into the programme delivered by the PFI contractors Carillion PLC.

Carillion and the MOD team worked together and delivered a range of initiatives that made carbon and financial savings, whilst maintaining military outputs. These included adjustment of the heating and air conditioning parameters; improved lighting; installation of low emission condensing boilers and replacement of a fleet of diesel vehicles with three electric buggies, two hybrid cars and two small low emission cars, all resulting in a saving of 9,723 kg CO_2.

The savings achieved under the direction of the partnership with the support of the site population have, in this year alone, realised an energy saving of 485,971 kilowatt-hour, a reduction and a saving of £28,340 in utility costs.

The team proud of their achievement © Crown

ENERGY AWARD **RUNNER UP**

Abbey Wood Green Travel Campaign

MOD Abbey Wood is one of South Gloucestershire's largest employers with future increases by 2012 as Defence Equipment and Support concentrates its business activities at the site. The site's Environmental Team have implemented the Green Travel Campaign which aims to reduce the environmental impact of commuting and business travel and relieve local and site congestion.

The team implemented a series of measures and awareness campaigns to encourage employees to use alternative means of travelling to work such as walking, public transport and cycling. Cycling facilities have been upgraded, changing room and locker facilities expanded and 800 cycle parking spaces have been provided housed within purpose built shelters. Car sharing has been such a success with staff making use of dedicated parking spaces that Abbey Wood is one of the top car sharing organisations nationally.

The Green Travel Campaign is a big success © Crown

INDIVIDUAL ENERGY AWARD **RUNNER UP**

Nicky MacNeil, Universities of Glasgow and Strathclyde Air Squadron

The Universities of Glasgow and Strathclyde Air Squadron building (UGSAS) in Glasgow, was one of the 25 sites involved in the government-wide commitment to reduce carbon emissions by 10% within 12 months. UGSAS not only met the 10% target but exceed it, achieving an incredible 50% reduction.

Critical to the site's success was the effort made by Nicky MacNeil. Nicky took the lead and engaged with the facilities management contractor and the RAF Utility Management Bureau Service to deliver a series of carbon saving projects in year in order to meet this challenging target. Projects included loft insulation, energy efficient lighting upgrades and the installation of a Grade A combi boiler. Nicky also led communication and staff engagement activities and introduced tailored heating and IT control policies.

Nicky's dedication and drive ensured the successful implementation of a local energy management strategy, without which the significant savings achieved by the site would not have been possible.

Nicky MacNeil monitoring energy usage © Crown

INDIVIDUAL ENERGY AWARD **WINNER**

Les Walshe, Energy Manager, Blandford Camp

Blandford Camp, Dorset home to the Royal School of Signals is a large and busy site, with a daily footfall of some 4,000 personnel. In 2010/11 Les Walshe, the sites energy manager was challenged by the Camp Commandant, to reduce energy consumption by 10% for that year.

With no funding for spend to save projects, Les took the initative and reviewed the effectiveness of the Building Energy Management System. By making adjustments to time schedules, optimisers, compensaters and heating/ water temperature settings he single handedly reduced the Garrison's energy consumption beyond the original target by some 12%.

Les saving energy all the way © Crown

An extraordinary 4.2 million kiloWatts of energy was saved, worth in excess of £150,000. The financial savings Les has made from improved energy management have benefited the Garrison in other ways, such as improving soldier living arrangements and training facilties.

MOD rises to the **carbon reduction challenge**

> "I don't want to hear warm words about the environment. I want to see real action. I want this to be the greenest government ever. Today, I commit us to a 10% reduction in carbon emissions across central Government in the next twelve months. You'll be driving this forward."

This was one of the first announcements made by the then new Prime Minister David Cameron back in May 2010 and set a challenging commitment on central government to reduce its carbon emissions by 10% within 12 months. As one of the largest contributors to CO_2 emissions across the government estate, MOD stepped up to the challenge achieving an excellent 14% reduction, some 9,000tCO_2 by May 2011.

But what does this reduction actually mean? Well, it is the equivalent of heating around 3,000 average three bedroom semi-detached houses for an entire year, or printing 142 million sheets of A4 paper, which would take you 13 years to complete!

For MOD the 10% challenge applied to 25 sites that make up the civil office estate and included Abbey Wood in Bristol, Kentigern House in Glasgow and various Defence Infrastructure Organisation (DIO) offices.

The headquarters at Main Building in London played a major part in several Whitehall specific initiatives, including installing a real-time energy display system which allows the building's energy use to be constantly updated and can be viewed on line at http://www.ecodriver.uk.com/MOD. Main Building also came top of the Whitehall league by making a huge 46% emission reduction over the Christmas period, saving approximately £13,000 (or 155,000kWh) worth of electricity compared to the same period in 2009/2010.

The level of hard work and initiative shown by the staff, and our facility management partners across all of the sites involved was tremendous.

They were supported by a central project team formed by staff from the DIO Utilities and Director Business Resilience Sustainable Development teams.

Key to driving this initiative forward was leadership and a clear commitment to achieve this target cascaded from Ministers right down to the individual site manager, then onto their respective staff. A range of actions were implemented and continue to be applied across the sites including:

- Adjusting heating and cooling temperatures and times
- Lighting improvements (reducing unnecessary lighting or fitting movement activated sensors and replacing existing light bulbs with energy saving ones)
- Installing energy efficient boilers
- Improvements to insulation in buildings
- Reducing the number of lifts in action
- Use of timers on electrical equipment
- Implementing weekend and holiday shutdowns
- Staff behavioural change (switching PCs and monitors off when not in use; only printing when necessary and printing double sided)

With limited funding and very little time, behavioural change was absolutely crucial to delivering the target. The word was spread throughout the sites using e-mail, display stands, town hall briefings, notice boards and posters, as well as articles in newsletters to explain the target and encourage everyone to get involved. At some sites, staff volunteered as energy wardens or green champions to raise local awareness of the project.

This however, is just the start. A new and even more challenging carbon target has been set for all government departments to reduce estate and business-related transport emissions by 25% by 2015. This new target will cover a wider scope of the defence estate and will require the MOD to build on past carbon reduction successes where a 19.4% reduction against a 12.5% target by 2010/11 was achieved a year early and apply the lessons learned from this year to the rest of the estate.

MOD's future energy reduction success will depend upon spend-to-save investment, improved asset utilisation and importantly the everyday small measures taken by all staff. Not only will using less energy save money across defence, but it will also help us meet the challenge to continue to reduce our carbon footprint.

Rebekah Jones
DIO Central Programme Office for Energy

Ministry of Defence, Main Building, Whitehall © Crown

Castlemartin **Access Project**

Colonel Richard Howard-Gash, Commander DTE Wales and West and Jane Davidson, Welsh Assembly Government Environment Minister at the opening of the Castlemartin Range Trail © Crown

For many years restrictions to public access on Castlemartin range within the Pembrokeshire Coast National Park (PCNP) has been an emotive issue. With increasing pressure from emerging coastal access initiatives in Wales, the subject was repeatedly being raised by other government departments and non-governmental organisations at a local and national level.

The Castlemartin Access Project was instigated following consultations on improving access to the range led by Defence Training Estates (DTE) and the Access and Recreation Team (ART) from Defence Infrastructure Organisation's Environmental Advisory Services (DIO EAS) as a direct result of the external pressure for improved access. The resulting study made recommendations into improving public access and a project board was established, consisting of MOD staff and external partner organisations.

Primarily, the Castlemartin Range Trail (CRT) was created to provide a 10km stretch of multi-user path around the northern boundary of the range, enabling users of the Pembrokeshire Coast Path to remain off-road at all times, even during firing periods. The route also uses some National Trust land. Prior to its existence users were forced to use dangerous narrow lanes around the ranges. This had been an issue at Castlemartin for many years and had been raised on many occasions by users, local authorities and the Countryside Council for Wales (CCW).

The multi-user trail is designed for walkers, horse riders and off-road cyclists and has the added benefit of great panoramic views of the range and the Castlemartin coast. By linking with existing rights of way the CRT also provides circular routes around Range East during non-firing periods.

The route has now been included as part of the 'All Wales Coastal Path' to be opened in 2012. This initiative highlights MOD's commitment to our policy presumption in favour of public access, where safe and appropriate, and is a great example of true partnership working across many organisations.

Alongside the CRT additional access improvements have been made:

- Two new mobile sentry posts have been provided to enable minimal closures of the cliff top path in range East during periods of limited firing enabling recreational visitors more time to enjoy Castlemartin Ranges' breathtaking scenery.
- The climber's cliff top path in Range West clearly way-marked to ensure that climbers can be certain of where the safe route runs.
- Clearer signage and information provided at the Stack Rocks Road car-park to ensure that only briefed personnel enter into Range West.
- Additional access to Range West granted to climbers during summer evenings.

The project board members have all been key to the success of this project. Since June 2008 each board member

The official opening of the CRT by the **Welsh Assembly Environment Minister, Jane Davidson, in November 2010 received wide media coverage**

has added value through their specialist knowledge and have been supported by range staff and many external organisations. Enthusiasm for the project has been huge, with support from the Welsh Assembly Government (WAG) and local individuals alike. The day to day management and delivery of the trail was undertaken by Landmarc Support Services (LSS) and local contractors overseen by the PCNP Castlemartin Ranger, who is part funded by DIO. The delivery of the CRT to tight timescales and financial constraints has required a huge amount of dedication from the project team. The enthusiasm and expectation raised externally by the promise of the CRT and other access improvements ensured that the staff involved remained very focussed on the delivery timetable, managing the expectations of many along the way. Despite many issues and difficulties that arose during the project implementation, staff remained positive and determined to deliver this high profile route. Particular mention should be made of Lynne Houlston, the Castlemartin Ranger, who was paramount to the success of project delivery on the ground.

The project has successfully managed a range of stakeholders and their objectives. The project, and in particular the CRT, has been driven by the strength and determination of all the parties and is an example of how a 'can do' attitude can overcome obstacles. Key successes of the project include:

- Path standards agreed between MOD, contractors, CCW and the National Park – all of whom had different expectations!
- A signage and waymarking strategy agreed including a trail emblem. Signage and direction indicators had to be bi-lingual (English and Welsh) to meet with funders conditions.
- Tenant farmers and graziers brought onside to ensure that their stock management enabled safe passage of the route.
- Ecological and archaeological consultations undertaken to ensure that path works were undertaken avoiding sensitive areas or times.
- Range safety inspections undertaken and additional signage and fencing put in place to ensure public safety.
- Agreement that the path should remain permissive to ensure MOD could retain operational flexibility for future training. This agreement allows for the avoidance of very wet ground found along some lengths of the CRT. Rather than engineer expensive drainage solutions, the MOD or Pembrokeshire Coast National Park Authority (PCNPA) can close wet sections of the path, diverting the path back to its original road route, to protect the route from heavy poaching and to ensure that members of the public avoiding flooded ground do not stray inadvertently into the range.
- The use of mobile sentry posts on Range East has been welcomed locally and gives the majority of casual visitors to the cliff tops far greater access on to the range. This novel management of range safety has won great favour not only with local walkers and tourists but also with climbers who have greater access to pitches.

The CRT was 100% funded by WAG via CCW and PCNPA. The original offer of 75% funding was increased to 100% when the MOD agreed to allow the CRT to become part of the official 'All Wales Coastal Path'. This is recognition of the standard of, and public interest in, the route. The additional mobile sentry posts, climbers path waymarking and Stack Rocks Road car-park signage were all funded by the MOD.

The official opening of the CRT by the Welsh Assembly Environment Minister, Jane Davidson, in November 2010 received wide media coverage. The project's progress was also monitored and reported on by BBC Radio Wales. This media coverage has highlighted not only the route itself but the wider environmental stewardship at Castlemartin range and across the rest of the defence estate. The project has

Cyclist pushing his bike at the far western end of the CRT © Crown

demonstrated to a wide audience that the MOD can, and does, work to deliver on its environmental policy in partnership with a huge variety of stakeholders.

The project has brought together a huge number of interested parties and stakeholders and delivered successfully. It has forged partnerships and built trust and awareness between each organisation as the project has developed.

It is a flagship of partnership working and is a success on many levels for all of the stakeholders and users. The path is well used and appreciated thanks to promotion by all the project partners.

Richard Brooks
DIO EAS Senior Access and Recreation Advisor

The future….Watch this space

The CRT is now the focus of a project led by the Bumblebee Conservation Trust to improve bumblebee habitat connectivity for some of the scarcest species. Habitat management and improvement will be supplemented by information and interpretation along the route making the CRT and the range a bumblebee stronghold in West Wales.

The project board which oversaw the implementation of the access project consisted of:

DIO EAS Senior Access and Recreation Advisor
Richard Brooks (Chair)

DTE Wales and West Commander
Col Richard Howard-Gash (previously Lt Col Peter Hollins; Lt Col Johnny Rogers)

DTE HQ Staff
Nigel Hayward (previously Lt Col Paul Norrington-Davies; Major Hamish Miln)

DTE Castlemartin Range Officer
Major Paul Snelling

DIO Land Management Services
Lisa Payne

Landmarc Support Services
Anna Sutcliffe

Countryside Council for Wales
Bob Haycock

Pembrokeshire Coast National Park Authority
Lynne Houlston

The National Trust
Richard Ellis

Further project support was made available from:

DIO Environmental Advisory Services staff
Castlemartin Range and Landmarc Support Services staff
Pembrokeshire Coast National Park Authority staff
Pembrokeshire County Council
Tenant farmers/graziers
Dyfed Archaeological Trust
The British Horse Society
The Ramblers
The British Mountaineering Council

CRT along the front of Merrion Camp © Crown

Castlemartin Range East Cliffs – made more available to climbers through improved access management

Defending Development

40 Commando on operations in Afghanistan © Crown

Regular readers of Sanctuary Magazine will be fully aware that much of the UK's defence estate has high importance and value for wildlife.

This is because the estate largely escaped twentieth century agricultural improvement, urbanisation and fragmentation, and many establishments stand out as islands of rich biodiversity in a sea of arable fields and urban sprawl. One legacy of this 'sanctuary' is that because natural habitats and species have declined so drastically in the wider landscape, the MOD has significant statutory responsibilities to protect and maintain its natural heritage, and potentially faces significant obstacles when it needs to develop the estate.

Recent developments on the Defence Training Estate (DTE) have mainly focused on recreating the 'Contemporary Operating Environment' for predeployment training, including networks of Forward Operating Bases (FOBs); mock Afghan villages and compounds; Counter Improvised Explosive Device (C-IED) lanes, as well as new tracks, firing points and targetry. On the test and evaluation estate there have been programmes to upgrade communications infrastructure and create new magazines to enhance safety. Airfields have had new hangars and taxiways to accommodate new aircraft, munitions depots have had new fencing, and at each of the naval bases there are new and upgraded jetties to build and berthing pockets to dredge. Many of these developments have been within designated sites, and all have had the potential to affect protected species and wider biodiversity.

Over a third of the 240,000 hectares (ha) of defence estate is designated as Site of Special Scientific Interest (SSSI), and almost all of this SSSI area is also protected as part of the Natura 2000 Network, Special Protection Areas (SPA) and/or Special Areas of Conservation (SAC). Over 30,000ha are within National Parks and 18,000ha are within Areas of Outstanding Natural Beauty (AONBs) (or devolved equivalents). Three case studies are presented to illustrate how we successfully integrate both military training and nature conservation objectives through careful planning and effective liaison between military, environmental and construction subject matter experts.

STANTA Westmere FOB © Crown

CASE STUDIES

Salisbury Plain Training Area: Baden's Clump Complex

This recently completed complex is one of many training facilities that together replicate the *"Contemporary Operating Environment"* on Salisbury Plain. It comprises nine Afghan-style compounds with 3m high concrete walls, and provides a series of tight fighting spaces, with a number of Explosive Method of Entry points. It can be used for conventional and counter insurgency training, to deliver combat team, hybrid-foundation training and mission-specific training objectives.

Despite being within the boundary of Salisbury Plain SSSI/SAC/SPA the nature conservation impact of the development has been kept low by careful choice of location. There was no species-rich grassland in the development footprint, which is almost entirely within a young, plantation. Some areas of species poor, rough grassland have been lost, but the presence of the plantations meant that the area could not be easily grazed so there was little potential for the species richness to improve. Some chalk tracks in the vicinity had the potential to support fairy shrimp *Chirocephalus diaphanus*, a SSSI species. These tracks will remain and greater usage of the area should result in increased disturbance and therefore an increase in suitable habitat for this species.

In terms of administration, the project required a Sustainability Appraisal, Habitats Regulations Assessment, Planning Permission and a Felling Licence, but was not subject to statutory Environmental Impact Assessment. Practically, a number of impact avoidance and mitigation measures were used. Removal of a few mature Scots pine *Pinus sylvestris* was required in order to construct the feature and there were records of a rare bird (listed on Schedule 1 of the Wildlife and Countryside Act) nesting in the area. However, as the majority of these trees were retained it was not felt that this would result in any detrimental impacts on this species. There were no records of any other rare birds and the nearest nesting area for stone curlew *Burhinus oedicnemus* (an SPA feature) was some distance away and not visible from the training feature. Unusually for the area no signs of badger were noted.

The only potential impact was assessed to be on the rough grassland which could support small mammals, insects and the protected species slow worm *Anguis fragilis*, and common lizard *Zootoca vivipara*. However, this impact was assessed as low in the context of the wider environment and was minimised by carefully removing scrub and bramble by hand and strimming grassland before work commenced to encourage animals to disperse. Vegetatation arisings were stacked to form habitat piles/hibernation sites at the edges of the surrounding plantations. One small area was not strimmed before work commenced so an Ecological Clerk of Works was present during the topsoil stripping.

Salisbury Plain Training Area Afghan compound © Crown

Magilligan Underslung Grenade Launcher (UGL) Range

In 2010 DTE identified urgent operational requirements for a series of new ranges for training with the Under-slung Grenade Launcher (UGL), which is used on operations in Afghanistan. After an assessment of troop location and site availability HQ DTE directed that one of the ranges should be constructed at Magilligan Training Centre (MTC) in Northern Ireland to meet the needs of 19 Bde units completing Mission Specific Training prior to deployment on Op Herrick, Afghanistan.

Magilligan Training Centre covers 911ha of dune habitats at a stunning location on the north coast of County Londonderry. The dune system is one of the largest and most important in Northern Ireland and 795ha is designated as an Area of Special Scientific Interest (ASSI) and a SAC. Any new military development therefore needs careful planning to secure assent from the Northern Ireland Environment Agency.

In order to minimise the impact of the UGL range it was based around the footprint of an existing 400m rifle range with the addition of a new main firing point, stop butts, bunds and grenade landing area. The size and shape of the new range meant there would be some encroachment on to the ASSI with 600m^2 of dune grassland potentially being lost. There were other secondary impacts associated with the project such as the risk of ground disturbance during construction and an increased risk of fire during range operations.

To ensure that there was net biodiversity gain rather than loss, control and mitigation measures incorporated into the project included allowing the bare sand bunds to re-vegetate naturally; restoring grazing across 2000m^2 within the old rifle range footprint to encourage reversion to dune grassland; and the installation of firebreaks to control the fire risk. These and other measures ensured that favourable conservation status of the fixed dune grassland was not compromised and the project went ahead to provide realistic pre-deployment preparation.

Bovington Counter Improvised Explosive Device Lanes

The Chief of the General Staff and Commander Force Development Training have directed that the British Army is to 'train as it needs to fight'. This has prompted a need to 'contemporise' the training facilities across the defence estate including those at Bovington Training Area in Dorset. Amongst the many recent training area enhancements is the construction of C-IED lanes. IEDs, also known as roadside bombs, have been responsible for 66% of casualties in the current Afghanistan conflict and preparing troops to combat this threat is an essential part of pre-deployment training. Different types of C-IED lanes are required to detect and avoid an IED from within a vehicle (mounted) or on foot (dismounted).

To provide a realistic facility at Bovington an area 40 metres long and 6 metres wide was required with a soft vehicle track through the middle. This area was excavated to a depth of 800mm and backfilled with sand. Training IEDs can then be buried anywhere within the lane to a depth of 500mm. Locating the dismounted C-IED lane adjacent to the mounted lane was important so they could be used in conjunction with each other to provide a more realistic and coherent training exercise.

Several locations were considered for the lanes but most were unsuitable because of their impact on other training activities or sensitive habitats across what is a very busy training area. The chosen location was partly within Turners Puddle Heath SSSI and the Dorset Heaths SPA and SAC. It is also an area that supports a good population of sand lizard *Lacerta agilis* a European Protected Species and so avoiding any impact on the animals and their habitat was an important consideration during the construction and operation of the lanes.

The layout of the C-IED lanes was designed to minimise the area of sand lizard habitat that was affected. Appropriate sites for storing materials and access routes for construction traffic were selected to ensure habitat was not damaged by vehicles or plant. This meant the principle impact of the C-IED lane development was the conversion of 240m^2 of dense self sown pine and underlying sand/gravel substrate to sand. The development did not damage any heathland but it did remove any potential for the restoration of heathland in the future. For this reason a small amount of mitigation was undertaken, removing self sown pine trees from a 0.1ha of heathland adjacent to the C-IED lanes. This work exposed areas of mature heather and a south facing bank to restore some good quality sand lizard habitat. In the long term the C-IED lanes themselves could become valuable breeding habitat if the IED threat is reduced and the lanes are no longer required for training.

Dr Stuart Otway
Senior Natural Environment Advisor, DIO

Oliver Howells
Natural Environment Advisor, DIO

Julie Swain
Natural Environment Advisor, DIO

Members of 63 Squadron (Queens Colour Squadron) RAF Regiment use metal detectors to check for IEDs (Improvised Explosive Devices) ahead of a patrol around Kandahar Airfield in Afghanistan © Crown

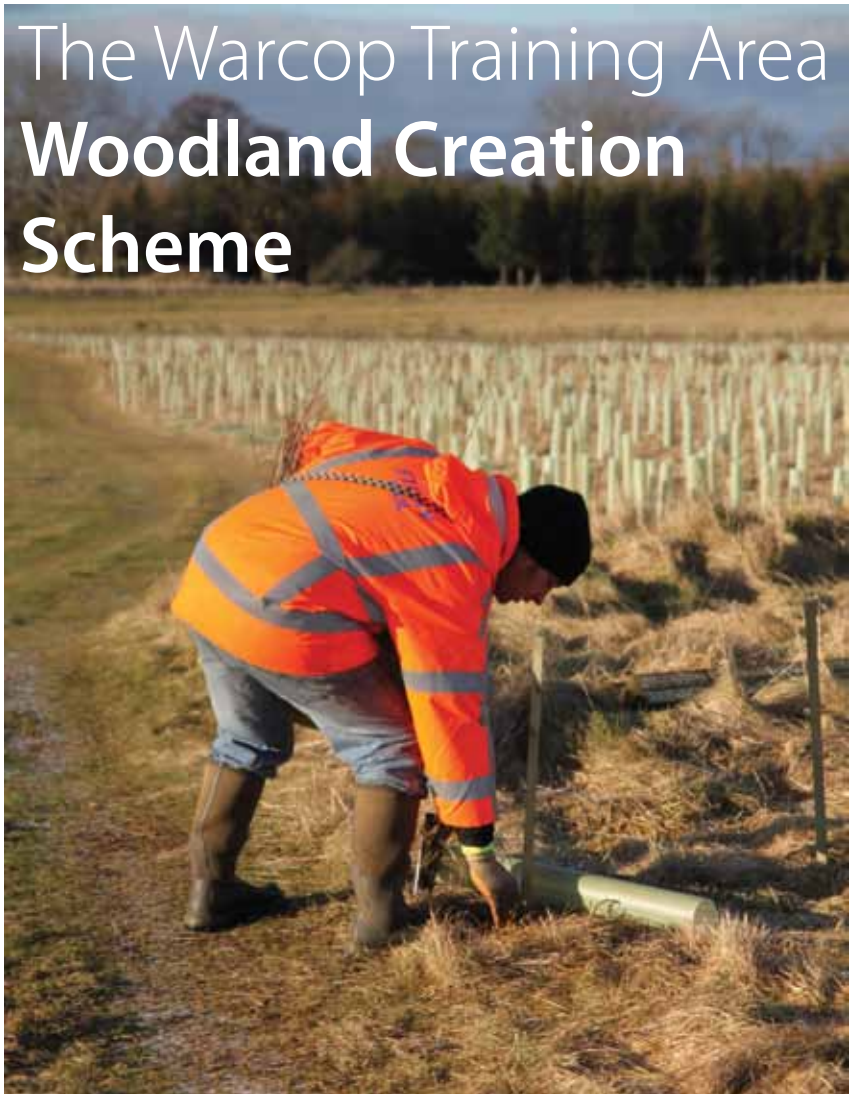
Roles and Responsibilities in Development

The ways in which developments are planned and delivered are varied. Those involved may include internal MOD staff such as military users and trainers, site staff, and environmental and planning subject matter experts; external contractors such as civil engineers and environmental consultants; external regulators such as Natural England and Local Planning Authorities; as well as non-governmental organisations, local experts and other interested parties.

The role of MOD Conservation Groups (CGs) varies across the country and between projects. Members provide baseline information and raise awareness of important site features through discussion and reports to CG meetings, and the development of site dossiers, sensitivity mapping and conservation management plans. CGs may be directly consulted in the design and environmental impact assessment of developments, but this is not always possible, especially when timescales are tight or where external contractors are unaware that CGs exist. Many CG members are consultees for Town and Country Planning and other regulatory processes, and can and do use their knowledge of the estate to comment on proposals, sometimes identifying issues and impacts that need further attention, but often countering objections from those less familiar with the defence estate. CGs also provide an invaluable role by helping us monitor the estate, enabling us to continue to balance training and environmental objectives through long-term and large-scale adaptive management.

The Strategic Defence and Security Review has already led to the formation of the Defence Infrastructure Organisation, and over the next few years there will be major changes and reductions in internal staffing; new streamlined estates processes; and competitions for the Next Generation Estates Contracts. It is important that throughout these changes we continue to maintain early and open dialogue, so that we can continue to improve both the natural environment and the training value of the estate.

The Warcop Training Area **Woodland Creation Scheme**



Planting the woodland © Crown

An innovative funding model for **woodland creation on the public estate**

The woodland creation project nearing completion © Crown

As a forester for the Defence Infrastructure Organisation (DIO) I have had the privilege of working on some of the most beautiful areas of the defence estate. My favourite, by far, is Warcop Training Area (WTA) in Cumbria.

Warcop is undoubtedly one of our most impressive training areas. Covering nearly 10,000 hectares (ha), it forms part of the North Pennines Area of Outstanding Natural Beauty (AONB) and over 50% of the estate has been designated within the Appleby Fells and Upper Teesdale Site of Special Scientific Interest. The training area has its origins as a tank gunnery range, established in 1942, to prepare troops for the invasion of mainland Europe.

The existing woodlands at Warcop, some 150ha, provides a valuable military training resource, with excellent potential for future development. They are an integral part of the landscape and make a significant contribution to enhancing biodiversity within the training area. The Warcop Integrated Rural Management Plan recognised the potential for enhancing woodland cover on the training area but funding constraints have prevented these aspirations from being realised.

To overcome this problem, the DIO Forestry team have increasingly explored opportunities to work in partnership with estate stakeholders with a shared interest in woodland creation. This has culminated in DIO and the Woodland Trust entering into an agreement, in 2011, to jointly explore the potential for and facilitate woodland creation across the defence estate.

Working with the Woodland Trust, developing on an existing partnership with the North Pennines AONB Partnership, the opportunity arose for the establishment of 160ha of new native woodland on WTA. This represents a 106% increase in woodland cover on the estate. This was jointly funded by the North Pennines AONB and the Woodland Trust. The North Pennines AONB provided funding from their Living North Pennines project. The Woodland Trust have secured sponsorship from both Waitrose and Eurocamp, through participation in their Woodland Carbon Scheme which allows individuals and businesses to mitigate their carbon emissions by funding the creation of

native woodland. The project is now being used as an example of how the woodland carbon scheme can work by the Forestry Commission.

Whilst enhancing the estate for military training was always the primary driver for this project, new woodland locations were chosen for the contribution they would make to enhancing biodiversity habitats for species such as the red squirrel and the landscape. The majority of the sites were ultimately selected for their direct benefit to the long term integrity of woodland within the wider landscape context.

The woodland will be planted over two years. The initial phase of the woodland creation scheme involved the planting of around 40ha jointly funded by the Woodland Trust and the AONB. This was in addition to 10ha of new woodland planted last year by local community groups and volunteers, resulting in around 50ha being planted during the 2010/2011 planting season. The remaining 110ha will be planted by the end of 2012.

The woodlands are to be planted using 0.7 or 1.2 metre tree tubes, at an average stocking density of 1100 trees per hectare which equates to 176,000 trees for the whole project. All the species are native to the area and, when available, of local provenance. The woodlands have been designed around the National Vegetation Classification (NVC) W9 upland mixed broadleaved woodland. The species will include ash, downy birch, rowan, hawthorn, hazel, sessile oak, alder, holly, aspen and bird cherry, characteristic of the ancient semi-natural woodlands found in the northern Pennines The majority of the new woodland will be planted in areas still grazed by sheep and the management of grazing is key to the successful establishment of the woodland. This project therefore also acts to highlight how, given the right circumstances, woodland creation and upland farming can be compatible, with any marginal effects on the estate's graziers mitigated by maintaining agricultural payments.

Jez Kalkowski
Head Regional Forester
Defence Infrastructure Organisation

Enhancing the biodiversity of the woodland © Crown

Completed section of the woodland © Crown

Defending **the Past**

Pupils from Durness Primary School – be scared! © Crown

The aim of the project was to cultivate an understanding of the cultural and built heritage of the military training area by the local community - and for the community to share that understanding with the troops who come to Cape Wrath to train.

Thomas Edison had a lightbulb moment when he declared that 'Success is 10 percent inspiration and 90 percent perspiration'. Well, if Mr Edison had taken part in the Defending the Past project based around the Cape Wrath Training Centre (CWTC) he would have included a dash of determination, a splash of education and more than a jot of jubilation. Defending the Past (DtP), a jointly-run, year-long project with Defence Infrastructure Organisation (DIO), formerly Defence Estates and the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS), has come to a close. What started off as a survey of the architecture and archaeology of the CWTC in north-west Sutherland developed into a community project which took on board field trips, range camping, a photographic competition, The Cape Wrath Challenge marathon, a 'designer' milestone and art installations.

Durness, with a population of about 300, is the most north-westerly village on the British mainland and is one of the few remaining villages of its size in mainland Scotland that is accessed only by single track road. It is located 103 miles from the nearest city, Inverness, and is immediately adjacent to CWTC, one of the most important training areas in the British Isles used by all three branches of the armed forces. A Project Manager, Laura Gutierrez, was employed specifically for the DtP project with regular input from DIO and RCAHMS staff.

One of the first activities in early 2010 was a primary school visit to Faraid Head, the range's military control tower, where students learnt more about the current military use of the training centre and met soldiers from the Black Watch regiment who spoke of their recent tour to Afghanistan. Children from the school designed new ration packs for the soldiers after being given a standard MOD-issued ration pack.

Pupils from Durness Primary School also visited the famous Stevenson lighthouse, built in 1828 on the tip of Cape Wrath. The 11 mile long public road running from the lighthouse through the range down to the ferry slipway on the Kyle of Durness is marked by milestones which date to the mid 1830s. The RCAHMS 2008 survey highlighted that the 8th mile marker was missing and pupils from Kinlochbervie High School designed a new milestone which was duly erected in its rightful position.

By offering a range of activities DtP had many strings to its bow. Informal lectures on the heritage of Cape Wrath were provided by staff of RCAHMS and DIO and in the summer months, a professional storyteller, Bob Pegg, met with a number of local residents with memories or connections to Cape Wrath in order to document their stories on an audio recording. Material from RCAHMS' extensive collections were made available and such was the interest in the range of aerial photographic images of Durness and its environs that a framed series of these images are now permanently displayed in Durness Village Community Hall.

The project coincided with a prominent week-long community running event (the Cape Wrath Challenge) in May. Taking advantage of the influx of visitors who enter the various running events on offer, a project stall containing information about the

heritage of the area was set up in the Village Hall and several guided walks looking at significant sites of archaeological interest were undertaken. Project staff from RCAHMS and DIO also participated in the beach run and relay marathon as part of the Cape Wrath Challenge, finishing a commendable fourth out of 11 teams.

A highlight of DtP was an overnight camping trip on the training area for pupils of Kinlochbervie High School. Before the trip the pupils formulated and firmed-up their ideas under the guidance of environmental artist Ruth Macdougall. These included 're-designing' several of the Armoured Personnel Carriers used as targets and creating colourful signs which pointed out sites of heritage significance to soldiers using the training area. The camping trip allowed them to see their final design concepts implemented on the training area itself. A huge contributory factor towards the success of the overnight camp was the presence of the Cape Wrath Training Centre Commandant, Major David Halpin. Under the supervision of Major Halpin the children did physical training, team sports and set up a fantastic beach barbeque.

In May 2010, the project launched a national photography competition to find photographs for a set of playing cards with an environmental theme that could be handed out to troops using the training area. The competition received wide media coverage and generated over 235 entries, with a number submitted by local residents.

The final 52 card photographs were drawn from the competition entrants, DIO's image library, the RCAHMS collections and that of the Sutherland Partnership who provided images of local wildlife and plants. A Range Warden, Tony Jackson, provided assistance with the captions for a number of photographs.

Educational, informative and enjoyable though DtP was, there was of course a serious message to the project…. Yes, Cape Wrath is a remote and beautiful area, yes it's home to remarkable biodiversity and yes there are the remains of archaeological and cultural heritage importance….but it is also one of the most important training areas in the country where the serious business of military training is available to all three services. Reconciling all these interests was a major aim of the project and its success can perhaps best be summed up by those who took part in some of the activities:

"I learnt much more about what actually happens at Cape Wrath. A lot of things I learnt I didn't know before and kind of surprised me" (S1 pupil, Kinlochbervie High School).

"We visited Faraid Head Military Control Facility and pupils found the experience very interesting. It was good to get the perspective of current military use. The pupils saw the range of skills and teamwork needed to conduct this sort of military activity" (Teacher, Kinlochbervie High School)

Stone Circles, Roman Forts, Time Team, burials, bones and bling are usually what spring to mind when we think of archaeology and our cultural heritage. But there is a growing awareness that the past is all around us and it needn't be hundreds or thousands of years old. The objects of the recent past are the archaeology of tomorrow or even of today. The abandoned hulk on the range has as much a story to tell as the Viking house next to it. By working with the members of the local community, and in particular the younger generation, DtP has shown that military training, conservation, community involvement, access, education and teamwork are part and parcel of the responsible running of a major military training area.

Phil Abramson
Archaeological Advisor, DIO

Laura Gutierrez
DtP Project Manager

Major David Halpin
Commandant CWTC

Acknowledgements:

We are grateful to the HLF, Sutherland Partnership and the Live Literature Fund, managed by the Scottish Book Trust for their financial support. Local Community residents Ronnie Lansley and Graham Bruce and a host of other village members supported the project, as did staff of Durness Primary School and Kinlochbervie High School. DIO staff were extremely helpful, particularly Iain Robertson and Major Kim Torp-Petersen and Project Manager Laura Gutierrez worked her socks off to keep us all to budget and timetable. No mean feat!

Physical training on the beach, the fireman's lift © Crown

Winning eighth milestone © Crown

Avoiding **collateral damage**

Assessing the impact of **weapons testing activities at MOD Pendine**

Common scoter duck © Graham Maples

MOD Pendine is situated on the north shore of Carmarthen Bay, south west Wales, and operated on behalf of the MOD by QinetiQ Ltd. During WWII the site was selected to become the UK's main Small Arms Ammunition (SAA) Test and Evaluation (T&E) facility, firing and tracking bullets out over the 18km Sea Danger Area. The site also hosts a wide variety of other trials activities and training exercises, mainly based in the sand dunes, but also on the beach and in the sea.

In 2002 the sand dunes, intertidal habitats and associated species at Pendine were re-designated as the enlarged Laugharne - Pendine Burrows Site of Special Scientific Interest (SSSI); the first SSSI notification that included MOD Pendine dates back to 1953. The habitats and species found at MOD Pendine are not only of national importance – they are remarkable within a European context. Consequently, the Carmarthen Bay Dunes Special Area of Conservation (SAC) and the Carmarthen Bay and Estuaries SAC were designated more recently, under the EC Habitats and Species Directive. In 2003, Carmarthen Bay was also classified as the first wholly marine Special Protection Area (SPA) in Britain as it is the most important UK site for migratory and overwintering common scoter ducks.

Following QinetiQ's recent application to renew the range's Food and Environmental Protection Act (FEPA) license (which permits the deposit of materials in the sea), the Countryside Council for Wales (CCW), as statutory advisor to the Welsh Assembly Government and other competent authorities and as a consultee on the FEPA application, completed a 'test of likely significant effect' to identify and highlight issues likely to undermine the conservation objectives for the designated sites.

This assessment identified potential impacts on scoter ducks and their habitat. During the winter, scoter feed in large numbers in the Bay, by diving for invertebrates. Potential disturbance and damage to intertidal and subtidal habitats, were also recognised as threats to the SACs and SPA, including contamination by lead and other metal components of projectiles. Furthermore, dolphins and other cetaceans are regular visitors to Carmarthen Bay; they are known to use the sea danger area and are particularly sensitive to underwater explosions and related noises. In addition to being considered 'typical species' of the marine SAC, cetaceans are also European Protected Species (EPS) and have legal protection in their own right. Last but by no means least, there are regular sightings of leatherback turtles in the Bay that feed here on jellyfish blooms. Leatherbacks are an EPS and are listed by the International Union for Conservation of Nature as Critically Endangered.

As the initial assessment had identified potential impacts, an appropriate assessment (AA) by the MOD was required. UK and NATO T&E activities were at risk of restrictions and possibly stoppages unless it could be proven beyond reasonable scientific doubt that there would be no adverse effect on the integrity of the European sites.

DIO's internal Environmental Advisory Services started an extensive desktop study to address the issues, with CCW providing detailed reports on invertebrates, marine mammals, the SPA scoter population, and the various fish species that are special features of

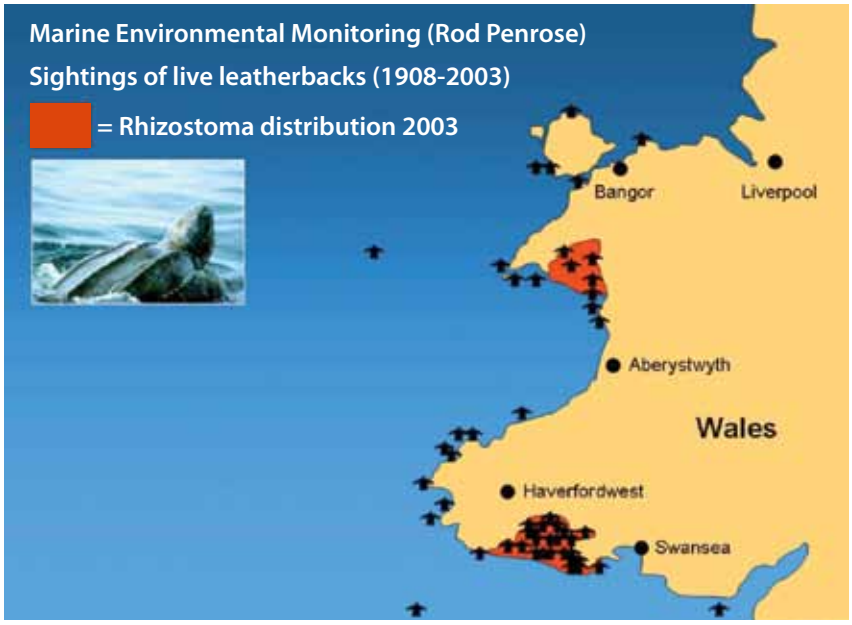


Diagram showing the sightings of live leatherback turtles in Welsh waters and the rhizostoma jelllyfish distribution (1908-2003). Map courtesy of Dr Jonathan Houghton.

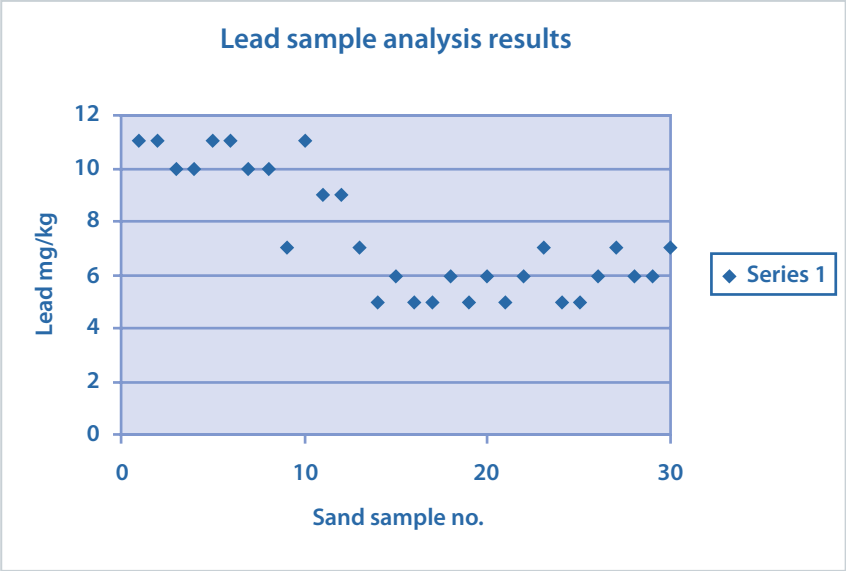
the Carmarthen Bay SAC (river and sea lamprey, and Allis and Twaite shad).

A key document for understanding the possible environmental risk from heavy metals was a Defence Science and Technology Laboratory study into the ecotoxicology and environmental fate of SAA fired into the sea. This report provided a detailed assessment of the composition and degradation of fired SAA, including the rates and modes of release of copper and lead into seawater, and comparison of expected concentrations with environmental quality standards (EQS). Extrapolating the results, approximately 27,500kg (i.e. 27.5 tonnes) of lead would need to be deposited each year in order to exceed the seawater EQS. The Pendine sea contamination register, showed that in 2007 and 2008 lead deposits were less than 1-2% of this level. There was still a need to confirm these modelling predictions, and also to establish whether there was any accumulation of heavy metals within the sediments of Carmarthen Bay.

The Environment Agency Wales provided ten years of water quality monitoring data, including dissolved heavy metals. Samples from shellfish beds adjacent to Pendine and Pembrey Sands had an average dissolved lead concentration of 0.1 micrograms (µg/l), peaking at 1.46 µg/l, therefore well below the commonly used 25 µg/l marine EQS and guideline toxicity levels. This allowed us to conclude that there was no dissolved lead contamination of the adjacent shellfish beds nor the wider Carmarthen Bay and its designated nature conservation sites.

Seabed sediment samples were taken by QinetiQ and analysed for heavy metals, in particular lead, copper and

Pendine © QinetiQ



Graph showing lead concentrations in sediment samples taken from the range danger area

antimony. All results showed levels well below guideline concentrations demonstrating that range activities over the past 70 years have not caused significant seabed sediment contamination.

The graph shows that lead concentrations in sediment samples taken from the range danger area (11-30), averaged 6 mg per kg, much lower than the commonly used 35mg/kg EQS, and lower than levels in samples 1-10 which were taken from the public beach and areas adjacent to Pendine village. The slightly elevated levels adjacent to the range may be due to roof and road run-off and sewage treatment effluent.

Having determined that contamination was not a significant issue, we were then able to focus on the risks of underwater explosions killing, injuring or disturbing mammals, fish and invertebrates, and the risk of SAA trials resulting in killing, injuring or disturbance to the 17,000 common scoter which overwinter annually in the Bay.

Underwater explosives activities at Pendine include munitions of up to 500kg Net Explosive Quantity. The propagation of underwater pressure waves is well understood and over the past 50 years various empirical studies have measured the impacts on different groups of marine wildlife. Survivability and safe distances have been found to vary not just with source intensity, but also with water depth, and the depth, size and species of the receiving animal. The most sensitive groups are those with air-filled cavities, such as mammals (including humans), turtles and also fish with swim bladders, with smaller fish being most sensitive to injury. Safe distances for mammals and turtles are usually quoted as over 1km, although recent Joint Nature Conservation Committee guidance suggests that cetaceans can be disturbed up to 1.5km. Empirical models predict that for a 500kg munition, safe distances for swim bladder fish can be up to 900m; safe distances for invertebrates vary from 200m (crabs) to 17m (shrimp), and non-swim bladder fish such as flounder have 90% survivability as close as 11m, which is surprising.

It was decided to contract in consultancy support to complete the ecological impact assessment for marine trials and training at Pendine. QinetiQ commissioned Dr Andy Woolmer of Salacia-Marine, a fisheries management and marine ecological impact assessment specialist, who had studied the benthic ecology of Carmarthen Bay for his PhD thesis. The task was to review the desktop study and contamination data, analyse possible effects on the various habitats and species in the Bay, and to liaise with CCW and other stakeholders to agree how these could best be reduced or avoided by additional controls and mitigation measures, and the significance of any residual effects.

The resulting reports enabled the MOD and CCW to identify and formulate appropriate controls and mitigation measures to make sure that there would be no adverse effect on the integrity of the SACs and SPA and to reduce residual impacts to the minimum. The controls were also designed so that the range activities would not result in any offence being committed under European Protected Species legislation. The Welsh Government accepted this assessment and duly renewed the site's FEPA license.

Several QinetiQ staff have now been trained as Marine Mammal Observers with elements to cover cetaceans, seals, turtles and scoter ducks to enable a 2km exclusion zone to be visually checked prior to firing. Additional Stop Butts on small arms ranges are planned to further reduce deposits of lead. Passive acoustic monitoring will also be employed from the Range Safety Boat to determine if cetaceans, in particular harbour porpoise are in the vicinity prior to detonations. Underwater explosive tests will be timed to avoid the main fish aggregations in April, May and September and there will be a "slow start" procedure adopted to scare remaining mammals and fish from the area prior to detonation of larger charges.

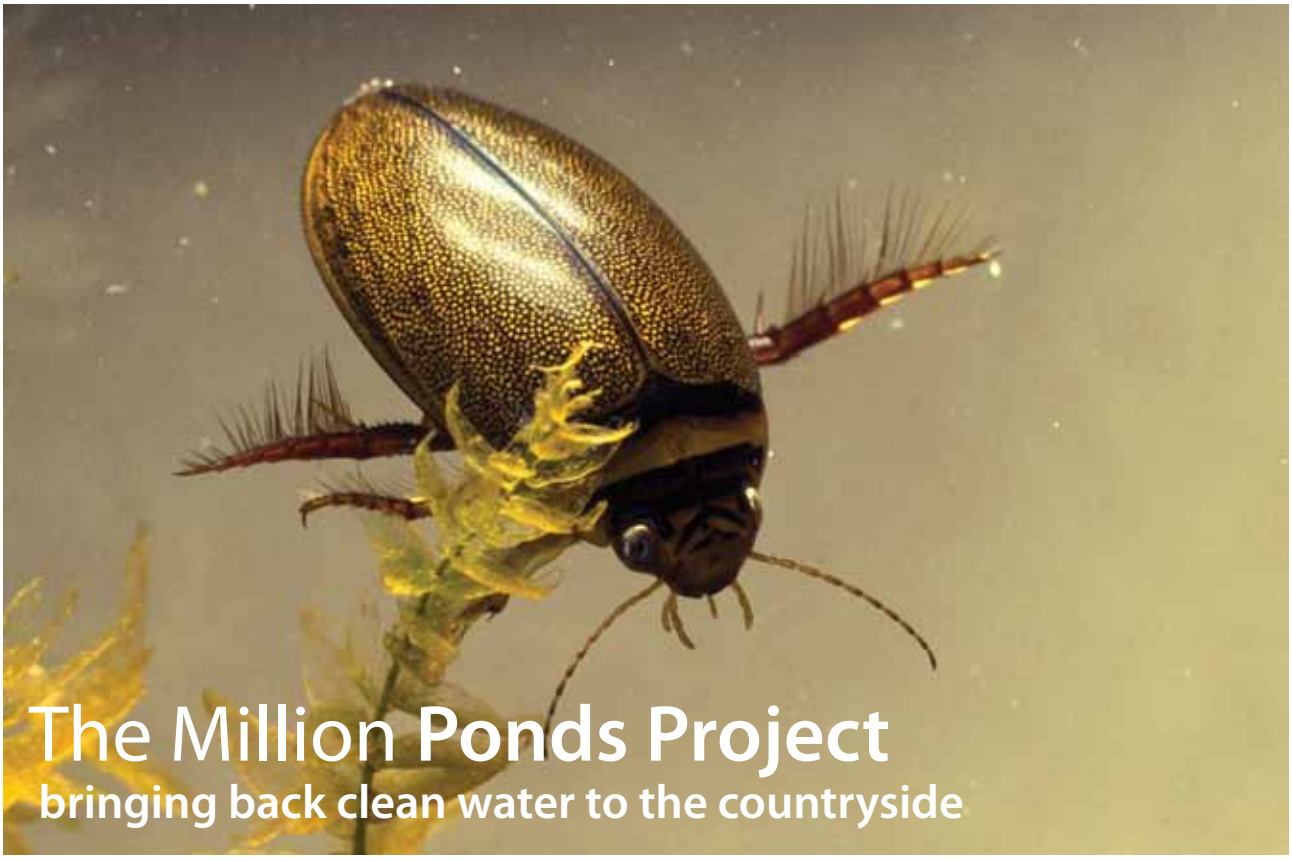
These and other conditions are all now enshrined in Pendine's Standing Orders, Environmental Management System, and the new Integrated Rural Management Plan.

The working practices between the MOD, QinetiQ and their consultant, and CCW that were adopted during the Habitats Regulations Assessment process can only be described as one of Best Practice, and it is hoped it will set an example for future cooperation and collaboration.

Dr Stuart Otway
Senior Natural Environment Advisor, DIO

Mike Hodges
Health, Safety and Environmental Advisor, QinetiQ, Pendine Range

Dr Ziggy Otto
Senior Marine Conservation Officer, Countryside Council for Wales, and School of Law, Swansea University, Singleton Park, Swansea, SA2 8PP



The Million Ponds Project

bringing back clean water to the countryside

Spangled water beetle *Graphoderus zonatus* © Roger Key

When 80% of our most threatened freshwater plants and animals rely on clean water, it is worrying to discover that clean water is now a rarity across much of Britain. Progress is being made to clean up rivers and lakes, sorting out the most polluting sewage works and pumping millions of pounds into agri-environment schemes, but these still have a long way to go. For many of our larger waterbodies we've so far failed to get them back to their once wildlife-rich condition. But don't lose heart – there is another way to protect our freshwater wildlife. We just need to think small, which is exactly what Pond Conservation and Defence Infrastructure Organisation (DIO) have done.

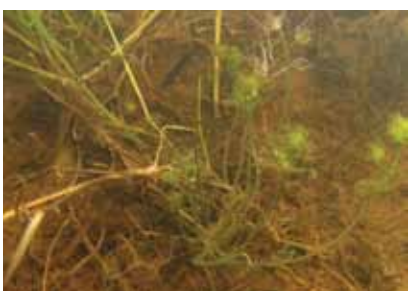
Clean water: what, why and where

The bad news is that many freshwater habitats in the UK are in a poor state. There are no longer any undamaged rivers left in lowland England and Wales, and even the tiniest water courses are widely impacted: 87% of English headwater streams show signs of biological degradation east of a line from the Humber to Dorset.

Ponds are just as bad: only 8% of ponds in England and Wales are in a pristine state biologically. This leaves our more sensitive wetland species like tassel stonewort *Tolypella intricata* squeezed into increasingly isolated pockets of clean water, like the Otmoor Ranges.

The good news is that by creating lots of new, clean water ponds across the UK, we can both strengthen populations and link them up to provide long-term protection in these climatically uncertain times.

Fortunately, it's possible to create clean water ponds even in landscapes where larger waterbodies are heavily polluted. This is because ponds have relatively small catchments – the area of land around a pond that feeds water into it – so clean water ponds can be dug in quite small patches of 'clean' land. And even if there is no existing 'clean' land, it's still possible to create small clean patches by making simple changes to how the land is managed – field drains can be blocked or diverted, livestock numbers reduced, a small field left unploughed and unfertilised, woodland, rough grassland or heathland created.



Tassel stonewort *Tolypella intricata*
© Stephen Lambert

Freshwater gems on the defence estate

Ponds can be very rich, supporting more species across a landscape than rivers, lakes, ditches or streams, and also more rare species. And whilst ponds make up just 5% of the total area of freshwater habitats, they alone support populations of between two-thirds and three-quarters of all freshwater species. To see examples of what ponds can and should be like, look no further than the defence estate.

The New Pill on the Otmoor Ranges is one of the best ponds in the UK, with rich assemblages of plants and animals that you only get at clean water sites, such as tubular water-dropwort *Oenanthe fistulosa*. The large drawdown zone – the area between the high and low water levels is what helps make this pond so rich. Among the many plants it supports is the only Oxfordshire population of Red Data Book plant lesser water-plantain *Baldellia ranunculoides*.

MOD land supports many of the UK's best ponds, mainly because the majority of the estate is protected from the all pervasive impacts of modern agriculture on the water environment. In Sanctuary Magazine 2010, Robert Aquilina commented that *"MOD ponds tend to have very good water quality. Whether they are stream or groundwater-fed they are often within unpolluted catchments with a lack of intensive agriculture, artificial drainage, runoff, dumping or poaching by livestock. The surrounding habitats can themselves provide important features for non-aquatic species associated with ponds, such as dragonflies that will forage and roost across heathland, scrub and grassland. These habitats also provide a buffering effect from pollution and disturbance."*

It follows, then, that MOD properties include some of the best places to make new clean water ponds – almost anywhere you dig a pond on the ranges it will be protected from pollution and disturbance, and have the potential to develop into rich habitats.

Ponds on Povington Heath on the Lulworth ranges have a rich assemblage of plants and animals, with a number of rare species present in most ponds. Each pond has at least one Red Data Book species and a number of notable water beetle species. Together they support the notable downy emerald dragonfly *Cordulia aenea*, leech species and caddis fly *Tricholeiochiton fagesii* found at only eight sites in the UK, plus Biodiversity Action Plan fern and liverwort species. A pond at West Holme heath, dug in 1995 by the MOD, stands out, holding a good selection of the usual heathland pond plants in addition to a huge population of the rare aquatic fern pillwort *Pilularia globulifera*, the liverwort pitted frillwort

Baldellia ranunculoides © Jeremy Biggs

Fairy shrimp *Chirocephalus diaphanus* © Iain Perkins

Fossombronia foveolata in the margins, and the downy emerald dragonfly.

Salisbury Plain is an outstanding landscape and supports many specialist species including the fairy shrimp *Chirocephalus diaphanus*. Ponds form in the wheel ruts on Salisbury Plain, providing an ideal home for the shrimps, which thrive in these small seasonal pools.

Clean water pond creation

When the potential of new clean water pond creation was realised, Pond Conservation initiated the Million Ponds Project, an ambitious 50 year plan to bring back clean water to the landscape. Since MOD land supports so many fantastic ponds, and has great potential for new clean water ponds, the MOD is a key partner in the project.

To help people make clean water ponds, and avoid the many pitfalls that limit a new pond's potential, the Million Ponds Project has published the Pond Creation Toolkit. The toolkit consists of a series of factsheets covering the planning, design and construction of ponds, species dossiers detailing pond habitat requirements of 50 of our rarest species, habitat factsheets discussing pond creation in woodlands, grassland, heathland, floodplains and wetlands, and two problem solving factsheets covering the risk of birdstrike and public access. The toolkit also includes the BAP Species Map, an interactive online map showing the distribution of 101 of our rarest pond plants and animals. The whole toolkit is available for free at www.pondconservation.org.uk/millionponds/pondcreationtoolkit.

The Toolkit goes into great detail, but the recipe for a clean water pond requires just three ingredients:

1. A clean water source - new ponds should be located in natural surrounds, with no inflows from streams, ditches or field drains, and no added topsoil.
2. Natural colonisation - new ponds should not be stocked with plants, fish or other animals.
3. Few impacts during the pond's lifetime - new ponds should be protected from frequent disturbance from dogs or duck feeding.

Across the defence estate, this recipe is being followed to create many new clean water ponds for Biodiversity Action Plan species including bats, birds, plants, mammals and invertebrates. Some of the work has been funded by the Million Pond Project supported by Biffaward who have committed £500,000 to a Pond Digging Fund.

Last year ponds were dug on the heathland at Woolmer Forest, Hampshire by Amphibian and Reptile Conservation. The ponds will provide a habitat for the incredibly rare and beautiful spangled water beetle

Three-lobed water-crowfoot *Ranunculus tripartitus*
© Pascale Nicolet

Graphoderus zonatus and the natterjack toad *Epidalea calamita*, though since the fairy shrimp *Chirocephalus diaphanus* has also been found on site, the pond may prove to be a boost for this seasonal pond specialist too.

Earlier this year, the Conservation Committee at the Reserved Forces and Cadets Association Altcar site in North Merseyside, created several new ponds for natterjack toad. The ponds are only a few months old and already natterjack toads are breeding in them. Unlike those in older, more established ponds, the tadpoles here will benefit from the absence of predators such as water beetle and dragonfly larvae, or competitors like common toad *Bufo bufo* tadpoles.

Plans are in place to create scrapes on Predannack Downs, Cornwall. The scheme is aimed at supporting populations of rare plants such three-lobed water-crowfoot *Ranunculus tripartitus*. Although frequently overlooked, small seasonal waterbodies in areas of non-intensive farming and traditional grazing methods are vital for many plants and animals.

What more can be done

Altogether, these small, individually apparently insignificant ponds can make up an impressive collection of freshwater habitats. The result should be secure populations of freshwater plants and animals, resilient to climatic changes. But this will only happen if we fiercely protect these gems, create more high quality freshwater habitats, and provide links to create networks across the landscape.

DIO has a vital role to play here, both as custodians of many of Britain's finest freshwater habitats, and as an organisation with an unrivalled opportunity to make even more wonderful waterbodies.

Visit the Million Ponds Project website www.pondconservation.org.uk/millionponds now or contact the Million Ponds Project team on 01865 483 249 or email info@pondconservation.org.uk for further support and advice on creating clean water ponds.

Becca Cleaver
Million Ponds Project Officer for Northern England

Pond on Altcar © David Orchard

Taking flight over **The Wash**

A flock of knots in flight © Crown

A military training ground

The Wash is situated on the east coast of England between the coastal towns of Hunstanton in north Norfolk and Skegness in Lincolnshire. It is, at over 62,200 hectares, the largest estuarine system in the UK. Four rivers, the Witham, Welland, Nene and Great Ouse provide the main freshwater flow into The Wash from a large catchment area extending across approximately 12% of England; but marine processes predominate.

The Wash has been used by the military since the 1890s, firstly for artillery practice and then with flying commencing in 1914. RAF Holbeach's use as an air to ground bombing range commenced in 1929 and RAF Wainfleet's in 1936. RAF Wainfleet Air Weapons Range (AWR) closed in 2009, with RAF Holbeach AWR remaining operational, serving UK and NATO air forces.

Routine training for both fixed wing aircraft and helicopters is essential in order to keep a minimum number of aircrew and aircraft at the peak of their performance and using the most up to date technology.

Holbeach Range as being one of the safest and most efficient air weapons ranges in the UK contributes markedly towards this end. Together with RAF Donna Nook, situated further north on the Lincolnshire coast, by the Humber estuary, it is of national military importance.

A special place

The Wash and north Norfolk coast comprise the single most important site in the whole of the UK for waterbirds. At peak times the area can support a total of over half a million visiting wildfowl and waders. In addition, there are also some very important populations of breeding birds.

Concentrations on this scale are of global importance and we have an international responsibility to ensure that these bird populations are protected. The area also supports marine communities and a breeding colony of common seals of European importance.

Special measures

Needing careful conservation to safeguard its future, The Wash and north Norfolk coast was designated a Special Area of Conservation (SAC) with three Special Protection Areas (SPA) through EU and UK legislation, in addition to its re-designation as a Site of Special Scientific Interest in 1983. As the sites extend below the high water mark, collectively they are known as a European Marine Site (EMS).

This means there are now greater responsibilities on public authorities and agencies to work closely together to safeguard the nature conservation interests, while encouraging sustainable use. To achieve this, an EMS management group was set up and an EMS Management Scheme launched in 2002. MOD is a partner to the Scheme as RAF Holbeach AWR extends into the designated area and is represented by Defence Infrastructure Organisation, formerly Defence Estates, on the management group.

Tornado © Crown

Understanding the effect of activities

From the outset it was recognised that a variety of activities could have an impact on the important habitats, plants and animals. New initiatives were considered, and incorporated in the EMS Management Scheme Action Plan concerning air, water and land based activities carried out by individuals, groups, or organisations. A whole range of activities occur around the Wash and include commercial fishing, shellfish collection, bait digging and recreational use as well as military flying activity.

From the data recorded around the coast and a variety of other studies there is the potential for low flying activities to have a disturbing affect on protected bird and seal populations. There is also the added risk of bird-strike and accidents, particularly when migratory birds are flocking to the area.

The MOD is one of a number of relevant authorities responsible for ensuring The Wash and North Norfolk Coast European Marine Site is compliant with the requirements set out in the EU Birds and Habitats Directives of 1979 and 1992 and the UK Habitats Regulations 2010. As a result maintaining the nature conservation value of the range and adjoining areas of the EMS is a statutory obligation. One of the conservation objectives is to ensure that there is no significant disturbance of the species for which the site was designated.

The MOD is also committed under the terms of the Declaration of Intent between MOD and Natural England to protect wherever possible the nature conservation assets of its estate. Site management plans agreed with Natural England provide the basis for this. The Integrated Rural Managment Plan (IRMP) process developed by the former Defence Estates integrates management of the natural environment and also other land management themes such as public access, agriculture and estate management and cultural heritage, with the overarching military requirement for the use of the estate. Range operators are also well assisted in nature conservation related decision making by Holbeach Conservation Group who meet every 6 months.

Assessing the disturbance of birds by aircraft in the Wash

Arising from the concerns of Natural England and the EMS Board about the potential impact of the introduction of Apache attack helicopter activity, actions under the EMS management plan and commencement of the preparation of an IRMP for the Wash ranges in 2007 Defence Estates agreed to study interactions between birds and aircraft around the Wash. Following a lengthy procurement process work commenced in 2009.

The outcomes

The research project was divided into two parts, a desk study reviewing the ornithological interests of The Wash and military use of the ranges from which followed a survey programme. Observations were carried out to attempt to assess whether there was any significant disturbance of birds in and around the AWR, using the distribution and behaviour of over-wintering water birds as evidence.

The Wash presents many logistical difficulties to the design of bird surveys as a consequence of its topography and its large size as well as safety considerations. This is in addition to the environmental factors that are required to be optimal with, for example, the full tidal cycle between low and high tide coinciding with daylight hours and hopefully good weather.

The original aims were to carry out observations at Wainfleet and Holbeach but the decision to close RAF Wainfleet led to the study focussing on RAF Holbeach. The study was also reliant on the aircraft that were booked into the range; it was not possible to manage the number or types of aircraft and there often were low numbers present due to operational priorities. Most observations were of fixed-wing aircraft. This resulted in insufficient data for statistical analysis but some conclusions can be made.

The majority of birds showed no or litttle reaction to the passage of fast jets over Holbeach, and movements of birds was predominately linked to the tidal cycle. Ten species were monitored in detail: dark-bellied brent geese, shelduck, wigeon, oystercatcher, grey plover, knot, dunlin, bar-tailed godwit, curlew and redshank. Of these, six showed no reaction, whilst four species did show some in terms of differences in the numbers of birds present or of behaviour in the presence of military flying activity. The more sensitive species appeared to be shelduck, bar-tailed godwit, dark-bellied brent geese and curlew.

In the presence of helicopters more species appeared to show differences of behaviour with only three species, wigeon, oystercatcher and dunlin showing no reaction.

It is difficult to make definite conclusions other than there is more work that could be done. There did seem to be different reactions from different species and confirmation of the more disturbing effect of helicopters, but there was no evidence for any significant impact.

However, the study has produced a valuable baseline and records of species, numbers and movements of birds that previously was not available and this can be used to inform future management decisions and monitoring on the defence estate.

Peter Rushmer
Project Manager for the Wash and North Norfolk Coast European Marine Site Management Scheme

Moira Owen
Natural Environment Advisor, DIO

Access at **Kirkcudbright Training Centre**

Walker at Kirkcudbright © David Crosbie

In Sanctuary Magazine 2008, my colleague from the Access & Recreation Team, Richard Brooks, wrote about the new public access route that had recently opened at Kirkcudbright Training Centre (KTC).
Now, four years on, there have been new improvements to the public access opportunities at KTC, so I thought I would take this opportunity to highlight and promote them.

On 30th November 2006 Councillor Jane Maitland from Dumfries and Galloway Council officially opened the seven mile multi-user public access path that runs across KTC in a west-east direction from Torrs Point to Abbey Burn Foot. This was a real step change in public access at the site, as before this, access was only by prior arrangement and then only after a safety briefing from range staff, due to the nature of the training being undertaken and the risk of unexploded ordnance. This new route, which was waymarked along its entire length, would be open to walkers, cyclists and horse riders whenever red flags or lamps were not displayed and there would be no need for briefings.

Four and a half years on the route is still very well used by locals and visitors alike, with Range staff at KTC receiving regular requests from the local Tourist Information Centre for more copies of the Access Information Leaflet that has been produced for the site.

In the Integrated Rural Management Plan for KTC which was produced in 2007, the MOD adopted an action to look at increasing access opportunities in the future, with a view to possibly creating a north – south route from Dunrod to Mullock Bay. After discussion between DIO EAS Access and Recreation Advisor and the Officer Commanding and Range Officer at KTC, it was agreed that this particular route was not really a feasible option, due to factors that would make it very difficult to safely manage access. It was therefore decided to look at creating some walks of different lengths through areas of the site that presented no risks to the public. Eventually three new routes were identified, which offered shorter, circular walks for people that may not want to transit the whole of the Training Centre on the existing access route.

Two of the new *"loops"* are in the west of the site starting near Balmae, with the third being in the east of the site at Netherlaw. All of the new routes are waymarked along their lengths, and there are directional fingerposts positioned at strategic points to avoid any confusion.

The *"Townhead"* Loop, at just over four and a half miles, is the longest of the new routes. It starts near Balmae, and is probably best walked in an anti-clockwise direction. The route enters the training area and passes the former site of Balmae House, now long since demolished, before heading past Little Balmae and on towards Howwell House, formerly used as the Officers Mess for the Training Centre. Once past Howwell House, the route continues northwards until it reaches the U85 public road. The route then follows the public road, from which you can see the remains of Dunrod Church and the graveyard as well as the remains of a moat. You then head on through the small cluster of farm buildings and

Howwell House © David Crosbie

Kirkcudbright Access Waymarkers at Little Balmae © Crown

houses at Townhead and past the site of the former King Barracks, and then travel along the road back to the start point. While this road is very quiet, people should still be aware of farm vehicles and other occasional traffic that may use it.

At three and a quarter miles long, the *"Howwell"* Loop starts at the same place and follows some of the same track as the *"Townhead"* Loop, but returns via a different route. Unlike the Townhead Loop, the whole of this route is within the MOD boundary. There are open fields on both sides along much of this route, and you may be lucky enough to see a number of species of birds, as well as butterflies and dragonflies through the summer months.

The final new route is the *"Netherlaw"* Loop, which is on the east of the Training Centre. This is the shortest of the new routes at around a mile long and is ideal for a short dog walk or a walk with small children. The public can park at Abbey Burn Foot and then enter MOD land along the existing public access route, before reaching the fingerpost which signals the direction of the Netherlaw Loop. This route is situated in the area that used to contain the now demolished Netherlaw House and it's various related outbuildings. There are still some visible historic signs of these buildings as you walk along the route. This a very pleasant walk, much of it through woodland above Netherlaw Glen, where you can see the burn below and may see a wide variety of bird species, as well as the very attractive woodland flora, especially in late spring and summer.

These routes have been deliberately chosen to offer the public some alternatives to the longer existing access route, but also for their safe locations within KTC.

There are large areas of KTC which are simply not suitable for public access, and as such path users must keep to the defined routes, and only when the range is not active.

For more information on access at Kirkcudbright and to download a copy of the access Information Leaflet for the site, as well as to find out more information on Access to MOD land across the UK, please visit www.access.mod.uk

Scott Ashworth
DIO Access and Recreation Advisor Scotland, DIO


Vintage tank hulks seen from the northern coastline path © Crown

Military training areas benefit from **partnership approach**

Natterjack toad © Iain Perkins

New government policy aims to increase the role that people, local communities and the voluntary and private sector play in sustainable development on the government estate. This includes promoting biodiversity and the natural environment and working with charitable organisations to manage Sites of Special Scientific Interest (SSSI).

This might sound like a step change to many but in actual fact this has been happening for many years on the defence estate. The MOD Conservation Groups have provided the perfect forum for engaging local naturalists, community groups and specialist charities in the work being done to manage and promote biodiversity at the site level. The contributions made by these groups provide valuable expertise and a local perspective that ensures MOD sites are managed to maximise biodiversity, while minimising the cost to the taxpayer.

The relationship that the MOD has developed with Amphibian and Reptile Conservation (ARC) in Dorset and the Home Counties provides a great example of how MOD can engage with a specialist charity for mutual benefit. The expertise ARC has in amphibian and reptile conservation is being put to good effect at Bovington, Lulworth, West Moors, Hankley, Woolmer and Ash Ranges.

ARC background

ARC, previously known as the Herpetological Conservation Trust, have been involved in the conservation of our native herpetofauna for many years and have built up a wealth of expertise relating to management, the ecology of our reptiles and amphibians and the policy and legislation that relates to their conservation. This is put to use in a variety of ways on MOD land including habitat management of sites where ARC are tenants, provision of advice and the delivery of training events to MOD staff and contractors.

Partnership benefits

MOD has a close working relationship with ARC at Bovington Training Area. ARC currently has a ten year licence agreement to manage more than 120 hectares of heathland habitat across the training area, all of which falls within Turner's Puddle Heath SSSI. As part of the licence they are directly responsible for SSSI management and this is partially funded by a Higher Level Stewardship (HLS) agreement. The MOD has the same arrangement with many of its long term agricultural tenants and licensees across the estate, who get management grants through HLS or other environmental stewardship schemes.

Another notable example is Woolmer Forest where the longstanding Longmoor Conservation Group, which also includes representatives from other non-government organisations and amateur naturalists, has had a big hand in reversing the fortune of the natterjack toad *Epidalea calamita*. Woolmer is home to the last surviving native population of natterjacks in the south of England. The population, once on the verge of extinction, is now on the increase with an average of more than 75 spawn counts per year.

Constructed natterjack pond © Crown

Woolmer © Crown

Summary

The benefits of a partnership between MOD and ARC can be seen across a number of sites and the condition of the SSSIs they manage. There is also considerable exchange of data and knowledge between the two organisations.

The partnership delivers the shared objective of conserving rare reptile populations and other heathland wildlife while maintaining an estate that is suitable for essential military training.

Oliver Howells
Natural Environment Advisor, DIO

Gary Powell
Senior Reserves Manager, ARC

The benefit of ARC managing these areas is that they can access funding not available directly to MOD and they provide knowledge and resources not available to most other tenants or contractors. The ARC reserves management team undertake work such as tree and scrub cutting, bracken spraying, conservation grazing, pond creation, heather cutting, and the creation of bare sand strips.

Creating bare sand provides egg laying sites for sand lizard *Lacerta agilis* as well as habitat for heathland invertebrates such as the mottled bee fly *Thyridanthrax fenestratus*. To be effective it has to be situated in the right place and created in the right way, something ARC staff have the knowledge and equipment to do.

Military users

Close liaison between all MOD tenants and the military user is essential to avoid conflict and confusion. This is particularly true when livestock are being brought on to a site for conservation grazing. A good working relationship between ARC and the military is imperative at sites like Bovington where training is continuous, often dangerous and access to the training area can be limited. Getting the appropriate security passes, health and safety briefings and gaining access through the right channels is all part of managing the defence estate.

Over time ARC have developed a good understanding of military training across many sites and the constraints this imposes on conservation management. From an ARC perspective, it is the limited public access to these sites that helps maintain them in good condition, with lower levels of disturbance and fewer incidents of arson, which can impact on the reptiles, birds and the habitat they occupy.

Sand lizard scrape © Crown

Sand lizard area © Crown

Digging the Better 'Ole…
First World War Trenches and Modern Training at RAF Halton

RAF Halton Hope Street or Fat Rat's Alley leads up to the Front Line from the Support Trench called Parly Street © Crown

Young RAF recruits at RAF Halton are used to being given unfamiliar things to do as part of their training but none of them expected to be rebuilding First World War trenches in 2010!

RAF Halton occupies a house and grounds that were once the property of tycoon and pioneer aviation enthusiast Sir Alfred Rothschild. At the outbreak of war in 1914 Lord Kitchener appealed for citizen volunteers to build a New Army capable of meeting the German onslaught in Flanders. This new force required training grounds and Lord Rothschild was happy to loan his estate to the Army. Soldiers, including men of the Royal Flying Corps (RFC) passed through Halton in order to learn the skills that would serve them well on and above the battlefields; in 1918 the RFC would be transformed in the RAF who still occupy the site today. Miles of trenches were dug during the wartime training, transforming the quiet Buckinghamshire countryside with their deep earthworks snaking across the landscape. At the end of the war in 1918 many of the trenches were backfilled and have disappeared into the landscape but some small sections may still be found around the site. The Station Commander had spotted some of the earthworks and asked his environmental team what they were. The query was passed to Defence Estates', as was, Historic Environment Team and the author confirmed that these were First World War training trenches and very much part of the station's historic landscape. The CO then asked whether they could be used in some way for force development, perhaps by rebuilding them.

A clay pipe found during re-excavation of the trenches © Crown

The vision for the trench reconstruction drew together several strands. In the first instance the Commander and his team were keen to place this with the

RAF Halton Trainees at work on the reconstructions © Crown

Service Personnel Awaiting Trade Training (SATT). RAF Halton's SATT are personnel at the beginning of their RAF careers, who have finished their initial induction and training and who are awaiting posting to their new squadrons. The period of waiting is a period of limbo, punctuated by drill and physical training. Feedback from recruits is that it can be a frustrating, even a boring time. It was agreed that rebuilding the trenches would help maintain fitness, encourage team working and be a different experience for SATT, keeping them busy and engaged. In addition, some of the key skills, such as safe use of tools and filling sandbags are as useful today as they were in 1914! The project also had educational aims: by working on the trenches the SATT would directly engage with Britain's military heritage and the history of the origins of the RAF itself. Finally, the CO envisaged a community benefit for the trenches by creating an educational resource available to local schools. The heritage aspect was underlined when a series of information panels were researched and which now stand on site. The site has already had many visitors and this will increase with the centenary of the war between 2014 and 2018.

The project team included RAF personnel involved in training and education, and site conservation group member Russ Barber. Russ provided conservation advice and removed self-seeded trees from the earthworks, planking them up into lengths for use in the reconstructions. The tree clearance also created a glade beneficial to wildlife. Meanwhile, the author advised WO1 Lister, who was responsible for the overall works, to ensure historical accuracy, using Army manuals from the war as well as experience from archaeological excavations in Britain and Belgium. The combination of hard work and careful research means that the Halton trenches are a perfect recreation of training trenches of a century ago. The authenticity is not just down to sandbags, A-frames and fire-steps. It even includes the names given to the trenches and displayed on signs. In reality, many training trench systems named their elements, while all operational trenches were given names because this facilitated navigation through the labyrinth of inter-connected positions. In addition, naming trenches allowed individual units to mark their presence in a landscape: for example, a formation from a particular town or city would often use street names from their homes, while other names might reflect an incident or memorable feature. At RAF Halton Mr Lister's Liverpool roots are evident in 'Hope Street Trench', while 'Fat Rat's Alley' says something about the wildlife encountered in another trench.

The result is a remarkable reconstruction of a First World War training site, built to the specifications of the appropriate manual, but it is more than that. The RAF Halton's trenches represent the labour of modern trainees who were keeping fit and learning valuable skills for their RAF careers. At the same time they now see themselves as part of a continuing tradition stretching back into history, and a history with which they have physically engaged. Meanwhile, the SATT who follow them will also learn through experience, as they extend and maintain the trenches for years to come. Finally, the very positive response of the young airmen and women was testament to the value of the project and the effort put in by RAF Halton staff: while it may be a tradition in the Services that one never volunteers for anything, the trainers found there was never a shortage of personnel ready and willing to experience military training of days gone by in order to create something for today!

Martin Brown
Archaeological Advisor, DIO

RAF Halton This rusty fragment of a hand-grenade shows that these trenches were originally sometimes used for very real training © Crown

RAF Halton A local ginger beer bottle found during re-excavation of the trenches. Evidence of refreshments bought and enjoyed by trainees © Crown

Satellite tracking gannets at **Bempton Cliffs**

The project in action © Steve Race

Joint project with **the Royal Society for the Protection of Birds**

Objectives of the project were; to carry out satellite tracking of breeding gannets; and to investigate their foraging ranges and destinations in relation to proposed sites for offshore wind farms.

At the British Trust for Ornithology (BTO) Ringers' Conference I was approached by Dr Rowena Langston of the Royal Society for the Protection of Birds (RSPB), who had an outline plan, and a promise of funding, to enquire whether the MOD could assist in any way with a project at Bempton Cliffs RSPB Reserve in East Yorkshire in July 2010 and July 2011. The requirement was to place satellite trackers on the tails of northern gannets *Morus bassanus* to allow their feeding grounds to be pinpointed in the North Sea.

Renewable offshore wind energy is a modern buzz word and wind turbines a familiar sight on many horizons today on land and at sea. Behind this particular proposal was the Crown Estate's decision to licence nine offshore wind zones to successful bidders; three of these – Dogger Bank, Hornsea and Norfolk Banks Zones – are relatively close to Bempton. Of particular concern were the gannets, and as a condition of the licensing process, the Department of Energy and Climate Change had agreed to fund research into the birds' feeding forays. Gannets rely on the fish in the North Sea to raise their young and could conceivably be on a collision course with the proposed wind farms once constructed. Rowena had been tasked with carrying out this research working closely with Dr Keith Hamer of Leeds University who has extensive experience working with gannets and satellite trackers on the Bass Rock, near North Berwick, Scotland.

The gannet is the largest UK seabird with a wingspan of over 2 metres (m). Bempton's gannetry is the largest on the English mainland with a population of approximately 20,000, breeding on the 120m high cliffs. The gannets pair for life and are specialised divers often from 30m above the sea hitting the surface at speeds of up to 100 kilometres per hour. Their skull is designed like a crash helmet and the bird's throat pouches fill with air as they hit the water, rather like a drivers airbag, preventing damage on impact.

My part in the project was to source climbers of sufficient skill and confidence to negotiate the loose and easily disturbed Cretaceous chalk cliffs directly above the sea. Not only was the climbing an issue, but there was also the serious possibility of dislodging large fragments of stone, which

could tumble down onto the birds below. An additional consideration was that it was highly unlikely any military climbers had ever experienced catching or handling a gannet before!

My immediate thoughts were to contact the Joint Services Mountain Training Wing (JSMTW) at Ripon. On completion of the necessary protocols JSMTW saw the project as a challenge and kindly scheduled it into their busy summer programmes.

With the climbers sourced, the cliff top party remained to be organised, and the equipment necessary to fit the tags and ring the birds to be found. This is not quite as simple as it sounds and there is a real skill to securing these antennae to the tail feathers so that they will not drop off prematurely. Once fitted, they can be followed by satellite for several weeks and as part of the learning process we found that some continued to send signals for much longer than the 30 or so days originally expected, with 84 days being the longest period achieved by one single transmitter.

Armed with all the necessary climbing gear, hessian sacks, catching poles and additional ropes, and after a certain amount of reiterating the potential dangers to the birds – never mind the climbers, three stalwarts from the Royal Army Physical Training Corps accessed the colony during two descents. Despite years of practice and experience abseiling down cliffs, the prospect of outcrops of loose stone dropping off onto the chicks below was daunting, the care being taken not to cause injury to man or bird! With the birds breeding so close together the need to select every step carefully also became apparent; the potential for casualties was everywhere. After a period of trepidation and time taken to create small operating platforms, the climbers quickly became accustomed to the sensitivities of the situation. The first birds were eventually hooked and the unique opportunity to hold one of these large, powerful birds without being seriously bitten was finally experienced. A suitable technique for 'bagging' and sending the birds up to the cliff top was soon developed and thereafter the quota of 15 adults on both occasions was virtually achieved. Having reached the top the birds were processed with great care to ensure no damage was done to either the processor or the bird itself. With a metal BTO ring fitted the bird was weighed and measured before having the substantial antenna fitted around the four central tail feathers.

As the battery life of the transmitter fades the antenna is expected to fall off when the bird moults and renews its tail feathers; there is no chance of recovery of these moderately expensive items.

It was difficult to decide who was more relieved as the birds were individually released; the indignant 'solan geese' were certainly pleased to be free again but there was a palpable sign of relief within the processors also! Holding an adult gannet for 15 minutes at a time, bagging and measuring it, keeping it still while the antenna is fitted all takes patience, skill and some luck. Their bite is fierce and guaranteed to leave a very obvious laceration!

The tags lasted for between 13-84 days and results showed that the majority of the direct feeding flights ranged between 50 – 100 kilometres (km) of Bempton. The average direct foraging range from Bempton was 63.6km while the average length of a return foraging trip was 158.6km and at the time of writing several of the 2011 transmitters are still providing information.

The information generated will inform the licensing of the wind farm project around the Wash and will ensure the gannets continue to thrive in relative safety in the future.

The project was a great success and the result of collaboration between RSPB, JSMTW and MOD on a largely inaccessible site.

Thanks go to the expert climbing skills and determined approach of WO2 (QMSI) Ady Haslam, Chips Rafferty and Andy Phillips, all current or ex members of the Royal Army Physical Training Corps and Drs Rowena Langston and Keith Hamer who arranged and supervised the tagging. Members of our own Swaledale Ringing Group from Catterick benefitted greatly from the opportunity to handle and process these magnificent birds.

Maj (Retd) AJ Crease
Deputy Commander, DTE North

Gannets at Bempton Cliffs © Maj (Retd) Crease

Maj (Retd) Crease holding a gannet
© Steve Race

Maritime environmental assessments in **The Royal Navy**

Dolphins escorting HMS Ocean in the Arabian Gulf © Crown

The maritime dimension

For many years the majority of MOD's work on environmental protection has lain within the defence estate. The Armed Forces have used established firing ranges across the UK for many years. Indeed, many such sites which now form part of the Defence Training Estate have created a protected environment for species by default thanks to the enforced absence of human influence. However in recent years UK national and European Union (EU) legislation embracing the maritime environment have increased considerably. Controlled areas with maritime components are known generically as Marine Protected Areas (MPAs).

MPAs are primarily concentrated in UK's coastal waters. This in part reflects the practicalities of identifying and defining the need for protection but also the greater concentration of biodiversity in coastal waters. Whilst habitats and species on land are relatively easy to access, assess and monitor, at sea millions of square kilometres of open ocean make these processes far more difficult. It is often impossible to define accurately the locations, populations, movement and status of species or their habitats. Hence the majority of protected areas with marine components tend to be coastal or inshore where research is easier and controls can be based on well founded data. This applies to many breeding and feeding habitats for protected species of birds, general coastal habitats, the sea bed and the protection of marine mammals. The further from the shore we go, the less precise our knowledge becomes and the more difficult it is to define the environmental risk.

Maritime legislation

There is now a much greater emphasis on identifying, defining and managing environmental risk in UK waters, resulting in new legislation which has both national and EU authority. This legislation will result in a significant increase in the number of MPAs and will also expand their presence throughout our offshore waters out to the approximately 320 kilometre limit of UK's Economic Exploitation Zone (EEZ). The principal vehicles for MPA expansion are currently the development of Marine Conservation Zones (MCZs) throughout English, Welsh (through the use of 'Highly Protected Areas') and Northern Ireland waters under the Marine and Coastal Access Act 2009 and in Scottish waters the establishment of new MPAs under the Marine (Scotland) Act 2010.

Environmental risk management at sea

The Royal Navy (RN) recognises that many of their activities carried out at sea have the potential to impact on the environment to varying degrees and is determined to ensure that this risk is both managed effectively and minimised. In support of this overarching philosophy Environmental 'Standard Operating Procedures' (SOPs) are considered and generally devised during the procurement cycle before any military equipment comes into service. These are often modified in the light of experience at sea or as a result of changing requirements and legislation, but they ensure that the use of naval equipment meets appropriate environmental legislation and that the potential for adverse environmental impact is minimised.

However, these globally applied procedures may not always be adequate when operating within or adjacent to environmentally sensitive or important marine areas. Therefore within UK waters where MPAs are clearly defined, MOD planners are being provided with a chart based system giving them precautionary guidance on environmentally appropriate activity. This guidance will

be supported by the production of 'Additional Military Layers' (AMLs) within the RN electronic charting systems, incorporating environmental data on MPAs and the RN environmental guidelines. By activating these AMLs planners will be able to identify exactly where MPAs are located, what their status and qualifying interests may be and what environmental guidelines should be applied when operating in their vicinity.

It is anticipated that this guidance will result in some activities moving to other sea areas or to be otherwise moderated early in the planning process in order to avoid any interaction with MPAs. However, if neither of these options is viable and the guidelines cannot be adhered to, it will be necessary to conduct a deeper analysis of the impact of activities by using the Maritime Environmental and Sustainability Assessment Tool (MESAT).

The MESAT has been developed to steer Naval planners through a detailed analysis of their intended activity, providing a much fuller assessment of the risks and suggesting appropriate measures to be taken in mitigation.

Should a MESAT assessment identify that, even with mitigation, there remains a significant risk to the environment but it is deemed that there is a pressing need to proceed, wider engagement with Statutory Nature Conservation Bodies (SNCBs) will almost certainly be required. With SNCB advice it may be necessary to undertake further environmental assessment and it may even be possible that a license to conduct the activity would be required.

These levels of risk management can be seen as a layered approach to safeguarding the environment as illustrated in the diagram opposite.

The environmental guidelines embedded in MESAT cover every type of Naval activity and every UK MPA, together with similar guidelines for activities on the high seas remote from any MPA. They have been developed in consultation with the UK Government Joint Nature Conservation Committee and the individual SNCBs in England, Scotland, Wales and Northern Ireland.

Throughout, the process has been steered by the key directive by the Secretary of State for Defence which is that environmental protection comes before the achievement of exercise aims and is only subordinate to operational necessity.

Whilst the MESAT addresses all forms of potential environmental impact, those which most engage Naval planners relate to noise generated by exploding ordnance on the sea bed or in the water column and the use of high powered active sonar. Such activities tend to be targeted and blamed for environmental incidents by environmental pressure groups and often by the media. This is especially so in relation to the stranding of marine mammals. This blame culture emanates in part from a lack of understanding of Naval activity, particularly in terms of its frequency and its intensity.

By conducting environmental assessments using the MESAT and employing the RN's standard safeguards such as Sonar Risk Assessments, planners will be able to demonstrate the actual levels of interaction between activity and MPA.

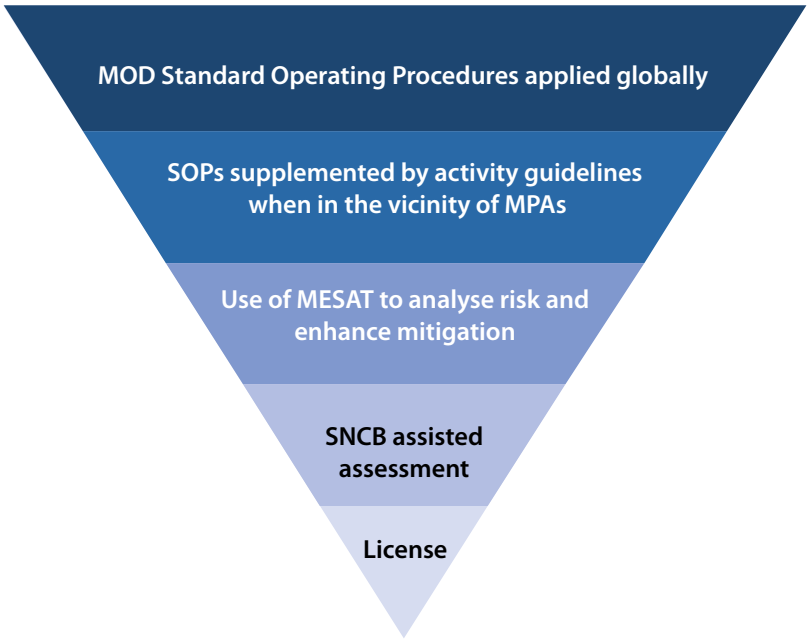
The reality is that these activities are subject to rigorous controls and safeguards based on the latest scientific research.

The MESAT will continue to evolve as legislation develops and in response to the latest research and scientific evidence, thus ensuring that the RN takes every possible measure to protect the habitats and species that form our rich maritime environment.

Commander Keith Redford
Royal Navy (Retd)
Principal Warfare Officer and navigation specialist.

His career spans nearly five decades, including over 25 years at sea and three sea commands.

LAYERED MARITIME ENVIRONMENTAL PROTECTION



Tedworth House

Tedworth House © Crown

An extensive renovation project will allow Help for Heroes to transform Tedworth House into a Personnel Recovery and Assessment Centre.

Tedworth House is a Grade II* listed building located at Tidworth, Wiltshire on the edge of Salisbury Plain and has been in MOD ownership since 1897. The present house was started in 1828 by Thomas Assheton Smith III, however a previous house stood on the site, but its location, design or architecture are all unknown.

Smith created a magnificent house and grounds, parts of which have survived to the present day. One item which unfortunately does not survive is the 'railroad' from the kitchen to the dining room, along which dishes were carried, and 'thus he obviated the necessity of his servants quitting the room and the consequence delay'. As this anecdote shows, Smith himself was a larger than life character, and whilst some contemporaries portrayed him as the typical country squire, liberal with his purse and popular with all classes of society, it was also said of him that 'he was never happy unless he was engaged in a quarrel'.

Along with the building of the House, Smith's obsession was hunting and he also built the adjacent magnificent stables and kennels which could house 50 horses and 400 hounds. His other passions included yachting, rowing, cricket, billiards and boxing. In the grounds there was the kitchen garden and the mausoleum. The mausoleum no longer exists though a fine print in the Illustrated London News shows the interior. On Smith's death in 1853, the house was rented out to a succession of tenants, one of whom was Edward Studd, whose son, CT Studd, went on to play cricket for England against Australia to win the Ashes in 1883.

The house was sold to Sir John Kelk in 1878. Kelk made his fortune as a civil engineer and he and the architect John Johnson worked on many famous joint projects including Alexandra Palace, the Victoria and Albert Museum, and the imposing church of St Mary's Tidworth, which stands a short distance from the house. The church is now unused, but it is maintained by the Churches Conservation Trust. Kelk and Johnson renovated and rebuilt large sections of the house in the 1880s. Kelk's monogram – JK – can still be seen over the entrance of the North Range, and his coat of arms is over the south façade.

There are several notable features of the house and grounds. The large building to the rear of the house is described as a 'Skating Rink' on a Victorian maps. Rather than an ice skating rink, further research has shown that it was a roller skating rink – one of the earliest in the country. Within the house a particularly fine decorative feature is the stained glass which shows naturalistic scenes of birds, fish and animals. Despite the very high quality of the work, who the artist was remains a mystery.

With a growing presence on Salisbury Plain by the Army, Tedworth House was an ideal location for use by the War Office, and it was purchased in 1897. The House was initially used as the residence and offices of the Garrison Commanding Officer Royal Engineers. In 1899 it became the Army's Headquarters for Salisbury Plain and in

Decorative stained glass window © Crown

Kelk coat of arms © Crown

"TO INSPIRE OUR WOUNDED, INJURED, SICK AND RETURNING VETERANS TO LEAD ACTIVE, INDEPENDENT AND FULFILLING LIVES WHICH WILL ENABLE THEM TO REACH THEIR FULL POTENTIAL AND TO SUPPORT THEM, AND THEIR FAMILIES, FOR LIFE".

Tedworth House logo © Help for Heroes

1905 became the official residence of the General Officer Commanding-in-Chief until the early years of the First World War when it became the Tidworth Officers' Club and later, nurses accommodation, which continued to the interwar years.

During the Second World War, Tedworth House was given to the United States Army for use as a club for GIs run by the American Red Cross and the Tidworth Officers' Club was located in 'The White Bungalow' in Tidworth. In 1947 Tedworth House reverted to the Officers' Club. It was also used as nurses' accommodation until 1977 when the military hospital closed and then served as an Officers' Mess and Officers' Club until 2011.

As part of Project Allenby/Connaught, new and refurbished officers' accommodation have been built elsewhere in Tidworth to fulfil the requirements of the modern serviceman, and the Officers' Mess was moved out of Tedworth House. Without an occupant the magnificent House was in danger of falling into disrepair so a buyer or lessee was sought.

Help for Heroes expressed an interest in Tedworth House as a Personnel Recovery and Assessment Centre (PRAC) for wounded Servicemen and women. The complex negotiations proceeded well and the keys to Tedworth House were handed over to the charity, Help for Heroes on the 18th February 2011. An extensive £17 million renovation project by Help for Heroes will result in Tedworth House becoming the PRAC to include support and activities for wounded, sick and injured service personnel.

Chris Daniell
Senior Historic Buildings Advisor
Historic Environment Team, DIO

The Three Graces © Crown

Monitoring sooty terns **on Ascension**

Sooty tern © AOS

The Army Ornithological Society (AOS) organised a Joint Service scientific expedition in March 2011 to Ascension Island to monitor various bird populations as part of the Seabird Restoration Programme.

This was the 16th expedition to the Island by the AOS, which enhances the work carried out by the local conservation office by concentrating on the sooty tern *Onychoprion fuscatus* population. The sooty tern on Ascension is unique in that it has a breeding cycle of 9.6 months rather than yearly as with most other populations. Over the years the AOS has built up an invaluable long term data set on the sooty tern. There are two main breeding colonies on Ascension, Mars Bay and Waterside which are just over three kilometres apart on the south west coast.

Over the years the AOS has ringed over 20,000 birds so one of the first activities on arrival is the re-trapping of ringed birds. On this trip we re-trapped 385 birds against a 102 hour effort. The ringing programme has confirmed sub-annual breeding and will enable us to estimate adult and juvenile survival. The second task was the survey of the fairs (sub-colonies). This involves working out the size of the fairs and the density of the birds. Quadrats of ten square metres are used to work out the density. It was very noticeable how groups of birds on the fairs are starting to spread out so instead of one large fair there could be five different subcolonies. It was estimated that the birds on Mars Bay occupied 5.22 hectares at a density of 1.32 per square metre and that on Waterside the area was 5.47 hectares with a density of 2.05 per square metre giving a estimated breeding population of 181,000 pairs.

Nest survival exercise

A nest survival exercise assists in determining the breeding success. An aspect of the breeding is the amount of eggs that are deserted during the incubation phase. There is more desertion on the edges than in the middle. One reason is the predation on eggs by common myna *Acridotheres tristus* that have a habit of pecking several eggs before eating one. Once the eggs have hatched the chicks then face predation during their first week by Ascension frigate birds *Fregata aquila*. After a week the young are able to find hiding places under rocks eventually forming large crèches. Rat surveys were also carried as the introduced black rats *Rattus rattus* predate both eggs and chicks. Samples were taken of the rats for analysis by the Royal Society for the Protection of Birds (RSPB) to determine the percentages of their diet during the tern breeding season.

Attaching the geolocators

We have good data for the birds during their breeding on Ascension, but we do not have any evidence of where they go once they head out to sea. We know the young spend five years at sea on the wing before they return to breed. We suspect the adults head to parts of the ocean that are rich in sprat and squid; where deep cold currents mix with warmer waters.

Technology enables us to attach geolocator tracking devices to rings on legs and one of the main aims of the trip was to attach geolcators to 20 birds. The geolocators are programmed to record the time of daylight, from which longitude and latitude can be determined. But to do this the devices have to be recovered to download the data. The geolocators are attached after the ring has been fitted to the birds leg. This is a delicate job as the ring has to be firmly in place and a special licence is required. They have only a miniscule impact on the bird as the rings weighs less than two grams.

Re-trapping the birds

To enhance the chances of re-trapping a bird with a device we have marked the birds with additional coloured rings and about 120 of their neighbours. We know that the birds are neighbour faithful rather than site faithful so if we locate one bird with the additional coloured rings, the birds with a geolocator will be close by.

Unfortunately there are many things that could prevent the birds returning. To improve the likelihood, we ringed

birds in a small sub-colony separated from the main group and thus likely to fail in breeding which will mean that they should be in the first wave of returning birds.

Next steps

Our first attempt at re-trapping will happen in early January 2012 and there will be another opportunity in October 2012.

The geolocators were funded by the University of Birmingham, RSPB, The Royal Navy Bird Watching Society and the AOS. It is expected that our results will form part of the case for an EU Net Biome project to ring birds around the world to determine their movement at sea. This is an exciting scientific development in understanding the migration of seabirds. Our experience will also influence the fitting of geolocators to other birds as well as sooty terns.

Summary

This was a very successful expedition which added to our scientific knowledge on the sooty terns breeding on Ascension. Our thanks to the Service ornithological societies and the Ascension Island Conservation Office that worked together to improve our knowledge and understanding of birds on the island. Finally, our thanks to RAF Ascension and HQ British Forces South Atlantic, as it is their support that allows the Services to continue to be highly regarded by the authorities responsible for the governance and conservation of UK Overseas Territories.

Andrew Bray
Army Ornithological Society

Ascension Island Government © AOS

Masked boobie © AOS

Member of AOS walking in the tern colony fair © AOS

Met Office awarded **biodiversity benchmark**

Common blue © Neal Pearce

In July, the Met Office achieved the Wildlife Trust's prestigious benchmark for biodiversity at its Exeter HQ. While proactive biodiversity management at the Met Office was initially instigated by a small group of volunteers, it is now set to be applied at other Met Office sites.

The Biodiversity Benchmark Award from the Wildlife Trust recognises the Met Office's efforts in integrating wildlife and environmental considerations into its day to day operations. Only 15 organisations in the UK have met this rigorous standard so far and the Met Office is the first from the public sector.

This standard is very difficult to achieve and maintain, as it requires sites to be environmentally managed to the highest of levels. This award reflects the commitment of the Met Office to minimise its negative impacts upon the environment, whilst endeavouring to promote and actively enhance the biodiversity performance from its sites.

The Benchmark follows on from the work of volunteer members of staff at the Exeter site who helped to create its first wildflower meadow. In 2007, an area of the Met Office Exeter HQ site was developed into a wildflower meadow and work began to clear the area of invasive weeds.

Through a combination of meadow stewardship and selective planting of native wildflowers, the diversity of observed species improved significantly. Initially the area designated as a wildflower meadow covered 0.3 hectares, but this has now been extended to 1.2 hectares.

To support continuing work in pro-active environmental management, the Met Office adopted biodiversity as an environmental objective in 2010. Additional habitats have now been identified across the site to encourage a wide range of wildlife. Bee hives have been added and nesting boxes for swifts and bats are being investigated as part of a regional project supported by the Devon Wildlife Trust.

The range of work has already had a positive impact, with significantly more diversity of species observed on the site, including the rare maiden pink *Dianthus deltoides* wild flower, which is classified as a nationally scarce species.

The key to getting this recognition has not only been in recognising and encouraging biodiversity on the site, but also integrating biodiversity considerations into the management systems to ensure environmental concerns are taken into account in the decisions we make.

Looking to the future, the Met Office aims to increase biodiversity management across its sites, widening best practice to its other sites as it continues to build on its commitment of encouraging biodiversity.

Neal Pearce
Environmental Advisor
Met Office

Met Office

Understanding Loe Pool for its future

Loe Pool from the Loe Bar, looking towards the National Trust's Penrose Estate © Sarah Maiden

Loe Pool near Helston in Cornwall is a special place, deeply in need of some special measures to bring it back to its former glory. Loe Pool was formed several thousand years ago when a vast bar of shingle blocked the mouth of the River Cober, to form Loe Bar. The lake is a unique habitat for rare mosses, algae and insects – including the only known Cornish habitat of a rare woodlouse *Porcellio dilatatus*. It is an Area of Outstanding Natural Beauty and a Site of Special Scientific Interest. But the lake is suffering from a surplus of nutrients, making it prone to algal blooms which devastates it of its wildlife. This leaves parts of the lake bed bare of plants and devoid of invertebrates on which higher animals depend.

To address this problem a group of stakeholders was formed to do something about managing the lake and bringing it back to its former good ecological status. The Loe Pool Forum is a group of concerned organisations which includes the Royal Navy, Environment Agency (EA), National Trust (NT), Natural England, Kelda Water Services, Cornwall Council and Cornwall College. The Royal Naval Air Squadron (RNAS) at Culdrose discharges to the pool via a treatment works on the Carminowe stream. Kelda Water Services is responsible for the operation of the works, via the Aquatrine contract.

A year-long scientific program was arranged to check nutrient concentrations and gauge flow in the tributaries to the Pool. NT volunteers did the work on the ground, while Kelda's strategic partner Severn Trent Labs undertook the analysis. Now that the results have been analysed by the EA and put into context, they have surprised everyone, and are guiding the Forum on where to focus its attentions. It has been shown that the Naval Station produces over 20% of the nutrients entering the pool - a significant proportion, and the first time it has been quantified. Farming practices add another significant proportion, often via the over-application of NPK (nitrogen, phosphorous and potassium) fertiliser, or via sludge handling practices.

The project has now moved into a difficult phase; that of moving onto the solution. The NT is in a position to influence agricultural sources of nutrients, since much of the catchment is comprised of tenanted NT farms.

Efforts to decrease nutrients originating from RNAS Culdrose is likely to come in two forms – removal of phosphate using chemical dosing at the treatment works, and a forthcoming European ban on phosphates in washing powder.

The efforts of the Forum should help to improve this beautiful, part of the county. A remarkably similar issue has arisen at Llyn Penrhyn lake near RAF Valley in Anglesey, and a similar project to gauge impacts is due to begin in 2012.

Dr Lewis McCaffrey
Environmental Manager
Kelda Water Services

Carminowe stream in flood
© Dr Lewis McCaffrey

From Thin Air to **Hot Air**

Completed refurbished timber hut © Landmarc

Generating energy and reducing carbon emissions using air source heat pumps at **Sennybridge Training Area**

In 2008 the Defence Training Estate (DTE) undertook a Sanctuary-award wining project to provide environmentally friendly heating to camp accommodation blocks. Having proved significant carbon and energy savings as well as improving the quality of accommodation for visiting units, the concept has been extended and is again delivering against the MOD's energy agenda.

Sennybridge Training Area (SENTA) is the third largest military training area in the UK at nearly 15,000 hectares and is located on the Mynydd Epynt, a plateau that lies between the Brecon Beacons to the south and the Cambrian Mountains to the north.

The camp forms the headquarters of the DTE Wales and West and provides facilities for live firing and dry training. It has the capacity to accommodate 1,151 soldiers at any one time.

The camp was developed during the Second World War. Timber hut accommodation buildings were put up on site as cheaply and as quickly as possible, at a time when energy efficiency was of little or no concern. With no wall cavity insulation, only 100mm loft insulation and a heating system with no temperature or time controls, by modern standards, energy efficiency of the buildings was extremely poor and a solution to improve or remove energy consumption was needed.

With the accommodation still required by visiting units and no available funds for replacement, refurbishment of the existing assets was the only viable option. In order to reduce energy costs and carbon emissions it was decided, following technical analysis, that a combination of improved insulation

Stripped out timber hut showing timber frame and roof structure above suspended ceilings © Landmarc

Completed refurbished timber hut © Landmarc

and efficient modern controllable heating would be the best option, which would also meet the departmental payback requirements.

Insulation of existing structures

In order to bring the insulation value of the external fabric of the building up to current building regulations it was necessary to completely strip out the existing internal wall linings and suspended ceilings thus exposing the underlying timber frame. Whilst carrying out this exercise it was possible to determine the condition of the frame and carry out remedial works before relining. Timber ceiling joists were fixed to the existing structure so that a plasterboard ceiling could be constructed, above this 300mm of fibreglass insulation was laid, thus ensuring this part of the structure complied with building regulations. The walls were lined with insulated plasterboard.

Replacement heating system

Each wooden hut contained three LPG fuelled heaters without electronic igniters or any form of thermostatic control which were notoriously difficult to ignite and consequently tended to be left on. The heaters were removed and replaced with air to water heat-pumps, running on mains electricity. The heat emission being via a pressurised wet radiator system filled with an anti-freeze solution. The heat pump is a low carbon alternative to traditional boilers. The heat pump works by using heat from the air, converting it to a higher temperature through gas compression. The process is very similar to how a refrigerator works, except it is in reverse, producing useable heat. Heat pumps are seen by the Carbon Trust and Government as preferable to traditional heating methods. They are a low energy option for providing heat that is capable of using renewable energy. As such the DTE was able to apply for and obtain a grant which contributed significantly to the cost of the heat pumps.

To answer the question of why air source as opposed to ground source, the simple answer is cost. When heat pumps were first used on the DTE at Crowborough, ground, rather than air was the source of choice. Technical data on air source energy demonstrated at that time that ground source was the more efficient provider of heat. Now air source performance has improved and savings (in comparison to ground source heat pumps) are made through installation costs as there is no requirement to drill a borehole for each pump installation and there is no disruption to the substrate which could affect aquifers or water tables.

Partnering success

As the Defence Training Estate's strategic partner, Landmarc Support Services were involved at an early stage. By coordinating the development and submission of the projects through Landmarc's Building Services Manager and in liaison with the DTEs Energy Working Group it was possible to establish shared objectives which enabled the smooth delivery on time and within budget.

The project is an example of partnering at its best, even enabling Landmarc to reschedule planned maintenance expenditure on internal decorations and rewiring to coincide with the project so that expenditure from the MOD and Landmarc were mutually beneficial.

Emission reductions

Twenty accommodation huts were refurbished throughout the two-phase project. As part of the phase one works meters were fitted to both an improved hut and an unimproved hut to monitor energy usage. Each hut was subjected to similar occupation patterns with meter readings being taken on a weekly basis. The findings indicated fuel cost savings in the region of 90% and a reduction in CO_2 emissions of around 98% equating to 26 tonnes per year.

The refurbishment scheme is expected to break even in 10 years, whilst the heat pumps have a life-span of at least 15 years. In addition, structural improvements to the buildings themselves have added at least another 15 years to the life of the camp, providing extremely good value for money on the original investment.

Helen Self
Communications Manager
Landmarc

Original timber accommodation hut showing Drugasar heaters, poorly insulated suspended ceiling and un-insulated walls © Landmarc

Balmacara House
An exemplar of collaboration

Final tidy up after works complete © Stephen Hudson, Turner Estate Solutions Ltd

Balmacara House lies on a remote coastal site on the west coast of Scotland near the Kyle-of-Lochalsh and is within easy reach of some of the most spectacular mountain ranges in Scotland: The Cuillins on Skye, Kintail and Torridon.

The 13 bedroom house was built circa 1805 by Sir Hugh Innes who sold it to Alexander Matheson MP for Ardross. It was later sold to Sir Daniel Hamilton, (politician, social reformist, and philanthropist) who bequeathed the estate to be administered for the good of the people of the Highlands. It is now leased to the MOD by the Highland Regional Council.

During its lifetime the House has had many identities including an agricultural school, accommodation for Royal Navy submarine trials teams and emergency accommodation for up to 100 submariners on camp beds! It was transferred to the Defence Training Estate in April 2007 and is now a tri service facility, used mostly by the Defence Diving School (DDS) as a training facility, due to its proximity to deep sheltered offshore diving.

On transfer to Defence Training Estates (DTE) from the Navy work was undertaken to refurbish the building. A collaborative approach between Defence Infrastructure Organisation (DIO), DTE and Regional Prime Contractor (Scotland) (RPC S) industry partner Turner Estate Solutions (TES), has seen Balmacara House refurbished to become a Tri-services facility as a training facility for the Defence Diving School. With good communications and an ever-increasing understanding of each others requirements, a strong relationship was formed and funding was found to enable extensive remedial work to be carried out to the exterior and interior of the building.

Over the three month renovation the outside of the house was completely renovated including replacing rotting windows, rendering, decorating, the replacement of rotting roof-timbers and most of the guttering. Inside there has been some major plumbing work under the banner of legionella prevention, a major overhaul of the showers and ablutions and full redecoration of the interior of the house. All of this work has given Balmacara House a new lease of life and should ensure that the house remains in good condition for years to come. The facility accommodates 35 personnel and guests enjoy the use of two TV lounges, two dining rooms, a gymnasium, bar and self-service laundry. It is planned to use the building as a base for adventure training across the Armed Forces.

The RPC S team worked closely together to ensure the works were completed to the highest standard, despite working through one of the most severe winters in recent history. The team also worked with the landlord - The Highland Council, and National Trust for Scotland for their consent and agreements.

There is still work to be done in the future but those that have been involved are very pleased with the results and see it as an exemplar of

During works © Stephen Hudson, TES

what can be achieved, despite a scarcity of resources, through good communications and cooperation.

Commander DTE Colonel Mark Waring travelled up to see the work completed to date, and recorded a special note of thanks to John Rennie Deputy Head Ops (DHO) EM (Scot & NI) and the RPC S team for supporting this project, and to TES for completing the work on schedule.

Ronnie Graham Assistant Head EM (Ops N) and DIO Project Manager said:

"DIO's top priority is supporting our Armed Forces in preparing for operations. Balmacara House is a unique facility and we're delighted to have helped secure its future and make a significant difference for those who use the estate. We formed a strong relationship with our partners and found significant funding which allowed us to renovate this historic building and make it fit for our Service personnel to use in the 21st century. This is an excellent example of what can be achieved when the estate community work closely together as it can and has in this case made a significant difference for others. "

Lieutenant Commander Jacqueline McWilliams, 2IC Defence Diving School, said:

"Balmacara House has for many years provided a base for our staff and students whilst undertaking the arduous deep diving element of professional diving training and although the House staff have always been exceptionally helpful and professional and the food excellent the building has not always been up to the task. This recent refurbishment has improved the House significantly turning a tired, dated and cold building into an excellent facility with good accommodation and recreation areas. DDS looks forward to many more years use of the House."

James Morice, TES Operations Manager North said:

"Turner Estate Solutions are delighted to have been associated with this unique refurbishment project, collaborating with all involved to deliver on time despite being challenged by the poor weather conditions encountered at this remote location."

Jillian Kelly
Communications Advisor
Turner Estate Solutions Ltd

Prior to works © Stephen Hudson, TES

Finishing being applied © Stephen Hudson, TES

The RPCS team with Colonel Mark Waring Commander DTE (bottom row, second from the right) © Stephen Hudson, TES

SANCTUARY

THE MINISTRY OF DEFENCE CONSERVATION MAGAZINE

Sanctuary is the MOD publication aimed at highlighting the environment and heritage work carried out **across the defence estate both in the UK and overseas**

This year marks its 40th edition and for the first time the publication has been generously supported by our industry partners and we would like to offer our thanks to Aspire Defence, Babcock International Group, CarillionEnterprise Ltd, Kelda Water Services, Landmarc Support Services and Lend Lease.


carillion
Enterprise
Aspire
defence
Kelda
Water
Services
LANDMARC
babcock
Lend Lease

11(ATT) Squadron RM Instow

One of the new facilities 'green roof' incorporating sun pipes which are innovative forms of natural lighting © Debut

Vehicle Dip Tank, Catering Facilities and Accommodation

Defence Infrastructure Organisation (DIO), in collaboration with Prime Contractor Debut, have maintained their excellent record in the delivery of sustainable buildings, through the provision of new training facilities at RM Instow.

The village of Instow in north Devon is home to the Royal Marines 11 Amphibious Trials and Training (ATT) Squadron. The surrounding geographical features enable them to train in extreme conditions of sea and surf. The beach conditions and vehicle access also make it the ideal location to train Amphibious Beach Unit (ABU) personnel in beach reconnaissance and recovery operations. Landing Craft coxswains are trained to negotiate the most demanding beach conditions. Drivers are taught to embark and disembark from Landing Craft, wading across water up to 1.5m in depth.

The aim of this project was to provide new living accommodation, training facilities, catering amenities, armoury and magazine stores, demolishing existing structures no longer required. A crucial element of these facilities was the provision of a new vehicle dip tank, which is where drivers and mechanics are taught to waterproof their own vehicles and trials of new vehicle types or vehicle waterproofing kits take place.

In accordance with MOD policy sustainability was a key consideration in the design and construction of the project, the new facilities incorporate many sustainable features including:

- Natural ventilation including wind catchers
- Natural lighting including sun pipes
- Passive solar shading
- Rainwater harvesting
- Solar water heating
- Sedum roof
- Flow restrictors on taps and low flush WCs
- Presence detection lighting
- Re-use of excavated material
- Re-use of existing dip-tank to house rainwater harvesting tank
- Use of imported recycled material

The buildings achieved a Defence Related Environmental Assessment Methodology (DREAM) score of 85%, equivalent to Building Research Establishment Environmental Assessment Method (BREEAM) Outstanding. The recycled content of materials exceeds MOD targets; for example, the steel reinforcement was 100% recycled. The project diverted 91% of waste from landfill, in excess of the MOD target of 80% and innovations in design led to features such as a green roof.

Partnering

Working collaboratively with DIO, the project was delivered through Debut's local supply chain partners with materials and labour locally sourced wherever possible, within 50 miles of the site.

Environmental impact

A Debut Environment and Sustainability Manager was assigned to the project and was a key member of the project

delivery team from the outset. A MOD Sustainability Appraisal was undertaken in accordance with the Sustainability and Environmental Appraisal Tool Handbook during Assessment Study stage to identify potential issues and minimise environmental impact from project inception.

In accordance with MOD Policy all construction works followed sustainability best practice, taking account of statutory and mandatory environmental regulations and agreements and project value engineering assessments. Initiatives implemented during construction to minimise carbon emissions included a *"Lights Out Policy"*, identifying which lights and equipment can be turned off when not in use through risk assessments and a Carbon Management Plan that incorporated actions to stop idling of plant and equipment and the use of energy efficient machinery. Fuel and electricity usage data was collected and monitored on a monthly basis, with energy consumption analysed and trends identified for future reduction.

A construction waste diversion from landfill rate of 91% was achieved through a Site Waste Management Plan, which included designing out waste, minimising offcuts and damage to materials, and making use of 'take back' schemes.

Thermally efficient building

The majority of the structure was made up of concrete panels pre-fabricated off-site by local company Cornish Concrete. Over 70% of the material in the pre-cast concrete panels came from secondary sources, supplied locally, such as waste material from the extraction of china clay. By using pre-cast panels, many of the traditional hazards associated with concrete site works such as noise, dust and wastage on site were removed and on-site water use reduced.

Precast concrete, with in-situ concrete infill, was used within the envelope of the building, combined with rendered rigid board insulation, providing an increased thermal mass for the structure that exceeds current Part L Building Regulations by over 20%.

A Sedum roof was incorporated to improve energy efficiency and increase the building's thermal insulation properties. The green roof assists in removal of carbon from the atmosphere and compensates for the loss of green surfaces, providing a beneficial environment to bird, plant and insect life. Following heavy rainfall the sedum roof will also aid water attenuation, minimising initial heavy runoff, to prevent localised flooding and reduce pressure on the sewage system.

Instow dip tank © Debut

New catering facilities © Debut

Natural ventilation and wind catchers

Natural ventilation is provided through two differing variations of wind catchers to reduce energy useage, which operate by drawing air through a roof mounted louvered box, bringing it into the building at a controlled rate of flow, whilst simultaneously expelling warm air. To mitigate reliance on wind speed the wind catcher houses a fan, which is powered by a photovoltaic panel, providing an energy efficient means of natural ventilation and fresh air intake regardless of weather conditions.

Summary

This is an outstanding example of how sustainability and sustainable solutions can drive the design, construction and subsequent operations of a new building.

David Williams
DIO Project Manager

Bob Groom
Debut Project Manager

Catherine Pinney
Debut Environment & Sustainability Manager

2 RM Instow using the new dip tank © Debut

Heathland restoration at **Predannack Airfield**

Heathland restoration © OCS

Regional Prime Contractor OCS Defence (formerly Cannon Horticulture) together with supply chain partners Debut have made positive steps towards increasing the amount of internationally important Cornish heathland at Predannack airfield in south west Cornwall.

Predannack airfield in south west Cornwall is part of the West Lizard Site of Special Scientific Interest (SSSI) as well as an important training site for Royal Navy (RN) helicopter pilots. The threat of bird strike is a very real problem and the short mown grass that results from a continuous mowing regime can attract flocks of wading birds, particularly in the winter.

Making the runway environment unattractive for birds by moving away from short-mown grass was considered a better approach than relying on corrective actions that expel birds and during survey work remnant heathland plants were noted amongst the grass sward.

In the spring of 2007 the RN gave permission for a small trial area of mown grass to be excluded from the cutting regime with assurances given including the *"return to grass"* guarantee should the RN wish it. The operational, ecological, safety and financial viability of allowing areas to re-establish further was undertaken and trials were then extended in 2008 to include additional areas.

Andrew Tregunna OCS Operations Manager for Culdrose and Predannack said "we carefully selected areas where heathland plants were already growing amongst the grass and once we stopped the summer grass mowing regime the heather was able to re-colonise very quickly".

Heathland is a rare and threatened habitat worldwide with heathland on the Lizard being particularly special as it is derived from the underlying serpentine rock. This results in a diverse plant community that includes some species only found on the Lizard.

The reverting heathland is becoming well established and includes common heather *Calluna vulgaris*, western gorse *Ulex gallii* and bristle-bent grass *Agrostis curtisii* together with rare white-flowering Cornish heather *Erica vagans* and black bog rush *Schoenus nigricans*.

In July 2011 the National Trust carried out a botanical survey of selected trial areas to determine progress of heathland regeneration. The survey indicated very positive results with recommendations for further areas to be included in the restoration process.

'Within just a few seasons areas where the mowing pressure has ceased or relaxed have developed without intervention into lowland heath and lowland acid dry grassland communities of nature conservation value ..... It is recommended that further areas are taken out of the intensive mowing regime, and allowed to revert without intervention for two years'.

Rachel Holder
National Trust

On trial areas flocking birds have not congregated in recent winters and instead solitary heathland bird species can be seen including stonechat and the rarer Dartford warbler *Sylvia undata*. This approach is resulting in major gains for MOD in reducing the risk of bird strike, reducing mowing costs and increasing the area of internationally important heathland habitat making positive contributions towards UK and local Biodiversity Action Plan targets and MOD and Natural England conservation objectives.

It is hoped that more areas will become incorporated into this project and at OCS we hope to continue to play a major part in maintaining this very special SSSI in favourable condition.

Jeremy Steed
OCS Rural Estates Advisor

Cornish heather *Erica vagans* mix © OCS

Project Allenby/Connaught: **delivering a sustainable estate**

Common blue damselfly *Enallagma cyathigerum* © Iain Perkins

Project overview

Project Allenby/Connaught (PAC) became a reality in the Spring of 2006 when the 35-year Private Finance Initiative (PFI) contract was awarded to Aspire Defence Limited (Aspire), a consortium of Carillion and KBR. For readers unfamiliar with this hugely important £8bn project, it is redeveloping and maintaining the garrisons across Salisbury Plain as well as Aldershot, and on a vast scale:

- 385 new and 180 refurbished or altered buildings
- 500 demolitions
- 11,800 Single Living Accommodation bedspaces

A few quirky facts…

- Total area of construction sites is equivalent to five times the area of Hyde Park
- Using enough bricks to reach from London to Monte Carlo
- Over 5,250 tonnes of mortar will be used – more than the weight of 750 elephants

Progress has been impressive and in a little over five years nearly 400 new and refurbished buildings have been delivered, a similar number of demolitions have taken place and more than 7,200 soldiers are now enjoying their own single en suite bedrooms. All of this supported by a vast range of support services, from stores management to tailoring, from the provision of transport to catering, in fact everything needed to run a military garrison.

Many of the Allenby/Connaught sites are located adjacent to designated ecologically-sensitive areas, areas of natural beauty or within regions of archaeological significance, such as the Stonehenge World Heritage Site, and therefore sustainability was a key criterion during tender evaluation and throughout negotiations and is now embedded in the heart of the project in all its design, construction and service delivery elements.

This approach presented a number of significant opportunities for embedding sustainable development principles into the design and delivery of the Project. Given Aspire Defence's 35 year tenure to deliver the best possible service to the Army, the sustainable legacy of its buildings is of importance for demonstrating positive change and keeping up with the momentum of national efforts – particularly in government – for performing against increasingly tight sustainable performance criteria.

Achieving sustainability through design and innovation

Since the Project's beginnings in 2006, sustainable development has been incorporated as an important element of the masterplan, covering such features as landscape, water resources, building elements, waste management, energy technology and biodiversity. Aspire Defence has set about delivering these improvements under the auspices of BREEAM (Building Research Establishment Environmental

Solar thermal heating solutions at Assaye Barracks, Tidworth © Project Allenby/Connaught

Assessment Method); a national building scoring and certification scheme, which is being used to score 418 individual building projects, making it the largest ever certification. The scheme recognises measures such as efficient energy and water equipment, in-built ecology features and effective waste and energy monitoring regimes, all of which are being habitually incorporated into Aspire Defence's building designs.

An in-house team of licensed BREEAM specialists carry out detailed analysis of each building for energy and water use, materials efficiency, transport, waste management, ecology, public health, local amenities etc, to ensure that each one achieves a recognised standard of at least 'Very Good' for all refurbishments and 'Excellent' for most new builds. To date, over 370 buildings have been successfully certified.

A number of energy efficient technologies have been designed into our buildings since the start of the contract, where all appropriate new buildings will incorporate some form of sustainable energy technology. All new accommodation buildings are fitted with either solar thermal heating panels – with a surface area larger than the floor area of Westminster Abbey – or micro-CHP (Combined Heat and Power) boilers, as appropriate. Many large facilities, such as diners are also benefitting from solar thermal technology, in addition to air-source heat pumps for most offices, technical and training buildings, many having it as their sole source of heating and hot water, completely cutting out the need for gas or other fossil fuel energy. This is only possible where there aren't intensive hot water needs, such as showers and large scale catering.

A large number of buildings are incorporating under-floor heating into their design (evenly warmed floors instead of radiators) as an added energy-efficient element. At present there is a building scheme under design in Aldershot, that will be the first under the Project to incorporate ground-source heat pump systems, where all of the building's heating needs are supplied by geothermal sources. This will deliver a substantial saving on carbon emissions over the building's operational life, particularly as the country's supply of grid electricity moves towards more renewable resources.

Approach to ecology

Local ecological considerations are of high importance to the Project, particularly given the nationally significant landscapes that exist outside the garrison footprints. Tidworth Garrison sits immediately to the south-east of the Salisbury Plain Site of Special Scientific Interest (SSSI), an area of high chalk plain landscape type that rises locally up to Clarendon Hill. At points in the development phase, construction activities come very close to this boundary. Aspire Defence has taken special measures to ensure that ecological impacts are minimised as far as is possible through designating set-aside land for protection and following a rigorous monitoring regime.

Not all the inhabitants of the Project area wear uniforms, and Warminster Garrison, to the West of Salisbury Plain, has a healthy resident population of badgers to which particular attention has been paid in considerate working practices and awareness-raising to staff. Across all Project sites, other protected species such as nesting birds, bats and reptiles are being specifically considered through landscape assessment, land remediation and design components. The Project has a particular focus on minimising the long-term impacts to bat habitats within its footprint, particularly given the high number of demolitions and refurbishments taking place to buildings that have been successful habitats for these animals. Each building due to be demolished or refurbished is carefully assessed for the presence of bats and measures are taken to safely remove these bats under licence, if required. The new build phase of the Project will see 2,500 specially designed 'bat bricks' incorporated into the external corners of buildings, in addition to specially designed attic spaces to encourage future bat roosts and to sustain a healthy resident population in the camps. All in all this represents the largest bat mitigation project ever undertaken in the UK.

Where development has meant the necessary encroachment into areas of high ecology value, Aspire Defence has set in place measures to reduce the impact to protected species. The biggest such example of this work is in a reptile translocation scheme, which took place in Perham Down camp, safely relocating over 1,000 individual common lizards and slow worms, and holding them in a designated containment area prior to the site development.

Balancing water drainage with ecology and sustainability

Part of the masterplan for the redevelopment is an improved, ecologically sensitive approach to water resources and drainage. This approach begins with ensuring that water resources are used as efficiently as possible. Aspire Defence is fitting 100 buildings with rainwater harvesting tanks that collect rainwater that falls on the roofs for use in flushing toilets in the buildings. All internal water fittings are being installed as standard with efficient controls, such as push-taps

Brown long-eared bat safely being rehomed © Parsons Brinckerhoff

Otter holt adjacent to Basingstoke Canal, Aldershot © Project Allenby/Connaught

and air-infiltrating taps and shower heads. As weather patterns are often sporadic, it is important that development takes into consideration the influences of prolonged wet and dry spells on ecology and sustainable means of flood water attenuation. In a number of schemes, the latter need has been balanced with the needs of local ecology with the designing-in of water features, such as Sustainable Drainage Systems (SUDS) ponds and swales, which have a large capacity for collecting and naturally screening surface run-off water under gravity rather than relying on lengthy underground pipework and mechanical pumping systems. Where these ponds are being made an incidental wetland feature for local wildlife is also being created, promoting particular species of bird, mammal, amphibian, reptile and invertebrate to inhabit the area.

The SUDS features in St Omer Barracks in Aldershot, are of particular significance as they sit adjacent to the Basingstoke Canal, an important SSSI. These ponds serve to collect and screen run-off water before its outfall into the canal, which was an important development consideration. The canal is home to ninety species of aquatic flora. Among the vast array of native flora and fauna one prominent sight in late May is the emergence of thousands of dazzling common blue damselflies, *Enallagma cyathigerum*. In total, 24 species of Odonata (dragonfly and damselfly) have been recorded on the canal, raising its importance as a site of conservation due to the richness of the species found there.

In collaboration with the Basingstoke Canal Authority, Aspire Defence has tasked its employees with taking part in conservation and restoration activities along the canal. Over two years, a stretch of 60 metres of bank has been restored in a sturdy and sustainable manner, using hand-woven hazel branches and rolls of coir. This preserves the integrity of the soil abutting the canal waters, allowing waterside flora to thrive. The team has also created a stag beetle pyramid from felled tree trunks – also, incidentally, home to a growing number of fungus species – and a pair of otter holts to encourage these elusive mammals to make their home in the area.

Conclusion

The MOD made sustainability a key requirement in its negotiations prior to contract award. Aspire Defence embraced this requirement and as a result a large part of the MOD estate, accommodating 20% of the British Army, is being built, maintained and serviced to very high sustainability standards. It is at the heart of what is important to the supplier, Aspire Defence Ltd, and the customer, the MOD, over the duration of this 35 year contract. It is tempting to think that at the end of this period, PAC and other major estate development projects will have made sustainability a routine part of daily business.

Michael Whitehead
Environmental Advisor,
Aspire Defence Capital Works

Golden pholiota, *Pholiota aurivella*, emerging from 'Stag beetle pyramid' © Michael Whitehead

Conservation at the **Defence Academy**

Hover-fly *Syrphus pyrastri* on red campion *Silene vulgaris* © Crown

The Defence Academy is the institution responsible for post-graduate education and the majority of command, staff, leadership, defence management, acquisition and technology training for members of the UK Armed Forces and MOD Civil Servants.

The Academy has a number of sites across the UK and is comprised of the Royal College of Defence Studies, the Joint Services Command and Staff College, the College of Management and Technology and the Armed Forces Chaplaincy Centre. Serco is one of the Academy's strategic partners and provides a fully serviced infrastructure service across the Shrivenham site.

Carbon reduction

Both the MOD and Serco are working together to reduce the carbon footprint produced by the Defence Academy. One initiative has been the introduction of electric vehicles used by the maintenance team. These vehicles replaced fossil fuelled vans which were used to visit buildings on site and the married quarters to conduct routine maintenance. Additionally, the MOD had the Carbon Trust conduct and produce an Energy Conservation Management Plan which is being implemented in partnership with Serco. More effective insulation of buildings, light/heat sensors fitted to common areas are but a few of these initiatives.

The Defence Academy pledged its support to the 10:10 initiative and committed to reducing its carbon emissions by 10% during the 12 month period from 1 April 2010.

No funding was available for spend-to-save measures and reduction in carbon emissions, especially those attributed to energy, were to be achieved through behavioural change. To assist in this process, a Carbon Footprint Action Group was formed with representation from MOD, Cranfield Defence and Security, Serco and ESS. Furthermore, energy and green champions were identified within each workplace and used to disseminate information and promote energy conservation. Various other means to promote 10:10 were used including:

- 10:10 website
- Newsletters
- In-house magazines e.g. Community News
- Posters
- 10:10 stand at the Academy Open Day
- Competition for energy saving suggestions

As a result of the control regime, behavioral change and the requirement to reduce travel costs, the overall reduction in carbon emissions was 22.15%.

Conservation days

Sporting gardening gloves and with buckets of enthusiasm, 17 trainee lumberjacks, volunteers from the various Serco offices around site, converged on Little Wellington Wood for a day of conserving and conversing on this, the 2nd Conservation Day to be held at the Defence Academy of the United Kingdom.

In military terms, the mission was to clear the woodland floor of debris left behind after recent tree felling in order to enhance the development of flora

and fauna. In Serco terms, it provided the intrepid woodlanders with a chance to get to grips with nature whilst getting to know each other a little better.

It is true to say that the phrase 'not seeing the wood for the trees' has never resonated quite as clearly as it did on this particular day. However, sustained by a remarkable tea trolley, a barbeque lunch and a sense of humour the team achieved a tremendous amount in the given time and even the Grounds Maintenance Contractor said they'd done well! With everyone sporting aches, pains, bruises and big smiles the day soon came to an end, however, it is recognised that this sort of day is of value to both Serco employees and the local environment and it is hoped that these conservation days will continue to be supported.

Wild flower areas

There is now an abundance of native wild flowers growing in the natural grass areas. The 53 species identified, include ox-eye daisies, sneezewort, fleabane and campion. They not only look very attractive but also provide an ideal habitat and food source for a wide variety of butterflies and insects.

The natural grass areas are cut once a year in September after seeding has occurred. Native wild flowers thrive on poor soils and so all cuttings are removed to prevent them from enriching the soil.

Bower Brook Wood

The strip of woodland that runs along the south bank of the Bower Brook is made up from 23 species of trees and shrubs. Whilst the aspen and grey alder predominate, there are also good specimens of box, yew, oak and beech. For the purpose of management, this area has been divided into ten sections, each of about 60 metres in length. Each year one section will be cleared of all unwanted undergrowth and saplings (elder, hawthorn, blackthorn, small elms etc.) during December and January. Shade tolerant plants such as yew and spindle, along with potential future trees will be retained. Wood piles will be made from the felled saplings. These will be allowed to decompose and provide habitat for insects and small mammals.

Trainee lumberjacks © Crown

Willows

The crack willows were pollarded in 2001 and are reduced to a 2.5 metre height every 10 years. Timber cut from the trees has been left in stacks to decompose, providing a refuge and food source for insects and cover for small mammals and amphibians.

This short article provides a brief overview as to some of the work the Defence Academy and Serco carry out on the Shrivenham site in support of nature conservation and energy awareness.

Nigel Mulholland
Defence Academy SHEF Advisor

Darren Harrisson
Serco Quantity Surveyor

The crack willows © Crown

Biodiversity Conservation within the **Sovereign Base Areas of Cyprus**

Arab mantis *Blepharopsis mendica* © Makris Christodoulos

The biodiversity within the Sovereign Base Areas (SBAs) of Cyprus is extremely diverse. Explained below are the benefits of biodiversity conservation and the challenges facing the SBAs future managment.

Biodiversity of habitats and species in Cyprus and the SBAs

Cyprus is part of the Mediterranean Basin, one of the hotspots for biological diversity on Earth. At the same time, the environment of this region is highly threatened due to the rapid, unsustainable development of coastal areas, which are Europe's favourite vacation destination.

The restrictions on non-military development have retained extensive areas in the two SBAs of Akrotiri-Episkopi and Dhekelia, in semi-natural condition with high conservation value. The same applies to the retained site of Troodos and the former training area at the Akamas Peninsula. As a result, most part of the SBAs as well as Troodos and Akamas have been designated or are candidate Special Protection Areas (SPAs) and Special Areas of Conservation (SACs), under SBA ordances whereas Akrotiri wetlands have been designated as a Ramsar Wetland of International Importance.

Habitats

Although the SBAs cover only approximately three per cent of the area of Cyprus (approximately 25,400 hectares), they host an impressive share of its biodiversity. The mosaic of Annex I habitats (of the Habitats Directive) within the SBAs and Troodos covers 31 terrestrial and marine habitat types (out of a total of 64 in the whole of Cyprus), including six priority ones (out of a total of 18 in Cyprus). Akrotiri wetlands is the largest aquatic system in Cyprus with a wide range of saline and freshwater influences, comprising a major salt lake, saline pools, salt marsh, sand flats and freshwater marshes. Episkopi Forest includes primarily *Juniperus phoenicea*, arborescent matorral, *Cupressus* forest, *Olea* and *ceratonia* forest and Mediterranean pine forest. Cape Pyla consists mainly of Aegean phrygana and vegetated sea-cliffs. Dhekelia Garrison covers *Sarcopoterium spinosum* phrygana and Arborescent matorral with *juniperus* spp. and Troodos Camp has good examples of Pallas's pine forest.

Flora

It has been estimated that Akrotiri Peninsula alone, within the Western SBA, hosts between 800 and 1000 vascular plant species, representing 40-50% of all the flora taxa found in Cyprus.

The Red Data Book of the Flora of Cyprus includes 328 rare, endangered plants. More than 45 of these occur within the SBAs and Troodos Camp, with 17 having been recorded in Cyprus only within the SBAs including: a broomrape *Cistanche phylypaea*, a species from the sedge family *Cladium mariscus* and pungent sage *Salvia dominica*. Akrotiri Peninsula alone, which is one of the three best hotspots of threatened plants in the Republic of Cyprus (along with Troodos Forest and the Peninsula of Akamas), hosts 22 Red Book Plant species.

More than 35 out of the 52 Cyprus orchid species occur within the SBAs and Troodos Camp, with more than 30 at Akrotiri Peninsula alone.

Vertebrate fauna

The fauna of Cyprus includes an estimation of at least 36 mammal, 370

bird, 24 reptile, three amphibian, 250 fish and 6000 invertebrate species. The most prominent feature within the SBAs is its avifauna, with 260 bird species recorded at Akrotiri Peninsula alone. Akrotiri Salt Lake and the surrounding marshes, lagoons and pools, halophilus scrubs, eucalyptus plantations and farmland support the largest number of water birds in Cyprus as well as other bird species. These include 89 migratory water bird species, thousands of overwintering flamingos, hundreds of roosting demoiselle cranes, large concentrations of white storks and common cranes, 20 staging species of sandpipers, dozens of nesting pairs of black-winged stilts and Kentish plovers. Plus significant numbers of overwintering shelducks and large numbers of migratory slender-billed gulls and bee-eaters. Fassouri marsh regularly hosts nesting spur-winged plovers and in 2005 became a nesting site (the only one in Cyprus) for the globally endangered ferruginous duck. In addition, it is one of the two nesting sites on the island for the black-headed yellow wagtail.

Akrotiri is an important site for migratory raptors as well, with 25 species recorded passing through the area, including hundreds of redfooted falcons, thousands of honey buzzards and hundreds of marsh harriers and lesser kestrels. The cliffs at Akrotiri and Episkopi are important breeding sites for the migrant breeder Eleonora's falcon, as well as the resident breeders Griffon vulture, European shag and peregrine falcon.

The mammalian interest within the SBAs and Troodos Camp includes eight bat species confirmed so far, the most notable being the maternity roosts in coastal caves at Episkopi and Cape Pyla of the Egyptian fruit bat *Rousettus aegyptiacus*, and the maternity roosts within buildings at Troodos Camp of the greater noctule bat *Nyctalus lasiopterus* and the Mediterranean long-eared bat *Plecotus kolombatovici*.

Akrotiri marine caves are home to another significant mammal, the Mediterranean monk seal *Monachus monachus*, which is a priority species of Annex II of the Habitats Directive. The rest of the mammals within the SBAs are common in the rest of Cyprus (fox, hare, hedgehog, rodents, dolphins), but there are occasional surprises such as a recent record at Akrotiri of a group of 20 rough-toothed dolphins *Steno bredanensis*, which stranded - eventually rescued - at Lady's Mile Beach.

A notable part of the reptile and amphibian interest within the SBAs includes the nesting beaches of loggerhead and green turtles, both being priority species of Annex II of the Habitats Directive, the significant coastal habitats of Schreiber's Fringe-toed lizard *Acanthodactylus schreiberi* and the important populations of Savigny's treefrog *Hyla savignyi*, which are an important part of the food chain at Fassouri Marsh.

As far as fish are concerned, it is worth mentioning the South European toothcarp *Aphanius fasciatus*, which occurs within the saline part of Akrotiri wetlands.

Blunt-nosed viper *Vipera lebetina* © Pantelis Charilaou

Invertebrate fauna

The marine, freshwater and land invertebrate interest within the SBAs includes a rich representation of the island's diversity.

It has been estimated that insects in Cyprus number around 5,000 species, but only a few groups have so far been studied well. The results of these studies indicate that a significant proportion of the Cyprus insects occur within the SBAs. For example, out of the total of 52 butterfly species identified in Cyprus, 46 occur within the SBAs and Troodos, including the three endemic *Glaucopsyche paphos, Hipparchia cypriensis* and *Maniola cypricola*. Also, out of the 34 Odonata, the 86 Buprestidae, and the 242 Carabidae species, 25, 33 and 102 species accordingly, occur at Akrotiri Peninsula alone, where the total number of insects has been estimated at more than 2,000 species. This includes many endemic species as well as insects with distribution limited to Akrotiri, such as the impressive *Chlaenius dimidiatus* found only at Fassouri Marsh and the endemic *Xantomus cyprius subsp. cyprius* found at Lady's Mile. Other impressive insects found at Akrotiri are the tiger beetle *Megacephala euphratica* and the Arab mantis *Blepharopsis mendica*.

Challenges and future management

The environment of the SBAs are under mounting risks from both natural and anthropogenic factors. The biggest natural pressure comes from climate change and the continuous reduction in rainfall levels in Cyprus. The average precipitation for the period 1916-2000 was 513 mm, whereas for 1987-2000 it was only 447 mm, down by 13%. Water is a key factor to the ecology of Akrotiri wetlands and SBA Authorities have commissioned a Water Level Management Study to inform the management decisions for the way forward.

Coastal erosion due to a combination of different factors - river damming, quarrying of sedimentary materials, tectonic movements and mean sea level rise - is another threat for Akrotiri Peninsula. Soft measures and a managed retreat strategy have so far been employed to address this issue.

Seral succession is another significant biological factor, which is changing the

herb and rush meadow at Fassouri Marsh into reed-bed. The tools under consideration to deal with this are water level management, controlled fire, targeted harvesting and grazing. The anthropogenic pressure includes aspirations for all kinds of development, both military and civilian, including dwelling houses, golf courses and other large scale leisure development, warehouses, industrial facilities, renewable energy plants, roads etc. These cause potential direct damage such as habitat loss and fragmentation as well as indirect impact. The management of these pressures is underpinned by environmental legislation such as the Environmental Impact Assessment, the Protection and Management of Nature and Wildlife and the Protection and Management of Wild Birds Ordinances. This legislation imposes requirements for conservation of protected species, environmental assessment, and designation and management of protected sites.

Unmanaged access and activities put additional pressure on the environment, by damaging sensitive habitats, species, soil, hydrology and other features. Fly-tipping, poaching and fishing are also detrimental human activities. Characteristic examples are the shooting of 52 red-footed falcons at Fassouri plantations in October 2007 and more than 50 marine turtles, the majority of which apparently killed as fishing by-catch, which washed up on the SBA beaches at Akrotiri-Episkopi Bay last year.

The introduction in the last century of alien invasive species, especially *Acacia saligna*, is having a continuous adverse impact on biodiversity. The control of these species is one of the priority management actions underway.

Tiger beetle *Megacephala euphratica* © Makris Christodoulos

The SBA Authorities are co-operating with the Republic of Cyprus, NGOs, independent experts and other stakeholders, engaging in baseline studies and research to support biodiversity conservation. Considerable investment has also been made in environmental education through the establishment and operation of the Akrotiri Environmental Education and Information Centre. The Centre is part of a pan-island network of environmental centres, run by the Ministry of Education and Culture of the Republic of Cyprus, offering environmental programs to schools, as part of their education curriculum. The Centre is also promoting ecotourism and European exchange programs, as another area of environmental opportunity.

The future

The biodiversity within the SBAs is a significant part of the natural wealth of Cyprus and the whole of Europe. We all have a responsibility to ensure its preservation for enjoyment by both current and future generations. This can only be achieved through the implementation of sustainable principles in agreed, holistic, long-term management approaches supported by wide stakeholder participation and commitment.

Pantelis Charilaou, HND Eng, BSc Eng, MSc Eng, Pgd Eng, MSc EDM
Acting Head of SBAA Environment Department

Two whip snakes © Chris Goodman

Conservation of Micromoths in the **Falkland Islands**

Exaeretia ammitis - a species with fully formed wings © Andrew Wakeham-Dawson

Borkhausenia falklandensis - a brachypterous moth with reduced wings © Andrew Wakeham-Dawson

The Falkland Islands lie in the South Atlantic Ocean about 500 km east of Patagonia in South America. The islands are a United Kingdom Overseas Territory and British troops have been stationed here in significant numbers since 1982 when the sovereignty of the islands was challenged by an invasion of Argentine forces. The 700 or so treeless islands that make up the archipelago are famous for their wildlife and attract visitors from all over the world who come to see the marine mammals, penguins and other bird species. Far less well known are the plants and insects. About 80-90% of the flora is also recorded from Patagonia and Tierra del Fuego but includes about 13 species unique (endemic) to the Falkland Islands. The insect fauna is similar with some species being common to the South American mainland or introduced from elsewhere - but again there is a number of interesting species that are endemic to the Falkland Islands.

Falkland Islands Invertebrate Conservation Programme (FIICP)

A few studies of Falkland Islands insects have been carried out over the last hundred years or so but it was not until soon after the Conflict in 1982 that attention was focussed on them and a preliminary catalogue was drawn up by the late Dr Gaden Robinson at the Natural History Museum (NHM), London. Further progress was made when Falklands Conservation (the organisation overseeing wildlife conservation in the islands) launched its Invertebrate Conservation Programme (FIICP) in 2004. This project was set up to allow the Falkland Islands to become signatories to the UN Convention on Biological Diversity. The fieldwork was carried out between 2004 and 2007 by Dr Alex Jones supported by the NHM, London, the University Museum of Zoology, Cambridge, and funded by the Darwin Initiative through Defra. Falklands Conservation's aim was to catalogue the invertebrates present in the islands in order to identify species of conservation priority and draw up Biodiversity Action Plans (BAPs). Identification of the specimens collected during the study is a lengthy process. I was posted to the Falklands in 2005-2006 and 2009-2010 during which time I was able to contribute to data collection for FIICP and I am currently identifying the moth material, concentrating initially on the smaller 'micromoth' species.

The Micromoths

Using various types of net and light-traps, the survey collected material from some 18 micromoth species: five of these are species, such as the brown house moth *Hofmannophila pseudospretella* and clothes moth *Tinea pellionella*, which have arrived in the islands with humans; at least six are Patagonian species (such as the oecophorid *Exaeretia ammitis*) most likely blown over by the prevailing wind and the others are endemic species. This relatively impoverished fauna is probably a result of the isolation and austere conditions of these islands. Study of FIICP material has revealed at least four species that appear new to science and we are in the process of formally describing them.

Adaptations to sub-Antarctic island habitats

Of particular interest are three species of endemic micromoth, each in a different taxonomic family, that have evolved wings so reduced in size and shape that the moths can no longer fly. These short-winged brachypterous species are: *Borkhausenia falklandensis* (an oecophorid moth), *Irenicodes holdgatei* (an elachistid moth) and a, as yet unnamed, species of gelechiid moth.

Flight is a risky business in the strong winds of the Falkland Islands; it is all too easy to be blown significant distances

from an isolated food plant. Instead, these moths crawl or jump, using their short wings for balance, in the relative safety among the tussac grass *Poa flabellata* on which they depend. The tussac grass grows in mounds (fibrous pedestals) up to three metres tall and, in the absence of overgrazing, dominates the ground right across small islands and around the coastline of the larger islands. The pedestals can be hundreds of years old. They provide a plentiful source of food for the moth larvae and a warm, sheltered microclimate; conditions that other species such as sea-lions and about three quarters of the nesting birds also exploit. Although these moths are endemic to the Falkland Islands, species of flightless moths have also evolved on other sub-Antarctic islands in similar environmental conditions.

Detrimental effect of over-grazing

Tussac grass, however, provides a nutritious source of forage for livestock especially during winter. Over 80% has disappeared in the last hundred years as Falkland farmers have traditionally used it to feed their sheep and cattle, often taking the livestock over from the main islands to the closer small islands by boat. The result is that the slow-growing tussac has been over-grazed and the valuable habitat it provides destroyed or seriously reduced in quality: so endangering the moths and other species that rely on it. Over-grazing is not just restricted to tussac grass: many areas of grassland have been over-exploited and vegetation does not grow back easily given the impoverished soil and austere weather.

Conservation of grassland

In response, Falklands Conservation is encouraging controlled grazing and re-planting of tussac grass. Farmers around the Falklands have responded to the conservation of this important habitat, often with the help of conservation parties made up of islanders and military personnel. It is also interesting to note that there is a rich diversity of plant species in grassland within the boundary of Mount Pleasant Airfield from which domestic grazing livestock are excluded. This and other areas where grazing is controlled are rich in plants such as the bush-daisy *Chiliotrichum diffusum* and a range of micromoth species such as the plume moth *Lioptilodes rionegroicus* and a new species of momphid moth. The growing awareness of the conservation needs of grassland habitats and the species they support will ensure the survival of the unique and fascinating Falkland Islands wildlife.

Revd Dr Andrew Wakeham-Dawson
HQ Air Command
Chaplaincy Service
RAF High Wycombe

Looking for moths in overgrazed tussac grass, Weddell Island © Andrew Wakeham-Dawson

Tussac grass on West Point Island © Andrew Wakeham-Dawson

The Falkland Islands **update**

A striated caracara *Phalcoboenus australis* with albatross chick © Roy Smith

A Year in the British Forces
South Atlantic Islands Conservation Group

The group was re-established in June 2010 and with nearly 100 members we try to mix conservation with enjoying the rich and varied wildlife that is present in the Falklands. We have the luxury of a Ramsar site; Bertha's Beach on our door step. Participating in the Beach Cleaning event Beach Watch 2010, we managed to collect only 14 bags; the beaches here are generally clear of the detritus that plagues many other countries.

We have a very positive working relationship with Falklands Conservation and have joined forces in order to undertake various conservation tasks such as blue grass and tussac replanting and eradication of rats from isolated islands. Now we are helping secure a penguin sanctuary facility for oiled birds.

One of the challenges British Forces South Atlantic Islands (BFSAI) and the Group face is controlling invasive species. We have three kinds of thistles – spear, creeping and winged. The burrs catch on the sheep's wool and when shorn this detracts from the price paid; thistle can be spread in the fleece too. Another common invasive plant is ragwort which can cause respiratory problems in exercising troops when crawling through grass contaminated with ragwort.

The Group is lucky enough to help in some small way with conservation work in exchange for a chance to learn about the successful interactions between various species such as at New Island where we have a wonderful relationship with the New Island Conservation Trust. At the rookery we watch the imperial cormorants and rockhopper penguins nesting together; both enjoying mutual protection against predators. Ian Strange and his daughter Georgina have provided the opportunity for our members - Service personnel and civilians alike to learn about these collaborations, generously encouraging us to appreciate nature in a beautiful, unspoiled environment.

The Group, regularly travel cross country to Whale Point. After an *"interesting"* journey of one and a half hours where those in the car get an opportunity to really get to know each other, being thrown around when travelling across the rough terrain. We arrive both shaken and stirred at the beach where there can be as many as 50 elephant seals. This is a mammal that likes to lay in groups but gets quite aggressive if one fidgets; they are huge, noisy and interesting. The bulls have a large proboscis and a thick layer of fat especially around the neck. This serves to protect the animal during the disagreements and when sparring in the mating season when the most

Paloma Beach © Roy Smith

dominant gets his harem together. The bull is as much as four times larger than the female. You can also see Commersen's dolphins play "surfing" on the breaking waves.

Driving to the beach is not plain sailing and it is not unusual to get the whole car "beached" on the peat. A chance look on Google Earth identified the interesting but isolated Paloma Beach. Land owner Lewis Clifton granted permission for a visit and we were put in touch with the land manager Nick Davies to make arrangements. 23 of the Group travelled from a windy (46 knots) Mount Pleasant to a calm and fogged-in Port San Carlos – about 35 miles. Here, the entire party was invited in for tea and cakes by Nick and his partner Doreen before setting off under their guidance. Incredible scenery greeted the Group as the mist cleared and provided an exciting journey over high hills, past incredible rock formations and down steep gullies. It is safe to say that sitting at the bottom of one such *"mountain"*, none of us really believed that the route would include a drive to the top; but it did.

As we neared our destination clearing skies revealed the most pristine beach, turquoise water, rolling waves and white sand. It looked good on Google Earth but was physically breathtaking standing there. Plans to beach clean melted when we saw that there was little to clear and set about delighting in the king, magellanic and gentoo penguins. At one point a king penguin came out of the sea, walked and stood in the middle of our group members, so close that even with a wide angle lens it more than filled the viewfinder! A further exciting overland return and more tea and cakes made it a real day to remember.

King penguin *Aptenodytes patagonicus* © Roy Smith

Very recently the members helped reduce sheep casualties by filling in abandoned Observation Point's (OP's) at an MOD site, Bush Rincon. Acting as animal traps, the fox holes had killed sheep unfortunate enough to fall in. Camouflage netting too was ensnaring the sheep and causing distress. The task was too big for manual work and we were able to use one of the major plant vehicles to carry the back-fill earth after manually clearing each of the OP's. Enthusiastic help was provided by the Group members including the Volborth family – Dad Jim, Daniel (7), Zoe (5) and Eleanor (4). The area was made safe, litter collected and good fun was had by all.

The BFSAI Group meet each second Wednesday of the month in the Joint Education Centre at Mount Pleasant. We have enjoyed talks on invasive species, eradication of rats, the role of Falklands Conservation and penguins (of course!), conservation work on Gough Island and on the BFSAI ranges with impromptu discussions with local land owners.

Joining the Group gives anyone the opportunity to get off camp at least once a month, to explore and enjoy the rugged Falklands environment; and be so close to nature that you can smell it. I apologise in advance for the penguins and Elephant seals!

Roy Smith
British Forces South Atlantic Islands Conservation Group Chairman

Around the Regions
with the Conservation Groups

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

1. **RAF Valley,** Anglesey
2. **RAF Henlow,** Bedfordshire
3. **RAF Halton,** Buckinghamshire
4. **RAF Wittering,** Cambridgeshire
5. **Aberporth Range,** Ceredigion
6. **Antony,** Cornwall
7. **Penhale Sands,** Cornwall
8. **Predannack,** Cornwall
9. **Ballykinler,** County Down
10. **Magilligan,** County Londonderry
11. **Warcop,** Cumbria
12. **Britannia Royal Naval College,** Devon
13. **Bovington and Lulworth,** Dorset
14. **Kirkcudbright Training Centre,** Dumfries & Galloway
15. **MDPGA Wethersfield,** Essex
16. **MOD Shoeburyness,** Essex
17. **RAF Leuchars,** Fife
18. **Abbey Wood,** Gloucestershire
19. **Defence Training Estate Home Counties,** Hampshire
20. **Defence Munitions Gosport,** Hampshire
21. **HMS Excellent,** Hampshire
22. **The Army Training Regiment Bassingbourn,** Hertfordshire
23. **Newtown Range and Jersey Camp,** Isle of Wight
24. **Defence Training Estate South East,** Kent and East Sussex
25. **Altcar Training Camp,** Merseyside
26. **Stanford Training Area,** Norfolk
27. **Bicester Garrison,** Oxfordshire
28. **Royal Military Academy Sandhurst,** Surrey
29. **Thorney Island,** West Sussex
30. **DM Kineton,** Warwickshire
31. **Boscombe Down,** Wiltshire
32. **Bulford,** Wiltshire
33. **Imber,** Wiltshire
34. **Larkhill and Westdown,** Wiltshire
35. **DSTL Porton Down,** Wiltshire
36. **DST Leconfield Carrs,** East Yorkshire

Spotlight on… MOD Shoeburyness Conservation Group, Essex (16)

Twm Wade outside the Manor House © Crown

Would anyone believe that Britain was big enough, or had rivers that were big enough to form a delta. Well, at the mouth of the Rivers Thames, Roach and Crouch there is a delta and all the islands are owned by the MOD.

For 150 years the MOD has had an artillery range at Shoeburyness that is unique to Europe because shells can be fired over water and retrieved from the vast foreshore known as Maplin Sands. The whole area is of international environmental importance for feeding migratory birds but also has a long history with its major waterways that were key to trade in years past.

I took up responsibility for the land management of the site on 1 April 2004 but attended my first Conservation Group meeting on 4 March, which Tony Garrick chaired. Meetings remain quarterly with the exception of the 100th which was held on 28 April 2006. The 100th meeting was shorter than usual and members moved on to the celebration where Ian Andrews, 2PUS, at the time was the principle speaker. Many of the founder members attended as well as the great and the good. With beautiful weather, it was a wonderful occasion.

There have been administrative changes as the Group evolved in step with the working arrangements between MOD and QinetiQ. The great strength of the Group is the diversity, enthusiasm and dedication of its members and the great respect between volunteers and those who are paid, like me.

We started the process of creating the IRMP (Integrated Rural Management Plan) in February 2006. There was intense activity in the first year while information was collated, considered, drafted into a report which supported a plan of action, de-conflicted, redrafted, revised, updated and so on. This was being done while keeping up with other work. In addition, the process of its creation gave rise to insights that needed urgent addressing; new work.

So what has been achieved and what lost…..

The main loss was the accidental destruction of 45% of the UK's annual sea purslane *Atriplex pedunculata*. We had a surviving population of introduced plants at Ware Corner (Part Foulness SSSI Unit 15). The Group had promoted landscaping of the area to provide nesting for terns but the machine operator was not mindful of the plant and buried it under the spoil. As chairman, I had some personal responsibility and quickly learned that I needed to be alert to the possibility of machine operators not having environmental awareness. There have been attempts to establish a population elsewhere but it is a very specialised pioneer plant with a seed and seedling that is nutritious for birds and susceptible to competition and prolonged flooding.

The gains have been many, the IRMP draft has benefited from increased and improved delivery of statistical data collated by members of the group. There is also a greater knowledge of what species the site has and where they are located for example the identification and location of water voles *Arvicola terrestris*, long eared bats *Plecotus auritus*, and avocets *Recurvirostra avosetta*.

My principle contribution has been a study of the drainage ditch network and identifying priorities so that the reduced funding can be used to address key areas and issues. Once we have a working network in place, we can find a suitable location for annual sea purslane, for terns and avocets to nest safe from predation and other flora and fauna to prosper.

The other matter I have focussed on is to bring unused areas into a sustainable system of management, restoring Unit 4 to grassland (not scrub), finding ways of reducing ground maintenance costs while having a management scheme that ensures the environment is maintained and enhanced.

As regards the historic environment, we have 12 'listings' one of which is Grade 2* and also on the Buildings at Risk register. The good news is that Temple Trust, a buildings preservation trust, are willing to take on the Manor House on Suttons Road (also know as Suttons Manor). We hope to establish a network with Temple Trust, that will eventually bring on board others that are willing to take on vacant listed buildings needing restoration.

We are fortunate in having within the estate the Foulness Conservation and Archaeological Society (FCAS) who established the Heritage Centre in the former primary school. As the name suggests, this society covers both the natural and historic environment and has brought together much of the history of Foulness Island. The Centre opens to the public once a month in the summer and runs tours for the visitors. Not only does the FCAS contribute to Group meetings, it is also the agent to fulfil the Group's aim to involve local people and provide a forum to discuss the natural and historic environment resource on the site and bring it to the notice of the wider public. At the same time, it is making the site accessible to the public.

Avocet © Crown

So, while this has been a personal journey outside my previous experience, I have been blessed with a dynamic team of knowledgeable and experienced people who are conversant with what the site does and passionate about the site's heritage and environment. I am sure we will see the volunteers in the Group continuing to contribute to MOD's stewardship of MOD Shoeburyness for many years to come..

Twm Wade
MOD Shoeburyness Conservation Group Chairman

Corn bunting © Crown

Anglesey
RAF Valley (1)


Aerial view of RAF Valley © Crown

RAF Valley Conservation Group is made up of representatives from Countryside Council for Wales, Royal Society for the Protection of Birds, Environment Agency Wales, Kelda Water Services (Defence) Limited and the Ministry of Defence.

RAF Valley is located on Anglesey, north Wales. Within 3km of RAF Valley there are 11 Sites of Special Scientific Interest (SSSI), three Special Protection Areas, two Special Areas of Conservation (SAC) and one Area of Outstanding Natural Beauty.

Llyn Penrhyn SSSI (Llyn being the Welsh word for lake) forms part of the Valley Lakes SAC, and following concerns raised over levels of nutrients and algae growth in the lake the group agreed to the establishment of a separate Llyn Penrhyn Technical Working Group made up of suitably qualified experts. They were tasked with planning a study to identify the origins of the extra nutrients. Next year there will be intensive water sampling in and around the lake. The group are working towards a target date of 1 January 2012 as the start to the monitoring year. Data collected will be then be used in a computer model to help decide on the most effective actions to reduce nutrient levels.

Robert A Hughes
Station Energy & Environmental Protection Advisor

Bedfordshire
RAF Henlow (2)

RAF Henlow Conservation Group has created at conservation area on the north site of the Station. A small group of volunteers at have taken nearly two years to create a wildlife pond. The pond is alive with water beetles, pond skaters, water snails, water boatmen, dragonflies, damselflies and many other invertebrates. There is seating available for those who wish to have their lunch in the area or just want five minutes away from the office. One of the benches in this area is made by Crown Paints out of recycled paint pots.

The pond took quite a while to excavate due to finding part of an old platform from the railway line that used to run through the station. After many, many evenings digging, the base was finally finished. The pond was lined with old carpet, sand and we did manage to have a few laughs along the way.

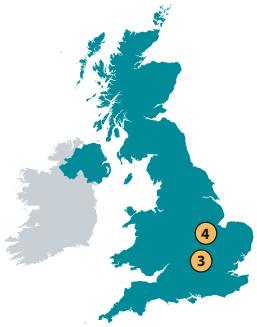

Dragonfly © SAC Mainwaring

A liner was placed over the sand and filled up with the help of the Fire Section and it didn't take long until we had our first live visitor to the pond – a hedgehog.

A couple of rain water butts were fixed to the nearest building to supply water for the plants. Once the plants were in we built a wooden picket fence in-between the buildings and planted a willow hedge in a semi-circle around the pond with willow donated from Priory Park, Bedford. The area is a dog free area and families are welcome as long as children are supervised at all times.

Our next project is a Nature/Heritage walk around the grass airfield. This will involve creating nature boards for all the flora and fauna, history boards showing the station as it was during construction in 1917 using pictures from glass negatives donated to the station and renovating the two pillboxes that will be included in the walk.

Denise O'Hara
Conservation Group Secretary



Buckinghamshire
RAF Halton (3)

The RAF Halton Conservation Group has, despite being somewhat disjointed for the last two years, been proactive and remains lucky to have some extremely enthusiastic volunteers who have continued their good work in the absence of a committee. Some of the activities that have been carried out include newt surveys by newly trained attendees of the DIO course, bird surveys and a fantastic woodland management project. We have a member who is involved with local barn owl projects and bat groups; he has been monitoring our bird boxes which have proven extremely successful this year with multiple broods. The bird survey identified a number of Red List species such as skylarks, spotted flycatchers, starlings and song thrushes; there were also a good number of Amber List species including house martins, red kites, mistle thrushes, stock doves and barn owls.


Barn owl © Crown

The woodland management project has been underway for over a year now and involves the clearing of rides and coppicing of Rosemead Covert, a small woodland area which is located at the southwest corner of our Airfield. Previously the wood had become overgrown and was not very bio-diverse; the project aims to create a thriving habitat along with a functional training area. It has provided, and will continue to provide, an opportunity for young people and cadets to have a hands on go at conservation activities and learn about woodland species. It will also provide a long term project for the Conservation Group volunteers who will get the opportunity to learn about methods of management and creating habitats and an area in which personnel can enjoy the stunning surroundings.

To really bring the group together, the first meeting of volunteers took place in July and will hopefully culminate in the compilation of a three year plan for projects and surveys. This will enable the group to continue their good work in the conservation of what is, by all accounts, a beautiful Station.

Kathryn Dunnell
Station Health, Safety and Environment Advisor

Cambridgeshire
RAF Wittering (4)

Conservation activities have continued quietly in the background of significant change at RAF Wittering this past year which ultimately saw the decommissioning of the Harrier aircraft and its supporting services; a poignant time for the military but I think the birds were quite happy.

In the summer of 2010 the Harrier was still flying regularly, so the birds needed to be vigilant; a pair of curlew decided they wanted to set up home and raise their young on the airfield grass. Probably not the best option to go for but, on behalf of the curlews, One Complete Solution (OCS) grounds maintenance in negotiation with the Station flight safety team obtained permission to leave the nesting area uncut to allow the curlew to hatch and raise their young successfully.

OCS personnel regularly report ad hoc flora and fauna observations; during 2010 we received notification of good crops of early purple orchid in one of our woodland areas, a couple of grizzled skipper and half a dozen dingy skipper butterflies.

In January 2011, whilst an OCS representative and I escorted Natural England (NE) on a visit to the Station we were lucky enough to observe a couple of waxwings feasting on the berries available to them on our south west boundary. The birds are slightly smaller than a blackbird, have striking colourful plumage and a signature crest on their head. I was advised that this sighting was quite a rarity for the region as apparently they are predominantly seen further east, particularly to the north. The good breeding season in their native Scandinavia had forced flocks to seek food further afield than was usual; hence landing on our native soil.

NE was primarily on site to assess the annual scrub clearance for Whitewater Valley Site of Special Scientific Interest (SSSI). Clearance of the scrub focuses


Waxwing at RAF Wittering © OCS

Curlew nest and eggs, RAF Wittering Airfield © OCS

on the bog area and allows for the natural habitats of both flora and fauna to flourish in this wet woodland.

During the latter part of the financial year the Site Estate Team (SET) earmarked a number of buildings on Station for demolition; this included two old communication buildings located in the wooded area of the SSSI. Work in the SSSI cannot be carried out without assent from NE; an initial visit from NE established that one building was all but demolished by natural degradation and would only need rubble removing. The second building was derelict but still a sound brick structure; a potential 'home' for bats. It was decided that even though Regional Prime Contract had carried out an environmental impact assessment of the area it would still be beneficial to take a more in depth search around the brick structure for evidence of bat life.

Visits from a licensed bat surveyor, torch in hand, concluded that bats were not using the building, so the demolition was completed early March 2011. Whilst this was not directly a Station conservation measure it is hoped that the void left in the woodland will allow the existing trees and ground flora to self seed and flourish again.

Sharon Rawnsley
Conservation Group Secretary

Ceredigion

Aberporth Range (5)

I am the Conservation Liaison Officer for the Aberporth Range. There is a MOD Conservation Group on site with members consisting of QinetiQ employees past and present, various ecological specialists, MOD representatives as well as other stake-holder parties.

The Aberporth site is situated on a headland jutting out into Cardigan Bay and the SSSI area includes the cliffs around the edge of the site, the very steep grassy or wooded slopes, as well as some of the gentler slopes on the plateau above.

The area is important as it is one of last remaining unimproved areas of coastal heath and grasslands in Ceredigion. The areas of hanging oak woodlands at the eastern edge of the site are unique along this part of the coast.

Dolphin in Cardigan Bay © SeaMor

Cardigan Bay has been designated as a Special Area of Conservation because of its importance for marine mammals – dolphins, porpoises and seals as well as lamprey, reefs, sandbanks and sea caves.

Cardigan Bay is especially important for bottlenose dolphins as it is one of only two areas around the UK with a resident population.

Field trips which have taken place this year are; beached bird survey, breeding bird survey and follow up breeding bird surveys.

Coming up this year we have; the MOD Bird Count and botanical surveys. Next year the bird and botanical surveys will continue and we are hoping to invite a fungi and mammal specialist onto site.

Karen Williams
QinetiQ Conservation Liaison Officer and Compliance Co-ordinator

Cornwall
Antony (6)

'Tis from deepest Cornwall that this 'ere column has been penned. I've been asked to write a few words about Conservation in South East Cornwall, and in particular about the Antony Conservation Group working out of Tregantle Fort ('tis God's own country you know).

Well, when it comes to conservation I'm a complete heathen, or should I say was. I can remember the occasion when Mr Ian Bennallick (a member of our merry band) and I were strolling around inside the Fort; he was scribbling down notes after every step. I don't know what he was looking at, but all I could see was grass. Or the occasion when I reluctantly joined Ms Josephine Haskett the local Landmarc Assistant REM looking for bats. *"Here's some bat droppings"* she proudly stated, *"try rubbing them between your fingers!"* Bonkers, blinkin' bonkers the lot of them.


Eerie Tregantle © Crown

But having said that, I've just been dive bombed by swifts and swallows as I ventured out of my office. I've just witnessed a weasel via the CCTV scurrying across the Fort's entrance road, closely observed by the resident buzzard. I've had a barn owl sitting on a window sill no more than 20 feet away and watched kestrels soaring on the thermal currents. My family and I have been wrapt in awe as a school of dolphins swam joyfully by whilst we sat stunned on Longsands Beach; closely followed by a basking shark. So yes, I might be a Conservation heathen, but even I have to admit that nature itself is just stunning.

Clive Joyce
Deputy Commandant
Tregantle Fort and Ranges

Cornwall
Penhale Sands (7)

2010-2011 has been a year of changes for Penhale Camp and Training area, some good and some not so good.

In April-May 2011 the MOD fenced Camp area was closed and sold to a private landowner. This meant that all MOD and Landmarc staff, who were based at Penhale, have now moved to staff offices at RAF St. Mawgan, about 6 miles away, near Newquay.

There is no longer any built accommodation on site for visiting units, except those wanting to camp at the Bivi Site or on the dune fronts where 'Survival Skills' training is carried out. All MOD units, cadets etc, are now accommodated at RAF St. Mawgan.

The Training Area remains in MOD ownership and despite the drawback of having to travel further, it is still very popular with visiting units for various activities and there is also an 'Off Road Driver Training Route'. The MOD Training Area of the dunes remains closed to general public access, except along the Coast and Permissive Paths or on the 'Warden-led' walks, events, school visits and workshops.

The Penhale Conservation Group remain active and held their AGM in February at St. Mawgan. On every visit to the dunes, some new/recent re-discovery of a rare species is made, usually of an invertebrate, thanks to the specialist knowledge and enthusiasm of the Group members. In 2010-11 a student from Cornwall College carried out her dissertation on the rare silver studded blue butterfly, comparing numbers, behaviour and habitats between the non-public access MOD area and Perran Sands/Bourne Leisure


Scrub cutting Penhale © Crown

owned area of the adjacent dunes, which are frequently used for recreation and access. Some interesting differences were noted and she is now a new member of the Conservation Group - we have also gained a few more new members, from links with Cornwall Wildlife Trust (CWT), Amphibian and Reptile Group UK workshops and Cornwall Butterfly Conservation.

Another major, and positive change has been the signing of a Tenancy Agreement between MOD and CWT, which also meant that in December 2010, a Higher Level Stewardship Agreement (HLS) was signed between Natural England and CWT, providing funding for management work, interpretation, surveys and a Management Plan and any contributions necessary towards the 'Penhale Warden Project'. CWT therefore now have responsibility for managing the conservation value of the MOD dunes, while Landmarc still maintain a role in managing the boundary fencing, signs and Bivi site/ MOD training facilities.

The dunes continue to thrive, both in conservation and training terms. We have yet to see what the future has to hold for the area, but the HLS Agreement and Tenancy provides 10 years of funding and management security and it is hoped that the relationship between CWT, MOD and Landmarc will continue to thrive and benefit the dunes as a whole.

Sarah Taylor
Penhale Sands SAC Reserves Warden
Cornwall Wildlife Trust

Grass snake found at Penhale © Crown

Cornwall

Predannack (8)

Predannack Airfield is a satellite station to RNAS Culdrose and used primarily for helicopter pilot and fire fighting training. The Airfield is situated within the Lizard Peninsular and is surrounded by areas of SSSI and SAC. 40% of the site is leased from the National Trust, and within this area fire fighting training is carried out.

The Conservation Group meet on a six - monthly basis and consist of:

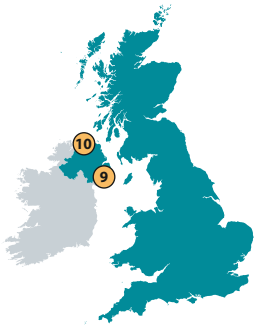
- Uniformed users of Predannack
- DIO including Regional Representatives
- Regional Prime Contractors
- Recreational users
- Outside agencies including National Trust, Natural England and Cornwall Wildlife Trust
- Lodger Units including Shelterbox and RAF Gliding School

Previous work includes monitoring a trial in the reduction of mowing across the airfield, a balance between flight safety and encouraging flora and fauna. A scrub management trial which has seen a significant reduction of scrub over the last five years.

Future work includes maintaining the Lizard SSSI in a favourable state, creating Mediterranean temporary ponds in three different locations and assisting the National Trust in school visits and guided walks.

Nick Kyte
Environmental Protection Advisor/
Pollution Control Officer
RNAS Culdrose

Predannack airstrip © Crown



County Down

Ballykinler (9)

The Ballykinler Conservation Group has continued its role as an important management forum in the past year with much progress being made to manage the Area of Special Scientific Interest (ASSI) and other features across the site. The Northern Ireland Environment Agency has recently re-assessed the ASSI and concluded that all the dune features at Ballykinkler are in either 'favourable' condition or they are 'unfavourable recovering due to management change'. This reflects the efforts of the Group over the last five years. This work continues and another 71 hectares of the dunes will be grazed from the summer of 2011.


Ballykinler coastal scene © Crown

Meanwhile Ballykinler has been heavily used for training in the past year with 19 Brigade preparing for operations in Afghanistan. This has led to an increased risk of fires across the site and steps have been taken to reduce this risk and tackle fires more promptly. This has included discussions with Northern Ireland Fire Service and the purchase of some fire fighting equipment to be used by range staff to tackle small range fires before they get out of hand.

The number of seals hauling out on the beach at Ballykinler may have been down slightly last year even though counts of 200 seals were regularly made between August and October. Numbers fluctuate because the seals form part of a larger colony across Dundrum Bay. Detailed monitoring suggests that other beaches are preferred for giving birth and the numbers have continued to increase at Minerstown in recent years.

Disturbance of seals by civilian motor boats and other recreational users at the Ballykinler end of Dundrum Bay remains a concern with the spectacular setting and backdrop of the Mourne Mountains making it popular with tourists in the summer months.

Oliver Howells
Natural Environment Advisor
DIO

County Londonderry

Magilligan (10)

The dramatic backdrop of Lough Foyle and County Doneghal makes Magilligan one of the most picturesque sites on the defence estate and Magilligan Conservation Group plays an essential part in managing the site, which is designated as both an Area of Special Scientific Interest (ASSI) and Special Area of Conservation. All the dune habitats and species that are ASSI features have now been classified by Northern Ireland Environment Agency as being in either 'favourable' condition or 'unfavourable recovering due to management change'. This progress has been made despite a heavy training load with 19 Bde undertaking a busy pre-deployment training schedule prior to deployment in Afghanistan.


Magilligan © Crown

In the last year the effects of the new grazing regimes have become apparent as three new tenants are grazing cattle across the vast majority of the dunes. Parts of the dunes have not been grazed in recent memory and the effects have been marked with the rather rank and dense sward being opened up. The graziers now attend all the Conservation Group meetings to report on progress.

The site was visited by a group of sand dune ecologists and site managers from across Britain and beyond when 30 members of the UK Sand Dune and Shingle Network visited in October 2010. They were shown how the MOD integrates urgent operational military training with its responsibilities to maintain biodiversity across the site and by all accounts they were impressed by the level of active management taking place.

Oliver Howells
Natural Environment Advisor
DIO

Cumbria

Warcop (11)

Tree planting

Phase 2 of a voluntary tree planting exercise involving members of the conservation group and local volunteers was conducted over the weekend 5 and 6 March, where some 3,000 additional trees were planted in and around the lower area of Haybergill Range.

A media event was held at Warcop on 17 March to promote the tree planting project and the agreement between Defence Infrastructure Organisation (DIO), the Woodland Trust and the Area of Outstanding Natural Beauty, for the planting of 50 hectares (ha) of trees in small blocks along the Southern edge of the estate in 2010/11 with a further planting of 110ha of trees in 2011/2012. These areas have been chosen primarily for their military training value and the proposal is to plant around 1100 trees per ha, using native species indicative to the area, where possible reflecting the existing natural woodland remnants.

Cattle grazing the training area © Crown

Long Fell

Natural England and DIO have agreed a proposal to fence an area of land on Long Fell to help protect the rare Teesdale violet. This rare plant which occurs in only two places in Cumbria, one of which is Long Fell. Recent monitoring has shown that the population is declining in this area.

Planting the woodland © Crown

The aim of the enclosure is to exclude stock from an area of approximately 14ha containing Teesdale violet, to protect the plants from grazing while they are flowering and setting seed. The enclosure will be grazed during the autumn to prevent coarse grasses dominating the limestone sward and out-competing the Teesdale violet.

High Level Scheme

Beef short horn cattle are now grazing in the area of Musgrave allotment for the first time at Warcop and form part of a High Level Scheme. The ideal management for the allotment would be to have cattle only grazing, as cattle will not selectively graze the flowering plants within the limestone grassland.

Their less selective browsing will also remove the excess of rough grass growth and allow flowering plants, heathers and scrubby trees to flourish.

This regime would also enable vegetation growing in the cracks in the limestone pavement, including ferns, trees and woodland flowers to expand beyond the crevices. Having some successional scrub growth, particularly scattered trees of mixed age would provide a valuable continuation of the woodland habitats of the adjacent Helbeck Woods. Such areas of upland fringe woodland are very uncommon in the North Pennines.

Sheep, by contrast, are more selective grazers, which often preferentially graze flowering plants, and leave the coarser grasses. They are also agile enough to venture onto areas of limestone pavement, and will often graze the characteristic plants which grow amongst the pavement.

Maj (Retd) Tam Campbell
Conservation Group Chairman

Volunteers who helped to plant the woodland © Crown

Devon

Britannia Royal Naval College (12)

Britannia Royal Naval College (BRNC) is a unique site located within the South Hams AONB (Area of Outstanding Natural Beauty) and is surrounded by county wildlife sites. I have been in post here at BRNC as the Energy and Environmental Protection Advisor for one year and I am still always taken aback by the beauty of the site and its surroundings as I make my way up the meandering path every morning beneath the variety of towering trees dodging squirrels, magpies and slowing to admire the odd buzzard perched on the lamp post.

Within the first few months of my appointment I found we have several feral bee colonies living in wall cavities, numerous areas used for bat hibernation roosts and maternity roosts (horseshoe species) as well as rare fungi identified by on site enthusiasts, Alan Payne and Carol Rampling all to be dealt with appropriately. As part of the Conservation Management Plan the site has a Extended Phase 1 Habitat Survey as a good basis with some recommendations for enhancement.

Due to the fact that the site is not listed as a SSSI, I have taken the approach to be the central point of contact for internal and external contacts to ensure progress. Ideas are discussed at the Safety, Health, Environment and Fire committee meeting and I action agreed outcomes in cooperation with external agencies and subject matter experts to gain expert knowledge.

So far I have held a fungi foray for staff led by Alan and Carol which was a successful and hugely informative couple of hours. I have organised and participated in a regular bat monitoring surveys with members of the Devon Bat Group as well as facilitated volunteers training with bat exit counts. South Hams AONB have conducted a site visit and provided valuable advice in ways of managing the japanese knotweed issue on site, potential funding opportunities in the creation of a wetland area and a woodland survey with the view to implement a woodland management plan. I am also in the process of liaising with the South Hams Bee Keeping Association to look at the possibility of extending the bee population and including site bee hives in an orchard area and there is always the advertising of the MOD bird count.

Close up of bees © Crown

There is still much to be done, with the estuary frontage at Sandquay. I often hear reports of kingfishers and other wildlife on the potentially important intertidal mudflats which is next on my list with monitoring and external help to note the importance of the still relatively undisturbed area occupied by the Royal Navy.

An enjoyable afternoon at work for anyone.

Hannah Govier
Conservation Group Chairman

Bees © Crown

Dorset
Bovington and Lulworth (13)

Probably in common with most training estate, there has been an increase in demand for new facilities, and an inexorable desire to bring training facilities up to reflect the contemporary environment. Whilst this has the potential to steam ahead without concern for the environment, we appear to be striking a balance. Similarly, there is concern from our group, that following some good work on SSSI maintenance and improvement, there are questions over availability of funding for maintenance in the future.

The strategy of encouragement to get all our tenant farmers into Higher Level Stewardship may have benefits for the future. Most of our SSSI areas that can be, are now being grazed. Of particular note is our arrangements with the Amphibian and Reptile Conservation Trust, who, following some successful ventures in Bovington training area, will hopefully be assisting us in Lulworth us to ensure the healthy management of some of our newly formed heathland, following felling.

Dormouse surveys are being carried out at Lulworth. They have moved from the gorse into boxes in the hazel near the impact area of Heath ranges. Thankfully none were found in the gorse this year, which will favourably affect the licence for scrub management.

Insect life continues to thrive and is providing further evidence that conservation activities do work. Dr Tony Warne from our conservation group has reported on some differences between traps set some 10 years ago before a new tank manoeuvre area was constructed and trees removed and this year. Also, Malaise traps have been put in the area between Toby's Pond and the all weather driving circuit around the same area as the one 7/8 years ago. Preliminary results from both show that there has been significantly increased numbers of most insects.

During a survey of the ponds on Wool Heath and Area South previously unrecorded species have been found including the largest species of pond skater and an uncommon diving beetle. Surprisingly, no tadpoles were found on Wool Heath but there are palmate newts.


BTA AFV Driver Training Area - tank manoeuvre area and metaled driving circuit © Crown

Woodland management continues with thinning and felling in accordance with a 20 year plan started in 2009. The arrangement which allows us to use funds generated from the sale of timber to use on other non SSSI conservation projects is working well, allowing for coppicing at 8 Acre Coppice, hedgerow development at Bovington Farm and thinning of holly in Furzy Coppice to encourage ground flora and natural tree regeneration. The deer exclusion fence in Tyneham Great Wood is being monitored to record the effect on ground flora.

Well – there's more, but you would have to be one of our conservation group to get the full benefit of what's happening around Bovington and Lulworth training areas. Happy surveying!

Lt Col (Retd) Chris Donaghy
Commandant
DIO DTE Bovington and Lulworth
Training Area


Small red damselfly © Iain Perkins

Dumfries and Galloway
Kirkcudbright Training Centre (14)

We are on the southern coast of Scotland, between Kirkcudbright Bay (pronounced Cur-koo-bree) and the Solway Firth, facing the Isle of Man and the Irish Sea.

This increasingly busy training area, approximately 2020 hectares, offers a diverse spread of habitat types, including sea cliff and rocky coastal shore, rough grassy coastal plain, scrub and shrub, agricultural grazing and cropping, mature deciduous woodland, new and old coniferous plantations, areas of overgrown hedging, wetland and reed beds.

Since 2006 public access has been available via a seven mile route across the centre of the range which is regularly frequented when the range is inactive. More recently, shorter circular routes have been made available at the east and west ends, which will appeal to those wishing to take a shorter walk.

Whilst our area is relatively undeveloped and has been variously described by some of our visiting military customers as 'the back of beyond', 'the land that time forgot' or even 'Jurassic Jockland', historically the land which the range has occupied since 1943 has been inhabited, farmed and fought over for hundreds of years. We have 193 registered sites of archaeological interest. On our eastern border are the remains of Dundrennan Abbey (Cistercian – founded 1142), also the range encloses at least two Iron Age forts, the remains of two churches and many 'cup and ring' marked rocks. Our southern seaward boundary was much used in the past for both legal and illegal trading between England, Ireland and the Isle of Man. The caves and underground cellar along the shore still attest to the dangers and rewards of smuggling along this rocky coast.

Our archaeologist, historian and geologist are therefore not short of material to keep them busy. Likewise, with badger setts rapidly approaching 200, our mammals experts are fully employed monitoring these and all the other mammal species in existence here.

There are many coastal bays, not always easily accessible, where seals and otters play. The prevailing south westerly storms and high tides bring in a wealth of marine life for our experts to examine and record. The whole coastline is a geological SSSI.

The south facing coastal slopes also keep our botanist fully employed. Whilst many areas are grazed others remain undisturbed, allowing a very varied range of species to flourish. At the time of writing this the woodland area and fringes are carpeted blue with native Scottish bluebells.

With a major geese wintering area to the east in the Solway and a red kite release in the Galloway Forest Park, we see a very large range of bird species in this area. Our own unique position and habitat range attracts very many types of migrant birds, both breeding and passing through. All these movements are monitored via our BirdTrack surveys and we are currently hoping to define the precise areas within the range boundary which are proving to be the most attractive to each species.

Raymond Mounsey
Ornithologist, Kirkcudbright Conservation Committee

View to Little Ross lighthouse from Balmae © Crown

Essex
MDPGA Wethersfield (15)

Local Wildlife Site designation granted

A long-forgotten 4 hectare slice of ancient woodland, Park Wood, has now, under the stewardship of the Ministry of Defence Police and Guarding Agency (MDPGA) Environmental specialist, Ros Gourgey, been granted the protective status of Local Wildlife Site.

'The Citation is currently being drawn up, but this is wonderful news for all those volunteers from MDPGA staff, our resident Army families and Essex Wildlife Trust, who have worked hard clearing areas so that ground flora and amphibians can flourish', says Ros.

The Military Correction & Training Centre, Colchester, work party came up with the clever suggestion to build rustic bridges over a couple of ditches which solved a 'thorny problem'. They were full of initiative and got the project off to a good start.

This ancient woodland now has a path which will become a nature trail for all the families on site.

Woodland creation

By planting 3,300 trees and shrubs close to the edge of Wethersfield airfield, Ostend Wood, outside our perimeter fence, has now been successfully extended. In partnership with the Woodland Trust, we planted oak, hornbeam, ash and field maple saplings, as well as hawthorn and spindle.

This provides habitat to encourage bird and insect life, as well as putting back what was formerly cleared for the 'war effort'. In addition, nearly a kilometre of native hedgerow now defines the boundary of the nature reserve and protects an important tract of grassland, grazed by rabbits, encouraging successful germination of wild flowers to attract butterflies and other insects.

Rare plant species discovered

I invited the Essex Recorder for the Botanical Society for the British Isles, Dr. Ken Adams, to record our flora. He was really pleased to discover a colony of 400 oxlips *Primula elatior*, in Park Wood. Once common in East Anglia, they are now very rare owing to habitat loss.

In addition, Tim Pyner, Essex Recorder for Mosses and Bryophytes recorded 67 species, including one extremely rare moss, the tongue-twisting clay-screw moss *Tortula amplexa*, known at only four sites in the UK.

Red and Amber-listed species recorded

Among the 50 breeding species recorded were numerous Red and Amber-listed birds. 2010 was a good year with 1,181 birds ringed and 35 nest boxes installed. However, Wethersfield bird enthusiasts are expecting reduced numbers in the 2011 British Trust for Ornithology Survey, because of the harsh winter.

Conflict of interest

There's a conflict of interest here with the mix of dog training, cadet gliding school, 4 x 4 training and hay cutting by contractors who sometimes disturb protected ground-nesting species, including skylarks and brown hares. Fortunately, due to a last-minute change of instructions to the grass cutting crew we saved several clusters of bee orchids *Orchis apifera*.

This site's natural heritage has been neglected for too many years. Progress has been slow but is gaining momentum as more and more people realise just what a wildlife sanctuary they have, quite literally, on their doorstep.

Ros Gourgey
Sustainability Manager

Judith Slater
Corporate Communications, MDPGA

Lee Dudley of Woodland Trust, Steve Love QPM, Chief Constable of MDPGA and Duncan Ford of RDT plant an oak, with staff members (Ros Gourgey, Lucy Sanders & Cheryl Spiers) © Paul Kemp MDPGA

Fife

RAF Leuchars (17)

Leuchars Conservation Group Railway Siding event group photo © Crown

It's been a time of change at RAF Leuchars this year. In the spring we waved goodbye to 111(F) Squadron with our Conservation Officer (the Squadron's JENGO) in tow. I was happy to take on the conservation role and duly signed up.

Conservation Officer (KC on the right) and the Conservation Group Secretary (Vron Wootton on the left) on a litter pick © Crown

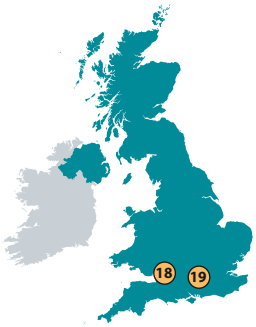
With most people's attention fixed on the Station's newest arrival – the Typhoon FGR4 jet fighter, I found myself looking skyward for some more familiar wings: oystercatchers, pipistrelle bats and even the mighty sea eagle.
I mention the latter specifically because, it seems, that in my thick Perthshire accent, the terms "sea eagle" and "seagull" are indistinguishable. A fact I discovered when, upon excitedly recalling a recent sighting of one such bird perched on the runway lights and stating that very few personnel on Station had ever seen such a creature, I found that I had rendered my listener speechless!

Luckily, there is no such confusion for the Conservation Group's two resident ornithologists. Vron and George can be found out in all weathers (though it's mostly rain) taking part in bird surveys, the results of which are fed into the MOD Bird Count.

The rest of the Group have been busy too helping the local Community Council transform the disused railway siding (which formerly served to bring supplies into RAF Leuchars) from a wasteland into a nature trail. Our annual Beach Clean on the north shore of the Eden Estuary concentrated on removing the harmful plastics that get washed inland on that stretch of coast.

Not everything was successful however. My Saturday afternoon presentation on Saltmarsh Restoration couldn't compete with the Ladies Final at Wimbledon and, as a result, only two people attended. I'll reschedule it though and this time I'll bring biscuits. Plans are in the pipeline for more events and presentations so if you're ever in the area and would like to find out more, just follow the trail of chocolate digestives!

"KC" Campbell
Conservation Officer
RAF Leuchars



Gloucestershire
Abbey Wood (18)


Heron fishing at Abbey Wood © Andrew Linnett

Many people arriving for work each morning might think that Abbey Wood isn't a very exciting place for wildlife. In fact there is plenty to see around Abbey Wood, particularly the lake and also in neighbouring Splatts Wood which provides a great place for staff to go for a lunchtime walk. As well as a resident community of small mammals, woodland and water birds there may be even the chance to spot something rarer including a kingfisher, a pair of nesting kestrels, heron, bank voles and even a visiting cormorant.

Despite funding restrictions, a project arranged by the Environmental Team to restore the ornamental ponds, including the garden of remembrance, is now nearing completion. Banks planted with native pond plants have been placed in each pond to allow wildlife access to and from the water. The rejuvenated ponds not only enhance the appearance of the grounds but also provide a more suitable habitat to attract dragonflies, frogs and newts to breed. Together with the addition of extra log piles, this is starting to encourage an increase in the wildlife.

For several years local volunteers have been carrying out valuable coppicing work and laying a wood chip path in Splatts Wood. This is part of the Abbey Wood site but is leased to South Gloucestershire Council. Led by the council's conservation officer, Chris Giles, a working party from an Integrated Project Team in Abbey Wood went out again in the New Year to cut down and clear branches from the hazel trees to create space for a wider variety of woodland ground flora. The Splatts Wood volunteer groups also work closely with British Trust for Conservation Volunteers.

Meanwhile, the OCS Group have sponsored a meadow near Stanley Farm and wildflower and meadow seed was sown the previous autumn. A sympathetic mowing regime has been recently extended around the site to allow the wildflowers time to flower and set seed. The new planting scheme will not only add colour to the office landscape but will also provide shelter for wildlife and nectar for butterflies and bumblebees.

David Harrington
Conservation Group member

Hampshire
Defence Training Estate Home Counties (19)

The heathlands of the Home Counties' Training Areas are particularly important for the many scarce insects associated with them and which provide opportunities for them to construct their nesting sites in the sandy soils. Many of these wonderful sites contain a legacy of what is occasionally disturbed bare sandy ground areas. These are frequently caused as a result of the disturbance by military vehicle training activities or by the use of the paths and tracks for walking or the riding of horses. It is the very occasional disturbance by tracked vehicles that can be particularly useful in tearing up the vegetation perhaps once in ten years. Alternatively, for the more frequently used tracks it is the edges of such sites where they remain as bare soil, or where cuttings have been made through sandy hillocks, thereby leaving cliff-like sand faces that are most useful to our populations of solitary bees and wasps and their parasites. All of this disturbance creates what are called early-successional habitats in mosaic within the "heather" areas of the heathlands.

The bare ground is the essential habitat component in conjunction with the dry heathland containing nectar-rich summer-flowering dwarf shrubs in the form of ling *Calluna vulgaris* and bell heather *Erica cinerea* with cross-leaved heath *Erica tetralix* in the wetter areas. Bare ground areas warm up quickly in the sun, an essential requisite for many insects. The heathland vegetation also provides the food sources that the progeny of some insects depend on, this is in the form of the many moth caterpillar species which feed on these plants. These caterpillars are captured and paralysed by stinging by solitary wasps, like *Ammophila pubescens*, which then stock them into their nest holes in the sand. High numbers of scarce to very rare species of solitary bees, wasps and flies are also known from all these areas.


The mottled bee-fly *Thyridanthrax fenestratus* sitting on hot bare sand © BENHS

In late 2009 the creation of additional bare sandy patches within the "heather"

Ammophila pubescens, the host wasp of the mottled bee-fly, on the edge of its nest hole in bare sand © Chris Spilling

areas commenced on the Aldershot Military Training Area. This continuing programme is being undertaken under Higher Level Stewardship to recreate additional bare sandy areas because some older bare ground sites on the tracks have been lost due to hard surfacing, applied to facilitate the access of fire and military vehicles. A continuous programme of bare patch creation is necessary as these patches regenerate into heather covered areas within five to ten years of their original creation. These new bare sand patches will help the Biodiversity Action Plan species, the mottled bee-fly, *Thyridanthrax fenestratus* which is in very low numbers on this site. Its host wasp, *Ammophila pubescens* will also be enabled to survive here too. Both species have declined due to disturbance of the hard bare sand they need by high numbers of the public visiting and trampling this site and the tendency in recent years for hard surfacing to be applied to the bare sandy tracks these species formerly used.

An essential pre-condition of bare ground creation was agreed by Defence Infrastructure Organisation Land Managers and Natural England staff. This is because the Aldershot training area is both a Site of Special Scientific Interest and a part of the Thames Basin Heath's Special Protection Area. It was also necessary to liaise with the local bird experts on the Conservation Group to minimise damage to bird territories of species such as woodlark and Dartford warbler. Timing of the digging of such sites is also essential in that the patches need to be excavated in November to January before woodlarks set up their territories. But all parties need to understand that such bare patches must be dug in mosaic within the "heather" areas, just sitting them in grassland or bracken heathland edge areas will not do.

A new bare sand patch created within the heather areas to help nesting solitary bees and wasps. Note the south-facing soil and turf bank, which is also used by a variety of insects both to nest in and to locate prey © Stephen R Miles

Stephen R Miles, FRES
Conservation Group member

Hampshire
Defence Munitions Gosport (20)

Defence Munitions Gosport is situated on a peninsula to the west of Portsmouth Harbour. Occupying 196 hectares and adjacent to a unique stretch of coastline with important wintering populations of waterfowl Portsmouth Harbour has SSSI, SPA and Ramsar status. There is also an ancient monument, Fort Elson, which is in a state of controlled degradation and is occupied by a colony of pipistrelle bats.

Ancient woodland in the explosives area is home to one of Hampshire's largest heronries. The 2011 survey carried out by volunteers has revealed the population remains stable with 72 nesting pairs of herons and egrets. Unfortunately our bird ringing expert is now on active overseas duty and we are currently appealing for a volunteer to fill this important conservation role.

Important information about the habits of birds in the Portsmouth Harbour area have also been revealed in the high tide count carried out annually by Ian Calderwood from the conservation group who passes the details to the British Trust for Ornithology.

The site has been included in the Million Ponds Project sponsored by the Ponds Conservation Trust and Biffaward. Final approval and funding has just been agreed to create seven new ponds adjacent to the existing great crested newt pond.

Three rare species of butterfly survive on the site, white letter hairstreak, grizzled skippers and small heath. Annual butterfly and moth counts are carried out by the Hants and Isle Of Wight Butterfly and Moth Society assisted by Owen Parker and other conservation group members. The latest moth survey in May revealed something exciting, a rare moth, *Coleophora vibecella*, pupae. This species has only been found in a few other sites in Southern England.

Kevin Cooper
Environment Manager
DM Gosport


Heron landing © Russell Howard

Hampshire
HMS Excellent (21)

Deep down on the South Coast sit a series of manmade islands and a low lying peninsula that form HMS Excellent, the main being Whale Island the home to the Fleet HQ, the site also comprises Tipner Ranges and Horsea Island. All of the above are surrounded by Portsmouth Harbour which in turn is both a Special Protection Area and a Ramsar site. Within these boundaries are three units of land designated as Sites of Special Scientific Interest (SSSI) and the whole of Horsea Island was recently designated as a Site of Importance to Nature Conservation by the Hampshire Biodiversity Partnership.

One unit of the SSSI meets the favourable condition but two are under a five year management plan to improve the conditions from unfavourable to favourable recovering.

Regular surveys are conducted around the estate including:

- Bryological surveys for mosses and liverworts which identified 54 species including the rare bearded earth-moss.
- Botanical surveys carried out identified 149 species of which the rare walled bedstraw proved noteworthy.
- Butterfly surveys are conducted on a regular basis and resistant elm trees and buckthorn saplings have been planted to promote and encourage certain species.
- Moth surveys were also completed, with six consecutive Fridays in the summer set aside to collect the data using a team of enthusiasts. The team used the light trapping method, which proved very effective especially for nocturnal species. This

allows the observer to catch large numbers of moths and subsequently release them safely back to their environment. The survey proved very successful with 174 species of moth both large and micro, in particular and notable were the yarrow pug and the L-album wainscot.

Bird watching is carried out on a monthly basis by a local twitcher who produces a master spreadsheet of all sightings annually, the most recent showing a total of 50 species, not including the waders that frequent the foreshores, of particular note recently was a migrant grey phalarope.

At all three sites much is being done to improve the biodiversity and infrastructure for the existing flora and fauna. Certain areas of the sites are left fallow to promote nature, flowers and insects alike.

Throughout the site bat boxes, bumblebee boxes, insect boxes, lacewing boxes, bird boxes and swift boxes have been sited, not forgetting the most recent addition of a sparrow terrace.

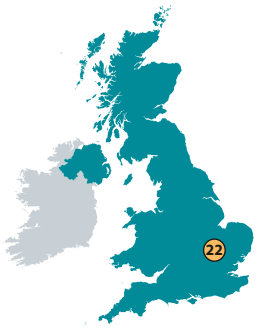
All the boxes are made from woodcrete, a mixture of sawdust clay and concrete, extremely durable, does not warp or rot is maintenance free and has excellent thermal properties.

Further to all of the above a local bee keeper requested permission to site two apiaries at Horsea Island, which was recently approved by DIO and should be in situ soon.

Ian Mackfall
Environment Manager

Insect box © Crown

One of the bat boxes on site © Crown



Hertfordshire

The Army Training Regiment Bassingbourn (22)

Bee orchid © Crown

The Army Training Regiment (ATR) Bassingbourn, it is located on the Hertfordshire/Cambridgeshire border and, has been in existence since the 1930s and is a SSSI. The Outside Training Area (OTA) is full of wildlife from hedge sparrows to pheasants, fox and muntjac deer. There is also the Tower Museum which is a Grade 2 listed building, dedicated to the 91st USAF Bomber Group, which is run by the East Anglian Aviation Society.

I have been in post for a number of years now and have always been informed by the locals that bee orchids can be found on the OTA but sadly I have never seen any. There is however an abundance of bee orchids flowering on certain parts of the station. These orchids are protected from grass cutting and personnel picking them. Bee orchids are notoriously unpredictable, appearing for a few years at a site in good numbers and then completely vanishing!

Following the Strategic Defence and Security Review the question as to whether ATR Bassingbourn will remain open is still to be considered.

Terry Simpson AIIRSM, AIOSH
Unit SHE Advisor

Isle of Wight

Newtown Range and Jersey Camp (23)

Glanville fritillary butterfly © Barry Angell

Two snow falls in one year, unheard of on the Isle of Wight *"never had snow like this for 30 years"*. As well as bringing the Island to a stop it did brighten up the landscape and threw a different light on the beautiful training estate we have here.

The annual wildlife walk went well, with viewing of the green winged orchids which seem to be in a decline cycle but plenty of bluebells and other flora and fauna for our visitors to see.

Barry Angell, our neighbour farmer and Lepidoptera expert, was overjoyed to confirm a rare Glanville fritillary *Melitaea cinxia*, butterfly in the area of the Butts. Hampshire & Isle of Wight Wildlife Trust were invited in to carry out a survey of the ponds; this has been discussed in our AGM. Nicola Wheeler and colleague spent the day checking and recording all our 20 odd ponds in the preparation for a more in-depth survey to follow. During the survey 10 brown hares were sighted in the same field on Lambsleaze Farm.

The annual check on the nesting boxes in Locks Copse was carried out by Group members Richard Grogan our licensed dormouse handler, ornithologist John Willmott, botanist Bill Shepard and invited guest Helen Butler. Helen runs the Wight Squirrel Project on the island. Red squirrels are indigenous here, greys are not present. A good watch is kept by the residents to ensure that the greys stay on the mainland. During the survey we normally encounter dormice. A total of 4 adults and 6 juveniles were recorded, so too was a squirrel dray in a nesting box. The dray was confirmed by Helen. We hope that it will be used again, probably for a nursery.

2010 was Cadet 150; this was to celebrate 150 years of the ACF. The cadets had a fun day on the Range meadow culminating with HM Lord - Lieutenant of the Isle of Wight, Major General Martin White CB CBE JP, presenting awards and planting a red oak tree to commemorate the event.

In November we held our AGM chaired by the new Deputy Chief Executive for SE RFCA, Lt Col (Retd) Chris Booth. During the meeting the chairman presented Sue Blackwell and Lee Glover with Defence Infrastructure Organisation Certificates, thanking them for their many years service to Conservation.

Another interesting and diverse year with Fungi Surveys conducted by Isle of Wight Natural History & Archaeological Society and the Hampshire Fungi Group. Moth trapping and bird ringing continue to be a regular occurrence during the year.

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

Shepards Hill January 2010 © Crown

Kent and East Sussex
Defence Training Estate South East (24)

Skimmer, heathland pools © Bob Kennedy

Defence Training Estate South East (DTE SE) has put large scale investment into projects at Lydd and Hythe Ranges to enhance current pre-deployment training. Developments have included the construction of an Advanced Close Quarter Battle facility, an extensive Counter Improvised Explosive Device training site and a number of significant changes to existing ranges. These projects have taken up considerable resources of DTE SE personnel and have been a prime example of stakeholders working together. For all projects at Lydd Ranges, Habitat Regulations were an important factor in determining the locations chosen for development and close liaison with Statutory Bodies was a key component throughout the process.

The Coastal Defence Strategy for this section of Kent has experienced further delays due to funding and at present the future remains unclear; thus short term maintenance to the sea defences continues. The look-out and electrical sub-station at Galloways, Lydd Ranges, is one of the main areas of concern as being at high risk of flood inundation. Fortunately a significant number of large concrete blocks, (arising from project work and a programme of redundant building demolition being carried out by Landmarc) have been made available. In April the Environment Agency improved the protection at Galloways using this recycled material (as rock armour) which will enable the facility to survive until 2017. However this is only a temporary measure and plans are being drawn up for a long term solution which is likely to involve the relocation of look-out and adjacent sub-station and improvements to the flood resilience of infrastructure.
The waste sorting facility constructed in 2009 at Lydd continues to successfully recycle (tins, timber, metal, plastics, cardboard and paper) from Lydd Camp and Ranges. In December 2010, planning consent was achieved to allow the transport of recyclable material from all other MOD sites within the Shepway District Area, thus enhancing the green credentials of DTE SE. A conscientious Landmarc team run the facility, keeping detailed records of the by-products that are processed.

DTE SE Dry Training Areas

The Agri-Environment Higher Level Stewardship schemes would appear to be contributing significantly to the bio-diversity of many hectares across the Dry Training Areas (DTA) and coupled with a more robust approach to rabbits, the future at present looks positive. Highland cattle grazing at Great Shuttlesfield SSSI exemplified the use of traditional breeds on un-improved grassland and it is expected that Natural England monitoring of indicators of success together with Conservation Group members' surveys and reports in 2011 will confirm this improvement across the DTA. Worthy of note was the finding of the nationally vulnerable lizard orchid *Himantoglossum hircinum* at St Martins Plain DTA in the summer.

Lydd Ranges

Accidental fires on the ranges remain an issue. Whilst burns on the unmanaged neutral grassland could be seen as beneficial, the danger of fire spreading into the perennial shingle

Wood vetch © Peter Gay

vegetation is ever present. Recent studies by Dr Brian Ferry on vegetation recovery within burnt areas suggest that in particular the prostrate blackthorn and their associated epiphytic lichen will take decades to recover. To aid limiting the spread of fires Landmarc successfully completed the re-instatement of a network of firebreaks at Southbrooks and Midrips. In addition flexible water dams have been purchased through SSSI Improvement funding which will act as temporary reservoirs for the Fire Service when they are on site fire fighting to reduce the need for lengthy trips to re-fill appliances.

The area of the Ranges cut for hay was extended last year and grazing finally commenced on the Forelands. Due to the small number of traditional breed cattle on the area, improvement to the sward will take some time but reduction in the rank grass is already evident. Proposals to extend grazing on the ranges are well underway although complicated ballistic templates mean that careful planning is required to ensure there will be no impact on military training.

Scheduled Ancient Monuments

The brickwork stabilisation at the Dymchurch Redoubt was undertaken through REES funding and involved the installation of scores of *"Syntech™"* masonry anchors. Whilst works were underway an unforeseen problem arose when it became apparent that extensive water ingress behind the outer brick skin during adverse weather could negatively impact the integrity of the anchoring. Extra funding was secured from DTE HQ late in the year to re-asphalt the terreplein above the casemates in question. The stabilisation and re-asphalting was completed within a very limited window of opportunity and was driven by the close supervision of the Landmarc Building Services Manager.

Conservation Groups

Attendance at Conservation Group meetings remained high. Summer visits included a field trip to Watersend Woods to view recent wide ride creation and an extensive tour of Lydd Ranges during the summer closedown. The Pippingford Park Conservation Group was given a talk on dragonflies and damselflies by David Chelmick which was followed by a site visit to their habitats within the Park. All those who attended the talk by David stated how instructive and interesting the day was.

Monitoring

Proposed dormice monitoring has been delayed at Watersend Woods; however another scheme initiated by the White Cliffs Countryside Partnership commenced in Reinden Wood. One of the newly positioned nest boxes was soon occupied which represented the first confirmed record of dormice in this 80 hectares wood for many years. The flora of Reinden Wood was also surveyed and several species of orchid and the parasitic toothwort *Lathraea squamaria* were recorded.

Recently bird reports have been more extensive for Lydd Ranges due in part to the proposed extension to the Special Protection Area (SPA) and Ramsar designations. The proposed designations at Lydd Ranges have been subject to extensive discussions between DIO and Natural England and agreement to the extent of proposals is expected in the near future. During discussions, site visits were held and in spring 24 avocets were present on the Wicks.

A total of 52 bird species were recorded at Pippingford Park last season. Whilst no Dartford warblers were present (a designated SPA Annex 1 species), good numbers of redstarts and tree pipits were recorded as well as a pair of (the Annex 1) woodlark. The data for Ashdown Forest as a whole confirms a crash in the numbers of Dartford warbler thus it is not specific to the Park.

Richard Goslett
Defence Infrastructure Organisation
Land Management Services
DTE SE

Pippingford Park Conservation Group, Dragonfly walk © Bob Kennedy

Merseyside

Altcar Training Camp (25)

Altcar Training Camp, situated on the coast a few miles north of Liverpool, celebrated 150 years of continuous use on 30th July 2011. The origins of the rifle ranges at Altcar go back to the threat of invasion by France in 1859 and the response of the War Office to establish volunteer rifle and artillery corps. One of these, the 5th Lancashire Rifle Volunteers, was formed by Lieutenant-Colonel Robert Gladstone and in 1860 he found an ideal site for the establishment of a rifle range on approximately 60 hectares of recently reclaimed land at the mouth of the Alt Estuary.

Within a few years the site was serving volunteer units from throughout Lancashire and towards the end of the nineteenth century the site was also used by the regular army. In 1912 the West Lancashire Territorial Association purchased the present-day estate. The site has a very interesting history, and although requisitioned in both World Wars, it remains owned and managed by the Reserve Forces and Cadets Association (RFCA) of North West England and the Isle of Man.

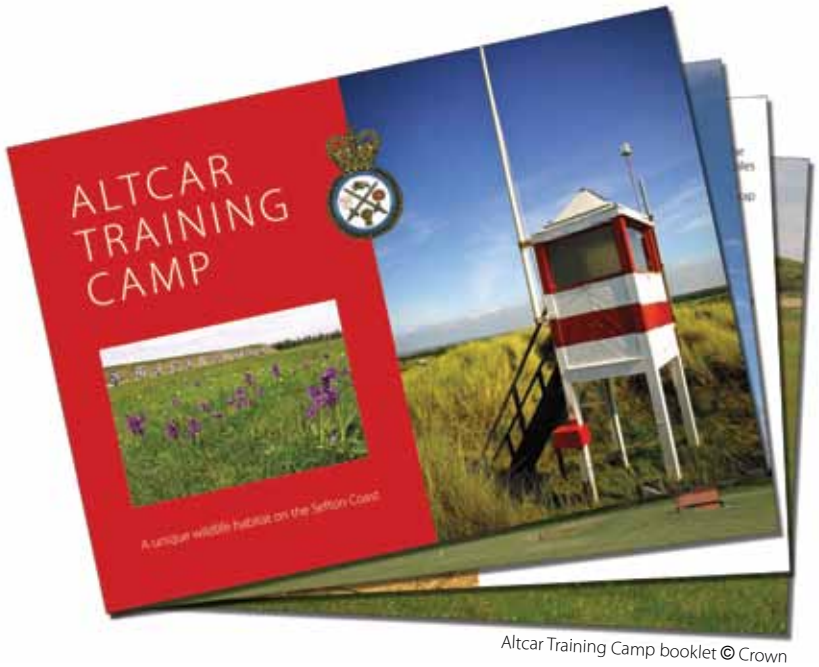
As well as a large area of open ranges, the Altcar estate includes a wide foreshore of international importance for overwintering and migratory waterfowl, foredunes, fixed dunes and dune grasslands, damp meadows, scrub and plantation woods. The site forms part of the Sefton Coast dune system, the largest in England and part of the site lies within the Natura 2000 network of European protected sites. Military use and nature are very compatible on the site and the relatively small-scale disturbance from training activity helps to keep some of the dune areas more open.

The Conservation Advisory Group, established in 1977, has an active and long-standing membership. Members are involved in archaeological surveys, bird-ringing studies, monitoring of rare species including natterjack toad and red squirrel, maintaining the site dossier, leading guided walks and advising on estate management, including applying for funding. Careful management of the estate by RFCA with the help of the Conservation Advisory Group has created fields of rare orchids and provided habitat for brown hare, bats and owls.

To celebrate this 150 year milestone the Conservation Advisory Group has prepared a new booklet on the history and wildlife of this special place. The booklet will be available to the visiting public and others and will help to show how we maintain and enhance wildlife on the military estate.

John Houston
Chairman Altcar Training Estate
Conservation Advisory Group

Sand dune system at Altcar © Crown



Altcar Training Camp booklet © Crown

Norfolk

Stanford Training Area (STANTA) (26)

Otters and crayfish in STANTA

In spite of prolonged and sometimes intensive military activity in STANTA, otters have continued to thrive since my article was published in the Sanctuary Magazine in 2009. This is undoubtedly due to the presence of a large area of suitable habitat, enabling them to retreat to quieter areas if disturbed. One or two traditional sprainting sites have been abandoned and other sites used instead. Although otters are usually nocturnal, there have been several sightings of both adults and cubs in broad daylight.

Until the '70s the main diet of this omnivorous animal appeared to be eels and so-called coarse fish such as pike, roach, rudd, tench etc. When the eel population declined and apparently became extinct, the otters preyed heavily on the indigenous white-clawed crayfish *Austropotamobius pallipes*. In 2002, this species was very plentiful in the river Wissey near the western border of STANTA but in 2004 widespread mortality was noticed. Crayfish and remains were last seen in October 2009, since when the species appears to have died out completely. Investigations by the Environment Agency showed that the mortality was caused by a fungus known as *Aphanomyces astaci*. This water mould is carried by the introduced North American signal crayfish *Pacifastacus leniusculus*. Although harmless to this species it is highly pathogenic to the white-clawed crayfish. As a careful search of the Wissey and its tributaries has not revealed the presence of any signal crayfish, there is little doubt that the fungal spores of this so-called *"Crayfish Plague"* have been introduced accidentally. Transmission can occur by contamination of foot-wear, fishing tackle and bait or almost any item that has had contact with water where signal crayfish are present. The fungus produces spores and it is possible that they can also be carried by birds. On arrival in a new area, it is therefore likely that the fungus spores can be distributed locally on the footwear of people and also by the movements of aquatic birds and mammals, including otters. Fortunately the spores have a short survival period and are sensitive to both excessively high and low temperatures. Although they can disappear from infected lakes and rivers within a month of first occurrence, every precaution should be taken to minimise the spread of the fungus. The spores are easily re-introduced, especially in rivers where there is a focus of infection upstream, for example where signal crayfish are present. Scientific research is on-going and further results will hopefully lead to a way of eliminating the plague.

Since the crayfish mortality, superficial examinations of the spraints have shown remains of small birds, but mainly fish scales. Otters are omnivorous and detailed microscopic examinations of spraints in other areas of the UK have shown they will even eat aquatic larvae of dragonflies and other invertebrates. It is well known that amphibians and small mammals are also eaten. Water voles therefore are potentially at risk, although they are not easily accessible, because they can escape into holes of river banks that are too small for the otters to enter. However, these holes can be entered by the much smaller, non-indigenous American mink.

It will be interesting to see how the diet of the otters changes in STANTA and elsewhere. The otters will probably continue to eat what is most readily available. Salmonids such as trout are likely to be taken mainly in fish farms where they are easily caught, rather than in rivers where the flow makes them more difficult to catch. It is also possible that recently released young trout may be caught before they have had time to adapt to their new environment.

Monitoring the otter population in STANTA will continue to be conducted by members of the Conservation Group whenever possible.

Dr Ian F. Keymer
Conservation Group Member

White-clawed crayfish © Ben Rushbrook

Oxfordshire

Bicester Garrison (27)

During the four years of being employed to look after the Garrison Estate, I feel a real sense of achievement, in particular with the development of what I believe will be a state of the art training facility for joint force operational training.

The time spent actively monitoring the estate has produced some outstanding results in all respects, from woodland management through to bird ringing activities there is still a long way to go, being patient due to seasonal restraints will without doubt produce the best outcome for all.

At the time of writing this article another successful achievement has been again the barn owl rearing programme producing 7 barn owlets being ringed. Since 2006 there have been 34 owlets ringed by the trust's ornithologists. I must thank all ecologists that have been involved with Project RSME. This year has also seen the introduction and trial of small birds being ringed to allow for tracking and monitoring their movements, a good selection has been made already for the MOD Bird Count.

The highlight for myself has been the success of achieving and passing the British Deer Society Deer management course, also known as the advance stalkers course, and I am looking forward to putting my skills to use.

Gary Beckett
Conservation Group Chairman

Barn owl chick being ringed © Gary Beckett

Surrey

Royal Military Academy Sandhurst (28)

The Sandhurst Conservation Group plays an important part within the estate and meets bi-annually reporting directly to the Commandant Major General Patrick Marriott CBE. It consists of local volunteers, our own bailiffs, as well as professional conservation organisations and subject matter experts. These include Defence Infrastructure Organisation, Natural England, English Heritage, Surrey Wildlife Trust and Bracknell Forest Borough Council who all work together to ensure MOD and Government conservation legislation is adhered to and the future conservation of the estate is assured. All Royal Military Academy Sandhurst (RMAS) conservation works now comes under one banner known as Project ACORN.

Project ACORN is a base foundation fully supported by volunteers, subject matter experts and our Commandant. He takes a very keen interest in conservation. With his direction we continue to sow the seeds to ensure the legacy left to us is continued and remains the bedrock to the RMAS heritage.

We seek to balance conservation with the operational output and activity in training our Officer Cadets in mind. Barossa Training Area is designated as SSSI, SPA and SAC. The woodland along the A30 trunk road is recognised as a site of nature conservation importance and there are a number of listed buildings, broadleaved woodland, dry and wet healthland. It supports internationally important populations of nightjar, woodlark and Dartford warbler. The area also supports nationally important assemblages of dragonfly and damselfly and includes the valley bogs of Wishmoor Bottom which together with Broadmoor Bottom form the most important remaining type of habitat in the area.

The sustainable development of RMAS adopts an approach whereby it fulfils present and future needs. A recent example of this has been to reinstate the walled Victorian garden at Government House, where the Commandant kindly agreed to open the area as gardening allotments to military residents based on the Station. They were officially opened by

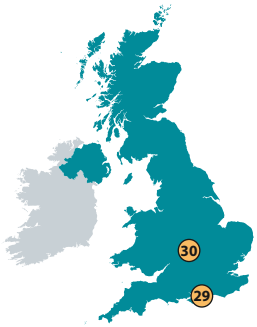
Penelope Keith CBE DL opening Lodge farm allotments 30 July 2010 © Crown

Miss Penelope Keith CBE DL on the 30 July 2010, in that *"Sandhurst Way"* an afternoon tea was served to the sounds of a brass quartet. As the growing season enters its second year residents are enjoying the fruits and vegetables, of their labours. Taking the project forward a small orchard is planned, which will incorporate a picnic area.

In partnership with DIO and Surrey Wildlife Trust a small herd of placid belted Galloway cattle have been introduced onto the Barossa training area. *"Barossa"* provides a vital habitat for wildlife in a predominantly urban area. The site's primary use is military training but this can happily coexist with looking after the heathland which is one of the rarest habitats in Europe. Constant management is required to maintain Barossa's biodiversity and rare species. The cattle are a big part of the picture in providing this management alongside other management techniques such as scrub clearance with conservation volunteers groups. Our links with the local community are far reaching, private visits by organised groups can be booked through the Sandhurst Foundation (www.Sandhurstfoundation.org) and annually Sandhurst opens its gates when we hold a Heritage Day. This year we had a record 13,000 visitors. Our guests are given access to view and enjoy the grounds, conservation and environmental awareness is promoted with a variety of stands. A recent appearance on the BBC programme Countryfile was deemed a real success with Matt Baker showing Officer Cadet's some handy dance moves following his appearance on Strictly Come Dancing, as well as reporting on the surroundings and habitat of RMAS.

Major Andy Stephens RLC
Conservation Group Chairman

Major Andrew Speed on Winston, Old College Steps © Crown



West Sussex

Thorney Island (29)

Chichester Harbour Conservancy tree planting © Crown

Community tree planting

During the course of the last year, 1500 trees have been planted in woodland copse on Thorney Island (TI). This project has been funded by Chichester Harbour Conservancy – Project Leader, Nicky Horner. Teams of volunteers from 'Friends of Chichester Harbour', National Trust, TI Shoot and conservation specialists from TI have braved all weather conditions to assist with the success of this project.

Million Ponds Project

Following the award of a pond creation grant under the Million Ponds Project, five ponds have been created to encourage the habitation of invertebrates and their future study. The project is led by Dr Pascale Nicolet, Area Co-ordinator and assisted by survey studies from Southampton University.

Bees

Thorney Island is now producing its own honey! During 2010 two successful bee hives were installed on the island. Following that success, it is hoped to install a further two hives. Secondly a member of TI Shoot has installed an organic bee hive to encourage new bee species onto the island.

Black poplar trees

Earlier this year, the National Trust planted 12 black poplar trees in various locations on the island. The black poplar tree is a protected species that is virtually extinct in the UK. It is hoped to encourage their growth on TI. To date only three have been lost, mainly to deer damage.

Bat surveys

These surveys were started by the National Trust during 2010, TI having been identified as a good bat habitat. The 2011 surveys have now started in different areas, including service hangars.

Maj (Retd) Chris Hallam
Conservation Group Chairman

Warwickshire

DM Kineton (30)

Here's a nice little tale of triumph over adversity. This particular tale shows that cost cutting in the Ministry of Defence can be an advantage. In recent times, some of the 'nice-to-have's' such as grass cutting on a grand scale has had to cease in favour of doing only essential areas.

True, this leads to some tracts of land being unsightly but if one puts the aesthetics aside the land is not just about us humans – it's about the marvellous flora and fauna that live and breed on it.

I was delighted in the summer of 2010 to learn that bee orchids were growing on a small patch of ground that hitherto had been neatly cut and cropped. The foliage and grass had never been allowed to grow but now several bee orchids had appeared rising majestically from the earth to peer at their surroundings. Perhaps they had been waiting for several years for this one opportunity much like a sapling waits in the rainforest for an old tree to fall so that it might reach for the light that the gap created?

Bee orchids at DM Kineton © Crown

Anyway – these tremendously pretty little flowers caused quite a commotion and on a personal level seeing them (for the very first time) was one of the real highlights of the summer.

Due to the financial restraints I am able to provide photographic evidence of the jewels of nature that DM Kineton has tucked away. We have some rarely seen flora and fauna but in order to find it I am often reminded of the wonderful maxim, it's not enough to look – you have to see.

Carl Portman
Conservation Group Member

Wiltshire

Boscombe Down (31)

It's been a couple of years since we last contributed to Around the Regions, and in that time we have recruited two new replacements for our butterfly recorders Mr Jon Millo and Mr Tony Horner. Although 'new' isn't really fair as they've been assisting Tony for some while now. Mr Tim Frawley and Mr John England are recording the butterflies and birds seen in the areas that they transect for butterflies, along the disused railway embankment. Both Jon and Tony have contributed some 16 years each towards the group; Jon began carrying out and recording butterfly transects along the disused railway embankment whilst here with the RAF and continued to do so after he was 'demobbed'. Tony has been recording bird species here at Boscombe Down for many years and, following Jon's move to Norfolk, he took over the butterfly recording. For a while Jon continued to record and table the butterfly records, but has now finally left the Group. This last year of recording (2010) at Boscombe, Jon saw a record number of Adonis Blue sightings, in excess of 150 on one very hot and sunny day in June. Tony, having completed over 50 years here at Boscombe, has also finally retired (although, not being able to stay away from Boscombe, he does still come in occasionally to help out).

At the 2010 Spring meeting of the Boscombe Down Conservation Group, Mr Paul Whitelegg, Head of Site, at Boscombe Down presented certificates issued by Defence Estates, to two long standing members of the Group for 'Outstanding Contribution to Conservation'; they were the Airfield Falconer, Mr Nigel Warrington and Mr Dennis Hill, our estates contact for ground works. Both members having completed over 20 years each, with Nigel being one of the founder members.

During May of last year (2010) there was some major trench work noticed in and around the Hardened Aircraft Shelters (HAS). It was fortuitous that we were able to photograph the Wessex Linear ditch (Monument SU14SE749) that traverses that area whilst the trench was open.

During work on the construction of a facility which was also near to the Wessex Linear SU14 SE749, Wessex Archaeology was called in to assess the ground for archaeology. Dr Phil Harding (of Time Team fame!) visited and inspected the area, declaring it 'all clear' for work to proceed.

This spring (2011) a Group working party coppiced one of the Nature Conservation Areas and removed scrub from another. Considering that on both occasions the working parties were only three or four persons strong, we managed surprisingly well. We are hoping to increase the size of our working parties and have another go at scrub clearing later in the year.

Mike Stone
Boscombe Down Conservation Group Secretary

Dennis Hill, Paul Whitelegg and Nigel Warrington © QinetiQ

Open trench showing ditch in 2010 © Mike Stone

Wiltshire

Bulford (32)

Chairmanship of the Group has passed from Lt Col Simon Ledger to Lt Col David Barron, the incoming Commanding Officer of the Garrison Support Unit. Membership continues to thrive with well over a hundred names on the books which spawns a small but dedicated band of enthusiasts who can be found out and about running the Group's various conservation projects.

Roman cremation urn © Crown

The recent months have seen a number of interesting archaeological finds with construction of the eastern range road leading to the excavation of a Roman cremation urn, a red deer antler pick and the discovery of postholes for a Bronze Age house. Chisenbury Midden has made two appearances on television in 'Secret Britain' and 'A History of Ancient Britain'.

The Bulford Kiwi received its annual clean from the New Zealand High Commissioner, with some assistance, on the anniversary of the Battle of Messines. Readers will be reassured to know that Wessex Archaeology have assessed the threat to ancient monuments from military training as low compared to burrowing animals, suggesting that our badger population is thriving.

At Tedworth House, now an impressively refurbished Help for Heroes Recovery Centre, our volunteers are endeavouring to restore an ornamental pond and mausoleum, which we hope will add to the general ambience of the site.

The Ornithology Sub Group continues to support the BTO with a 'Constant Effort Site' led by Robert Hayden and Simon Lane ringing migrant birds, particularly warblers, and they have recorded a large number of white throats returning this season. In addition, efforts are being made to increase the list of breeding populations for the BTO Atlas. The stone curlews are in residence and breeding well, although numbers of surviving chicks have yet to be confirmed, sadly the same does not apply to lapwings who are having a torrid time of it.

The activities of the botany sub-group span the plants and the dependent small animals, butterflies, and other invertebrates. During the autumn and winter months continuing scrub clearance at the Figheldean Bridge SSSI has improved the environment for Desmoulin's whorl snail colony. A sycamore sapling invasion was cutback on a hillside south of Tidworth to maintain the chalk grassland flora which has benefited the green coloured cistus forester moth.

This spring and summer the sub-group has assessed the health of rarer plant and insect communities especially those of interest to Natural England. The known distribution of purple milk vetch has been expanded westwards with several new patches discovered. Marsh fritillary butterflies clearly lay eggs on all three of their scabious larval food plants and we have proved that two big colonies are linked which increases their chance of survival.

Also in 2011 a brown-banded bumblebee colony was discovered with queens and workers identified. There is always more to do than the time allows in the brief summer months!

Within the Garrison, a joint venture with Wiltshire Wildlife Trust's 'There is Space Here!' programme is developing woodland walks around Bulford and Tedworth Park with the aim of promoting awareness of the natural habitat and all that it supports in the area.

Lt Col David Barron
Conservation Group Chairman
Commanding Officer

Red deer antler © Crown

Wiltshire

Imber (33)

Fairy shrimp © Iain Perkins

The Imber Conservation Group (ICG) continues to do its best to support Defence Infrastructure Organisation (DIO) staff at Westdown Camp, but with increasing levels of training and thereby poorer access, this has become more difficult. We suspect there will be little change in the next few years. However, we still managed to do quite a bit around Salisbury Plain Training Area (SPTA) West. There has been a strong showing within sub-groups, in particular Archaeology, Ornithology and Butterflies. That is not to lessen the efforts of those surveying the bats, badgers and fairy shrimps.

The Barn Owl and Raptor project that has been continuing on the Plain for over 25 years shows no sign of easing off and continues to attract support and plaudits. The nest boxes, made locally, are designed to provide safe roosting and nesting sites for cavity nesting birds of prey. SPTA is a good habitat but lacks natural nesting sites. 2010 was to have been a 'vole' year and we had hoped to repeat the success of 2005 to boost numbers. It was not to be as we had an exceptionally dry Spring, so much so that instead of lush green grassland we had tinder dry areas some of which caught fire. This is one explanation for the low barn owl broods. The previous cold Winter did not help either. There was a slight improvement in the little owl breeding when compared to the disastrous results in 2009. The new nest box made by Geordie Ward and his team is designed to keep the juveniles within their nest site for up to a week longer, so increasing the chances of survival. Nest box cameras have been installed at three sites as part of Emily Joachim's postgraduate research, which has been enormously helpful over the last few years.

A great success in 2010 was the participation in the final year of the SPTA Butterfly Survey, coordinated by Iain Perkins on behalf of DIO with our records collated by ICG Secretary, Tilly Gregory. I am hoping that the example set by this data collection will be taken up by other members.

Imber Churchyard is looking very much better and more cared for after sheep were let loose for a couple of weeks in February 2010, followed up by some good work by members of the ICG in the Spring. The work being done each year has been welcomed by the Church Conservation Trust, Edington Parish of which Imber Church is part, and by the many visitors at Easter and over the Christmas period. Neil Skelton of the ICG who leads this project oversaw the re-installation of a set of six bells in the tower in August 2010, a marvellous step forward.

A well attended summer BBQ took place in Imber Village in June 2010 and a very well attended AGM took place in October. Aspire Defence have continued to support the ICG with printing support for our newsletters and funding via the Red Start Project through the sale of nest boxes.

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

Poppies on Battlesbury Hillfort © Imber Consevation Group

Wiltshire

Larkhill and Westdown (34)

After a harsh winter and dry spring, summer has arrived on Salisbury Plain and we can assess the results of the hard work of the sub-groups over the year. Scrub clearance by the archaeologists has prepared Can Down for further exploration, the deer management efforts have ensured a healthy and robust population in our area; the bird ringing programme and nesting box efforts have increased and we have new group leaders for entomology, bats and botany, a thriving beekeeping group and a vacancy for someone to take on the badgers.

Lone trees – ancient waymarks, unique habitat and welcome shelter – are becoming an endangered species as monoculture marches across our chalk upland. We've lost three old favourites over the year but hope the rest will be conserved.

Our ringing teams have trapped and ringed over 2000 birds. The isolated area of hawthorn, gorse and bramble scrub at Westdown has proved vital to the conservation of the breeding warblers and the autumn migrants. The numbers of birds passing through our area is remarkable – nearly three hundred whitethroats, garden warblers and willow warblers were ringed in August and over four hundred blackcaps and chiffchaffs in September.

Sadly the dry spring and absence of mud for nesting materials, coupled with predation by sparrow hawks (seen invading the bunkers and hunting fledglings), has diminished our swallow population.

Our continued effort on conserving and monitoring our nightingales has paid off - in April we identified seven territories with singing males, at least four of whom are returners.

The owls and raptors have had a difficult year; our barn owls have not done well; a harsh winter and a late breeding season suggest no second broods this year. The tawnys are down on last year and we have only found one family of little owls. A ruddy shelduck has taken over one barn owl box and produced eleven eggs!

View West from SU101521 to Church Ditches © Christopher Beese

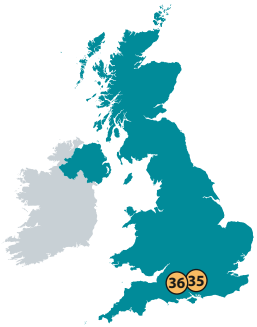
We are living on one of the most diverse habitats in northern Europe. Besides our birds, mammals, reptiles and archaeological treasures, it supports at least 13 species of nationally rare or endangered plants and many more that are scarce or just plain interesting. As well as chalk grassland, it has a range of habitats of high ecological value, including chalk-heath, woodlands, lichen rich turf and burnt or disturbed ground.

Some of the special plants growing on the Larkhill and Westdown ranges include: tuberous thistle *Cirsium tuberosum*, Deptford pink *Dianthus armeria*, dwarf sedge *Carex humilis*, early gentian *Gentianella Anglica*, frog orchid *Coeloglossum viridis*, meadow clary *Salvia pratensis*, green winged orchid *Anacamptis morio*, bastard toadflax *Thesium humifusum*.

We are privileged to have all this on a doorstep and hope anyone reading this may be moved to join us in doing our small bit for its conservation.

Brian Nicol
Conservation Group Secretary

Nightingale © Phil Deacon



Wiltshire

DSTL Porton Down (35)

X-pad level © Crown

The past year has seen a number of actions being undertaken to benefit the wildlife of Porton Down.

On the SSSI one of our problematic species, juniper, has been taken in hand to persuade it to reproduce, or at least produce replicates. As part of a project being led by Plantlife, Dstl has taken hundreds of cuttings which have been protected in a polytunnel on site with an automatic watering system. Conservation Group members individually potted the cuttings into various types of media, labelling their efforts. At the same time, as a test, I also sowed a few seeds of juniper into pure chalk from the Range. These sat, along with the cuttings, being frozen solid during the harshest of the winter and then lightly boiled in the April sun. A recent check of the cuttings was carried out. Brown thin twigs confirmed death whilst green-ness tempted a look at the healthy developing root system.

Expectations of success in seed sowing were low but two weeks ago eight very tiny perfect juniper plants were found to have emerged. From sowing to establishment of 1cm high plants took around 18 months. Such germination from a small sample of seed is very important as the viability of seed from Porton Down is thought to be very low.

Another call will soon be made for the return of the volunteers to pot up their cuttings for growing on and find out if they have green fingers or whether they might be better to taking up another hobby. A combination of growing plants from cuttings and from seed may see the beginning of an increase in the juniper population on the Range

Another aspect of the Plantlife Juniper project involves the use of mammal-proof cages that have been placed at various locations around the site. Different ground covers have been chosen, ranging from pure unvegetated chalk to rabbit scrapes to short-grazed grassland. Cages have also been placed to have different aspects. In each cage 1000 seeds were sown. These seeds were subjected to 66 weeks in a domestic refrigerator following advice given at a Plantlife workshop that this increases germination dramatically. Germination and development within these cages will be followed to assess differences between 'soils' in which the seed was sown, the effects of other vegetation growing and the direction in which the cage faces.

After many years of only being able to report sad news about juniper it is good to be able to have some optimism about a potential future for this species at Porton Down.

Stuart Corbett
Dstl Conservation Officer

East Yorkshire

DST Leconfield Carrs (36)

Sand martins first bred at the Defence School of Transport site a couple of years ago, temporarily stopping work on improvements to the Training Area, by making good use of some of the heaps of sand that had been brought in to create a sand track. The sand track was one of several developments to turn parts of the former WW2 airfield into a more realistic and challenging training environment, simulating conditions in Afghanistan for students.

To prevent any interruption to training, a special purpose-built sand bank was manufactured for the sand martins involving a not inconsiderable amount of planning, man hours, and machinery, utilising an area which was close to where they had previously set up home. Close attention was paid to the direction of the bank, how steep to make the gradient, and getting just the right consistency and colour of sand. The purpose-built sand bank looked perfect in every way, so surely any discerning sand martin would choose this over and above those rough and ready sand heaps on the sand track, time and time again wouldn't they?...

Sand martin © Dave Kjaer

...Back to the drawing board, nature wins again!

Alan Bakewell MCMI
Conservation Group Chairman

Secretariat

Secretariat maintains the long-term strategy for the estate and develops policy and best practice guidance on estate management issues. It is the policy lead for sustainable estate. The Directorate is responsible for Sanctuary Magazine.

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Defence Infrastructure Organisation Environmental Advisory Services

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

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Defence Training Estate

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

Headquarters Defence Training Estate
Defence Infrastructure Organisation
Land Warfare Centre
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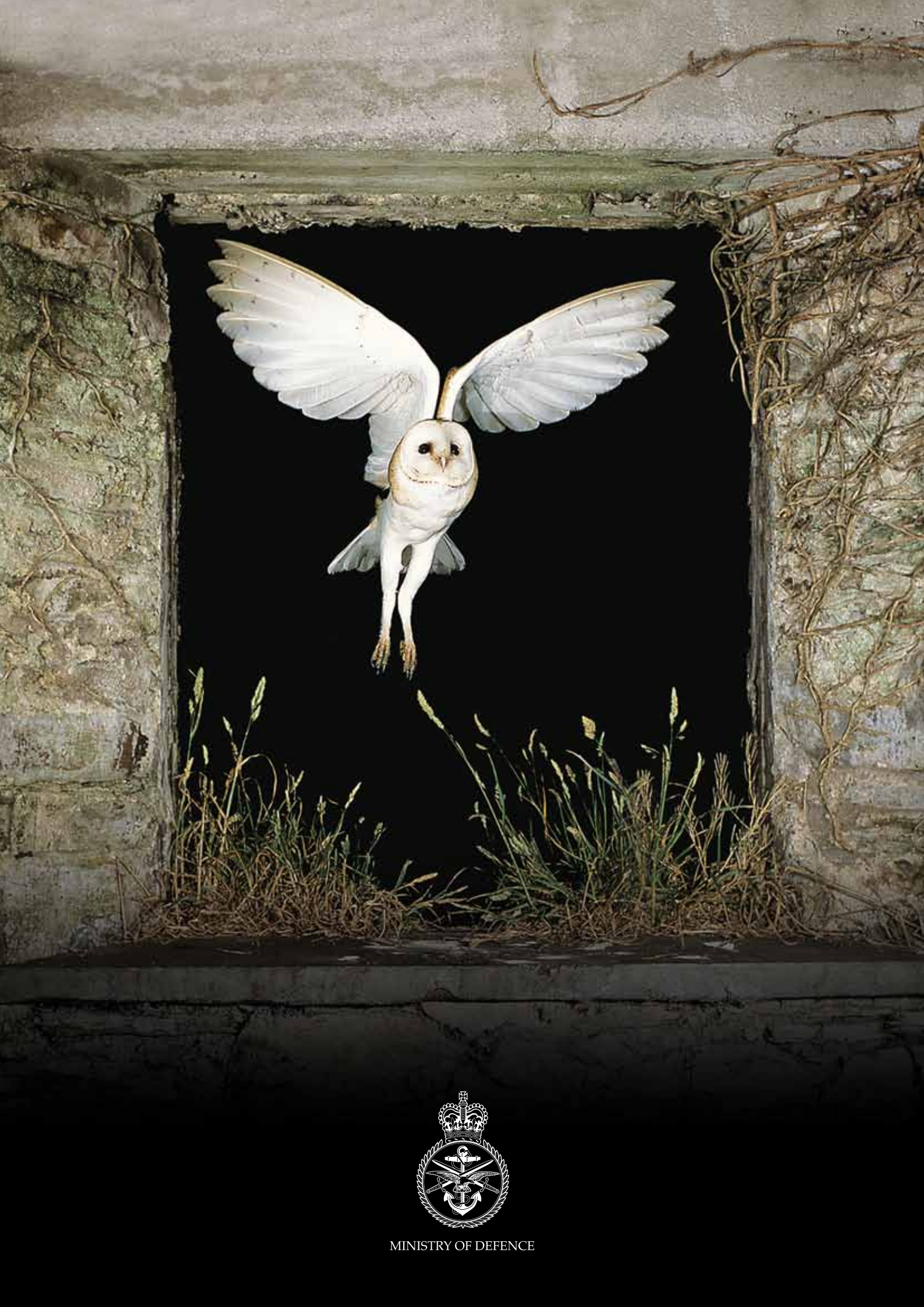
Defence Infrastructure Organisation

Six-spot burnet moths *Zygaena filipendulae*
© Iain Perkins

Submissions
If you would like to contribute to Sanctuary Magazine or enter future Sanctuary Awards please contact Clare Backman, Editor at:
DIO-Sanctuary@mod.uk



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