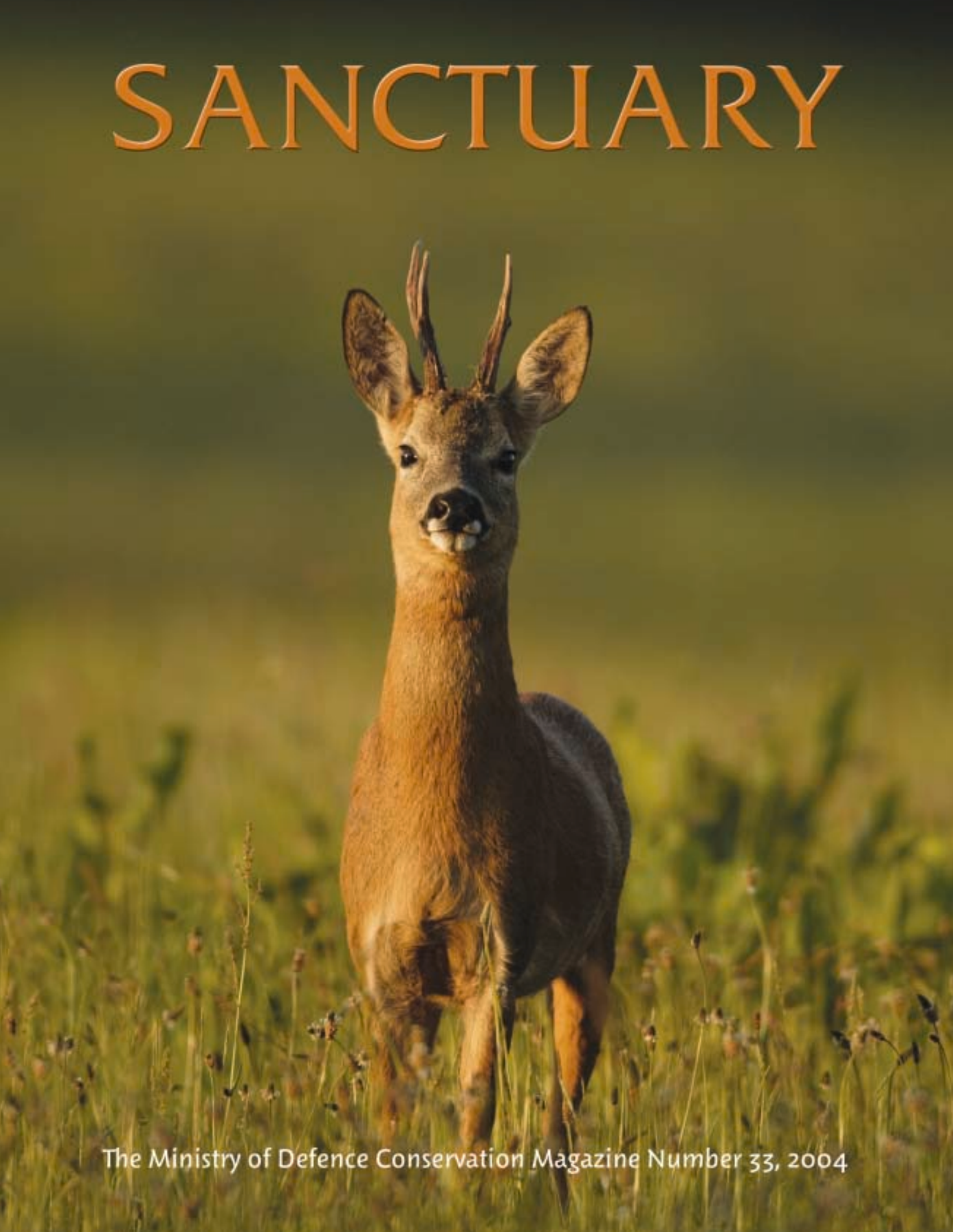
SANCTUARY



The Ministry of Defence Conservation Magazine Number 33, 2004

FOREWORD

I was not familiar with Sanctuary Magazine until I took over as Under Secretary of State for Defence in June 2003. I was surprised and quickly absorbed by the informed, well-written articles from a diverse range of contributors to the extent that I sent every Member of Parliament a copy. I am very pleased to have this opportunity to contribute this foreword to such a notable publication.

My role has provided me with the opportunity to visit much of the Defence Estate across the British Isles and some of our overseas bases. As the Department's Green Minister I am always interested to learn about our efforts in respect of the environment. The significance of the integration of operational needs and stewardship by commanding officers, and indeed how some MOD security staff have absorbed observation and recording of wildlife into their daily routine, cannot be underestimated. I firmly believe that environmental protection is about both these points of view - planning for the bigger picture and the adoption of individual actions.

From a ministerial point of view, the issue of sustainable development is one that is high on the Government's agenda. In principle, sustainable development seeks to ensure that we balance our demands upon the environment with both protection and stable economic growth. The Government's sustainability strategy has set us targets that provide real challenges, including bringing 95% of our Sites of Special Scientific Interest into favourable condition by 2010. I am happy to report that Defence Estates and our Armed Forces are working together to identify solutions for improvement, with 61% of our SSSIs already reaching the target despite the operational demands of defence.

The MOD's culture of care for the environment has been greatly aided by our working relationships with both Other Government Departments and Non-Government Organisations. Last August I visited a remote part of the British Isles when I went to Benbecula in the Outer Hebrides. The MOD has had a permanent presence on St Kilda since 1956 and I was in Benbecula to renew our partnership with National Trust for Scotland by signing a new 25-year lease. QinetiQ manages the ranges on MOD's behalf and all parties are commmitted to work together for the long-term benefit of St Kilda's cultural and natural heritage. In addition, MOD's continued occupation safeguards jobs that are crucial to the fragile economy of the area.

Finally, I was delighted to note that the 'Turtle Watch Project' in Cyprus won the Sanctuary Award, and would like to express my pride in the enormous efforts by MOD staff and the local community to protect this endangered species. I would also like to take this opportunity to thank the professional environmental staff and the volunteers in the Conservation Groups for their efforts to care for the environment. I am greatly impressed. I hope you enjoy reading this edition of "Sanctuary".

Ivor Caplin MP
Under Secretary of State for Defence
and Minister for Veterans

Sanctuary Magazine is printed on satimat; a sustainable souce of timber. When you have finished this edition, you may wish to pass it on to friends, family or donate it to a surgery.

EDITORIAL

Rosie Rowe
Editor Sanctuary

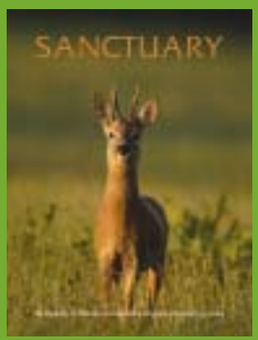
Lt Col Norman Clayden, the first MOD Conservation Officer, was at the vanguard of MOD's conservation work in the early seventies. He started Sanctuary Magazine in 1976 to publicise and encourage MOD conservation, and it has evolved into the magazine you read here today. Sadly, Lt Col Clayden passed away in December last year. The MOD owes him a deep debt of gratitude for his tireless work and immense dedication to MOD conservation.

The agenda for conservation is itself evolving. New legislation for conservation, heritage and access is bringing changes to MOD's policies for the environment, and within the pages of Sanctuary we still aim to bring you the latest news, illustrated by a selection of stunning feature articles. Yet while our intentions remain the same, our subjects do change. I'm always amazed by the diversity of topics and the sheer scope of work undertaken across the land that the MOD uses. Those with a passion for deer may have already been attracted by our cover photo, but read more about the deer of Lulworth Ranges on page 40 to 44. For the botanists amongst you, Bryan Edwards describes the lesser-known, lower plant groups that thrive at Lulworth (on pages 45 to 49), and for the ornithologists, Constable John Simpson provides us with an interesting insight into the bird life at her Her Majesty's Naval Base at Clyde in Scotland on pages 52 to 53.

As I have received articles from diverse locations across the MOD estate, I've been captivated by the picture of our ever evolving world. The breadth of historic articles, from the geological evidence of prehistoric life forms in Pembrokeshire (pages 17 to 20), to the more recent evidence of man's activities during the Great War (pages 54 to 58), illustrate vividly, our ability to shape the landscape.

As always, this magazine would not have been possible without the many volunteers that have taken the time to update us on their recent activities and my thanks goes to them. I hope that you enjoy this, our 33rd edition of Sanctuary.

Front Cover: Roe Deer, Andy Rouse © ARWP Ltd.



The majestic European Roe Deer *Capreolus capreolus* is one of only two species of deer native to Britain, Red being the other. Both species are now common, after spreading to England following the last Ice Age. There are three sub-species of Roe Deer: European, Siberian and Chinese. European Roe Deer are very adaptable and can be found in a wide variety of habitats ranging from open moor to thick cover in conifer or deciduous woodland. There can be a marked variability in body size depending on food availability and climatic conditions. Wild deer numbers are increasing and sensitive management is an important part of MOD's conservation effort. You can read more about deer on the Lulworth training area on pages 40 to 44.

Back Cover: Porton Down Ant-scape © Stephen Davis

As the name suggests, a high density of ants at Porton Down have formed this unique landscape. Anthills are formed by the Yellow Meadow Ant *Lasius flavus*. It has been estimated that there are three million anthills containing 35 billion ants on these grasslands. Anthills can only form in the absence of disturbance by farming operations and livestock trampling. Rabbit grazing keeps the turf short, favours the development of low growing herbs and allows the sun to warm the mounds. As the anthills become shaded, temperatures fall too low for ant brood production and the mounds are abandoned. A study of ants at Porton Down published in 2002 states that 20 species were present including a number of scarce species. You can read more about Dstl Porton Down on pages 70 to 71.

Sanctuary

The Ministry of Defence Conservation Magazine Number 33 – 2004

Editor	**Rosie Rowe, Defence Estates**
Sanctuary Support Officer	**Amy Collins, Defence Estates**
Designer	**Stephen Shortall, CTS MEDIA, Bath**
Printer	**Newnorth Print Ltd**

Regular Photographers

Professor Heather Angel and colleagues
Natural Visions – http://www.naturalvisions.co.uk

Dr Tracey Rich and Andy Rouse
http://www.andyrouse.co.uk

Bob Glover
331 Plumberow Avenue, Hockley, Essex SF5 5NP or telephone 01702 201959

Stephen Davis
Stephen.Davis@ english -nature.co.uk

Editorial Address

Rosie Rowe, Sanctuary Magazine, DE EST, Building 21, Westdown Camp, Tilshead, Wiltshire, SP3 4RS.

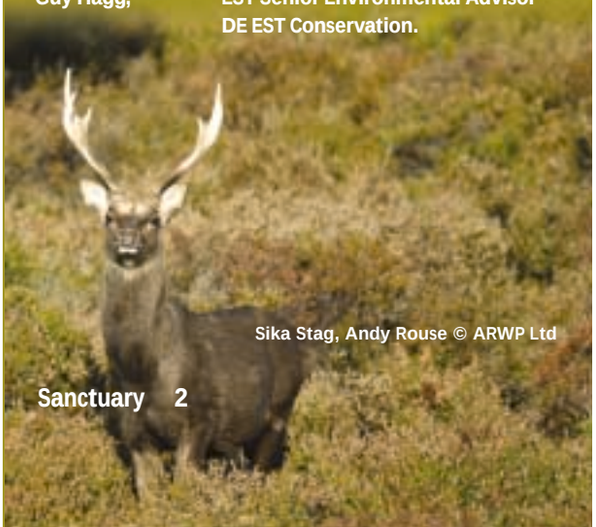
Telephone : -	**01980 674665**
Fax : -	**01980 674736**
Email : -	**Sanctuary@de.mod.uk**

Sanctuary Magazine is a free publication.
For further copies please write to the address above, or email Sanctuary@de.mod.uk

Sanctuary can be viewed online at: -
http://www.defence-estates.mod.uk

Sanctuary Editorial Board

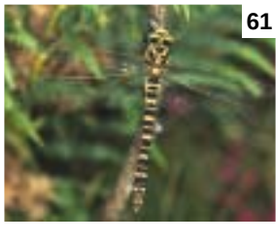
Alan Mayes,	**ES&P Sec&RM (Chair),**
Diane Jackson,	**ES&P Sec&RM1,**
Martin Coulson,	**Head of Rural Sustainability Strategy and Policy,**
Keith Maddison,	**Principal Environmental Manager DE,**
Rosie Rowe,	**EST Environmental Advisor Environmental PR & Communications (Editor & Coordinator),**
Guy Hagg,	**EST Senior Environmental Advisor DE EST Conservation.**

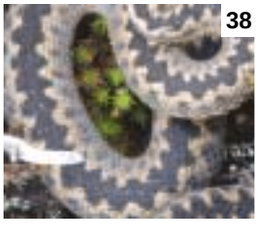


Sika Stag, Andy Rouse © ARWP Ltd

CONTENTS

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





Submissions

Guidelines for contributors can be obtained by emailing the Editor at: - Sanctuary@de.mod.uk
Editorial proposals should be emailed to the Editor.

DEFENCE ESTATES
Delivering Estate Solutions to Defence Needs

Judging the Sanctuary Award is always difficult, and this year's competition was no exception! The scope of the Sanctuary Award was widened for 2003 to reflect our wider responsibilities for conservation, to cover themes such as landscape protection and public access. The contest was also opened to our colleagues abroad, with the aim of encouraging and recognising efforts towards protecting and enhancing the environment at overseas sites. We were delighted when we received submissions that truly reflect the broad range of rural initiatives undertaken annually across the Defence Estate in the UK and abroad.

Rosie Rowe, Editor Sanctuary

The Prizes!

The winner of the 13th annual Sanctuary Award will hold the prestigious Silver Otter Trophy and receives a prize of £500 to support further conservation efforts. The runner-up receives a certificate and £250, and two entries receive highly commended certificates together with £150.

The Judges

Our judging panel consisted of myself, as Editor of Sanctuary, Martin Coulson, Defence Estate's Head of Rural Sustainability and Heritage Policy and Marcus Yeo, the new Director of Relations and External Affairs at the Joint Nature Conservancy Council (JNCC). The JNCC is the forum through which the UK's three country nature conservation agencies – English Nature, Scottish Natural Heritage, and the Countryside Council for Wales - co-ordinate their statutory responsibilities for Great Britain and internationally. Our thanks go to Marcus for taking the time to study this year's entries. We look forward to working with him on environmental and sustainability issues in the future.

Sanctuary Awards

The Runner-up

This year's Runner-up is the Foulness Conservation and Archaeological Society (FCAS). FCAS is a conservation group originally established to create, maintain and study conservation and archaeological sites and, to carry out historical research in the local area. The area consists of the MOD Estate on Foulness Island and the smaller islands of Havengore, New England and Rushley, on the Thames Estuary in Essex. The group is made up of local residents of Foulness Island, that have close links to outside sources of expertise e.g. English Nature, the Royal Society for the Protection of Birds, The Essex County Council Heritage and Conservation Department (for archaeology and local history) and the Southend Museum Service.

Heritage Centre, Ron Shadworth

FCAS initiated and delivered a project that converted a redundant Victorian school on the MOD Estate, into a Heritage Centre for the local community. The volunteers managed the project and did most of the work to convert the building themselves. The Centre opened in February 2003, and has already proved very popular, providing a home for a vivid display of rural, domestic, industrial and agricultural history of the area. This brilliant project has not only enabled the positive re-use of a building of local historic interest, but will benefit the local community through education and awareness for many years to come.

The Winner

Onlookers watch the start of a nest excavation, Sgt Matt Cascarina

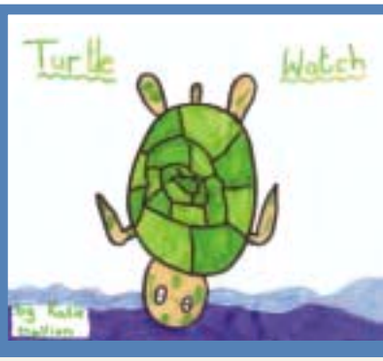
This year's winner is the 'Turtle Watch Project' from the Sovereign Base Area Cyprus. It is a truly inspirational project that has evolved into a major conservation effort over the past fourteen years. Hundreds of dedicated volunteers have devoted enormous amounts of time and energy to protecting the breeding habitat and the young of the Green and Loggerhead Turtle; two of the world's most endangered species.

Turtle Watch was started on the Western Sovereign Base Area (WSBA) and now has two teams based at RAF Akrotiri and Episkopi. Volunteers include the local Sovereign Base Area (SBA) personnel and their families, university students, SBA Police, SBA Conservation Wardens, the SBA Patrol Boat and the WSBA Conservation Officer!

A volunteer helps build the fence to prevent beach erosion, Sgt Matt Cascarina

Volunteers work tirelessly throughout the year. They clear the beaches of rubbish, organise beach patrols to identify tracks that may lead to a turtle's nest, and then they actively protect nests from predators. The volunteers' efforts do not stop there, as when the seven-week incubation period is over, they provide all night vigils to protect hatchlings. The teams keep scrupulous records and estimate that since beginning in 1991, they have located hundreds of nests, ensuring that over 15,000 hatchlings make it safely to the sea. Outside of the breeding season, Turtle Watch works towards measures to minimise beach erosion. In addition, they operate a constant awareness campaign, delivering presentations in schools and clubs and displaying educational posters. These widespread publicity initiatives have included leafleting in the local community, and this has resulted in local Cypriot families volunteering to take part. The project team has even opened a Turtle Watch Information Centre at RAF Akrotiri.

This ongoing project shows immense dedication and initiative, and thoroughly deserves to win this year's award. The Silver Otter Trophy is a tribute to the hundreds of volunteers both past and present who have given their time so freely to protect the Green and Loggerhead turtles.



Drawing by Katy Mallion of Episkopi Primary School that was used for an information poster

Highly Commended

Two projects receive Highly Commended certificates.

Strensall Training Area forms part of the largest tract of remaining Lowland Heathland in Northern Britain, and supports a wide variety of rare species. The Strensall Training Area Conservation Group has undertaken a Heathland Enhancement Project in partnership with the highly acclaimed "Tomorrow's Heathland Heritage" restoration project. Other contributors include English Nature, the Forestry Commission and the Yorkshire Wildlife Trust. Benefits to the biodiversity of the area include the conservation of ponds and wetlands, rare species protection, the maintenance of selected woodlands, the removal of invasive scrub and the introduction of a grazing scheme to improve the heathland. Of particular interest is their use of a flock of Hebridean Sheep to graze the area. Hebrideans are a rare breed, more inclined to browsing when feeding. Therefore, they readily tackle birch saplings and produce a more environmentally friendly result than chainsaws and herbicides! The project also aims to increase public enjoyment of the heathland by providing environmental interpretation material such as notice boards, site leaflets and nature trails. This is an impressive project, which demonstrates an innovative collaborative approach to heathland restoration and a commitment to improving public access and enjoyment of the Defence Estate.

RAF Halton is a large training establishment in Buckinghamshire that supports a diverse population of flora and fauna within its grounds. A Highly Commended certificate goes to their two Conservation Officers who have been instrumental in establishing and implementing a diverse and proactive conservation effort for the site. David Short and Andy Cook volunteered to be Conservation Officers in 2002. They both work within the Multi Activity Contract in the Armoury and undertake conservation tasks as a secondary duty. Their work so far has included the compilation of the site's Conservation Dossier, the protection of rare plants such as Bee Orchids, and work to protect species such as Badgers and the Edible Dormouse. Their efforts have ensured that the every-day business of this busy RAF site takes proper account of the wildlife that shares the site. In addition they have taken a keen interest in the local bat and bird population, and have created a web-site to educate and inform the local community, thereby raising the profile of conservation for RAF Halton. Overall, this showed initiative and dedication, and the panel are delighted to award them a highly commended certificate.

If you would like further information on the Sanctuary Award, or would like to receive a copy of the rules and entry form for the next competition, please email the Editor Rosie Rowe on Sanctuary@de.mod.uk.

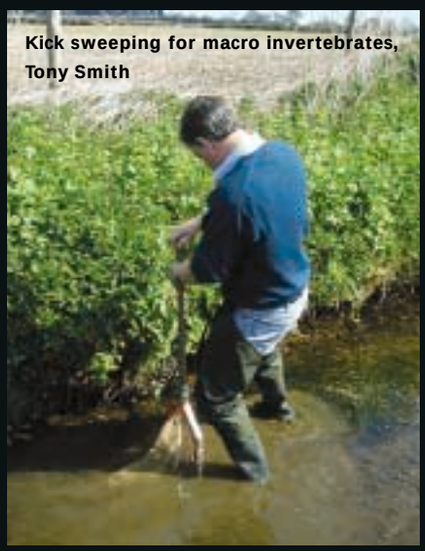
Caddis fly larvae with a sand case, *Brachycentrus subnubilus.*
© Heather Angel, Natural Visions

Ecological Research at HMS Dryad

By Tony Smith, Environmental Protection and Safety Advisor, Sea Mounting Centre Marchwood

HMS Dryad is a naval training establishment situated approximately eight miles north of Portsmouth in the lee of the South Downs. The site is steeped in history and the remains of an ancient monastery can be found in the grounds. The monks had built carp lakes adjacent to the River Wallington in order to provide food, and one remains to this day. At the beginning of World War Two, Southwick House and 300 acres of the surrounding land, belonging to the Borthwick-Norton family, was commandeered and subsequently bought by the MOD. General Eisenhower used the house, which became the Wardroom, as his headquarters for the D-Day Landings, and the wall map survives there to this day.

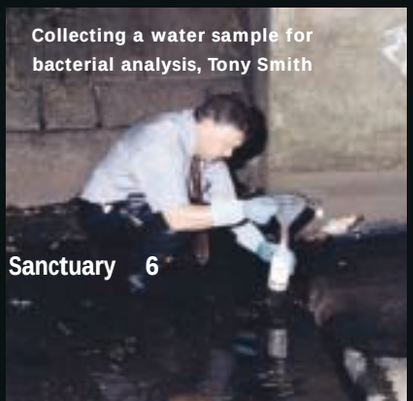
Tony Smith, the establishment Environmental Protection and Safety Advisor, studied an MOD sponsored Masters degree entitled 'Occupational and Environmental Health and Safety Management' between March 2002 and March 2003. The distance learning course, provided by the University of Portsmouth, consisted of a number of taught units together with a final year research project. His line manager, the First Lieutenant of HMS Dryad and Nigel Berry, the establishment Barrack Master and Conservation Officer supported and encouraged his efforts.



Kick sweeping for macro invertebrates, Tony Smith

Collecting a water sample, Tony Smith

Tony is well used to distance learning, having completed an Honours degree with the Open University in 1997. He studied, amongst other subjects, biochemistry, evolution, animal physiology and ecology. No wonder then, that when it came to the choice of the Masters research project, he chose the topic area of environmental protection, employing ecological science to assess levels of organic pollution and hence water quality.



Collecting a water sample for bacterial analysis, Tony Smith

Measuring flow rates, Tony Smith

Male and female freshwater shrimps, *Gammarus pulex* in tandem.
© Heather Angel, Natural Visions

The River Wallington enters the HMS Dryad site from the east and travels west for approximately 14 kilometres, discharging to Fareham Creek, which flows eventually into Portsmouth Harbour, a designated Site of Special Scientific Interest. With the permission of the Southwick Estate, 20 sampling points were established along the river, mostly at the confluence of tributaries leading to the main watercourse, and also near to farms. Sampling points were also set up either side of the Dryad Lake (an artificially created feature running the length of the site). This was in order to see if the water quality was affected by establishment activity, or by the use of the lake which provides coarse fishing for the Royal Navy and Royal Marines Coarse Angling Association.

The presence and absence of small invertebrate creatures which live amongst the river bottom substrate were used to assess the water quality. Examples include freshwater shrimps, mayfly and caddis fly larvae, leeches, worms and aquatic snails. These creatures are sensitive to organic pollution, and each species has a different tolerance. There are hundreds of types to catch, identify and record. This is a rigorous process, which must be carried out carefully in order to improve the accuracy of the results.

Other data collected from the river included water flow rates, depth, width, incline, longitude, latitude and dissolved oxygen levels. The Environment Agency provided training to assist the work, and statistical analysis software, which was needed to assess the significance of the results. Coarse fish from the lake were screened and analysed for the presence of pollutants such as heavy metals by the Institute of Naval Medicine. *E.coli* bacteria counts were also carried out for water samples taken as part of a secondary investigation, where sewage fungus was found to be growing in the river.

Results showed that operations at HMS Dryad had no noticeable effect upon water quality, but that certain parts of the river were suffering from significant levels of organic pollution, thought to be associated with household and farm discharges. The Environment Agency has welcomed this research, which they intend to use to help improve the river system. It is hoped that a simplified method by which non-specialists can carry out regular assessments on other MOD sites can be developed, using just seven key indicator species.

Sadly, HMS Dryad is due to close in the near future, although it is hoped that another MOD tenant will be found for the site. Tony has moved on promotion to The Sea Mounting Centre, Marchwood, Southampton since completing his degree. He now works as a Safety and Environmental Protection Advisor within the Warship Support Agency.

Freshwater leech, *Eropdella octoculata*, feeds on insect larvae.
© Heather Angel, Natural Visions

BRITISH FORCES CONSERVING IN CYPRUS

By L/Cpl Jason Wilson, Conservation Officer, Western Sovereign Base Area, Cyprus

The Republic of Cyprus is located around 1950 miles south east of London in the Mediterranean Sea and lies on the same latitude as Morocco. The island is about half the size of Wales.

British forces have been stationed in Cyprus since 1956. On 16th August 1960, the 'Treaty of Establishment' and 'Treaty of Guarantee' were signed by the United Kingdom, Greece, Turkey and the Republic of Cyprus. One of the conditions of Cypriot independence in 1960 was the UK's retention of a certain percentage of the island as a British reserve known as the Sovereign Base Areas (SBAs for short). The Treaty of Establishment provided for British sovereignty and jurisdiction over two autonomous SBAs, with "retained ancillary rights" for the UK to move troops across the new Republic, train on its territory, over-fly its airspace and use its ports.

The SBAs cover three percent of the land of the island, a combined area of approximately 99 square miles. The Eastern Sovereign Base Area (ESBA) lies between the towns of Larnaca and Famagusta, encircling the Army Garrison at Dhekelia, and running close to the border with the area of Northern Cyprus. The Western Sovereign Base Area (WSBA) is approximately 70 miles to the west of the ESBA and comprises the area of the Akrotiri Peninsula immediately to the west of the town of Limassol in the south of the island. It includes the Headquarters of British Forces Cyprus at Episkopi and the RAF station at Akrotiri. With the withdrawal and handover of Hong Kong, together with the closure of the remaining RAF stations in Germany, RAF Akrotiri is the last remaining overseas operational RAF airfield.

Children watch two Loggerhead hatchlings make their journey to the sea, Mrs Marie Allen

Green Turtle © Anne Norris, Natural Visions

Sgt Matt Cascarina showing turtle hatchlings to children on the beach

WSBA Conservation

The WSBA is home to a large variety of wildlife and habitats unique to the Eastern Mediterranean. This area is widely regarded as being one of the most environmentally sensitive locations in Cyprus, positioned along the southern coast, hugging the Mediterranean Coastline. The cliffs running between RAF Akrotiri and British Forces Episkopi are home to the last remaining breeding colony of Griffon Vultures and the equally rare Eleonora's Falcon. In addition, the beaches along the Akrotiri peninsula are some of the most important nesting grounds in Cyprus for Green and Loggerhead Turtles, which are both endangered species.

For many years in Cyprus, the MOD and committed volunteers have been striving to protect the fauna and flora in the area. Numerous conservation sub-groups have been formed, all of which are represented on the main Conservation Group, which is chaired by the Commander of the area. This approach ensures that conservation issues are given consideration at all levels on a daily basis.

For many years in Cyprus, the MOD and committed volunteers have been striving to protect the fauna and flora in the area.

Due to the increasingly high profile of conservation issues in the WSBA, I was appointed as a full time WSBA Conservation Officer in September 2003 to manage and oversee the expanding commitments of the WSBA Conservation Group. More emphasis is now being placed on raising awareness of conservation issues through lectures and articles in local newspapers and magazines. A web site has been launched this year, which provides information and photographs on various conservation issues. The latest project to be developed is a colour brochure to compliment the WSBA Conservation Site Dossier.

Griffon Vulture,
L/Cpl Jason Wilson

Sand dunes at RAF Akrotiri,
L/Cpl Jason Wilson

Phasouri Reed Beds, L/Cpl Jason Wilson

An Akrotiri villager said that although he had lived here all his life, he had not realised that there were turtles nesting on the beaches!

The WSBA Conservation Group is now well established, and members are now routinely requested to assist with Defence Estates' surveys. In addition, the group also conducts its own annual surveys, including the Demoiselle Crane Survey and Eleonora's Falcon Breeding Sites Survey. Future projects are already being planned and include a small mammal-trapping project and the construction and placement of bat and bird boxes. Both are in partnerships with local schools.

The activities of the "Turtle Watch" groups deserve special mention. Turtle Watch started out as two individual groups with the same goal, the preservation of the Mediterranean marine turtle.
Turtle Watch Akrotiri was formed in 1991, and over the years has developed into a large club, with the dedicated help of local service personnel and volunteers. Every year students from Glasgow University are invited to Cyprus to assist with beach patrols and nest excavations. Episkopi Turtle Watch records date back to 1996. Everyone gladly gives up their spare time to do whatever it takes to help these amazing creatures survive.

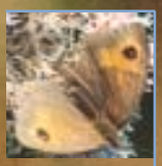
Education is one of the most important aspects of Turtle Watch. In early spring presentations are arranged in schools and clubs, and posters are widely displayed. All forms of communication are provided in both English and Greek, making this an all-encompassing project. In addition, leaflets are put through letterboxes to inform people that misuse of the beaches can have a devastating impact on the turtles. Due to the widespread publicity, local Cypriot families are also becoming involved with Turtle Watch activities. Recently, an Akrotiri villager said that although he had lived here all his life, and he had not realised that there were turtles nesting on the beaches!

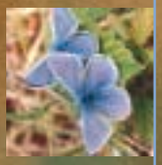
Volunteers, including service families and local youth groups, both English and Cypriot, rally together by means of posters, leaflets and advertisements in local newspapers, not to mention requests on British Forces Broadcasting Service Radio. Turtle Watch even has its own Information Centre at RAF Akrotiri. The Centre is run by volunteers and opens fulltime during the summer. An update on the activities of Turtle Watch during 2003 can be read on pages 120.

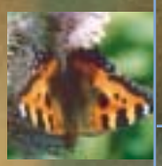
As you can see, conservation of natural resources is placed high on the agenda in Cyprus. However, little would be achieved without the efforts of hundreds of volunteers who give their time so freely to these vital, ongoing initiatives. My thanks goes to them.

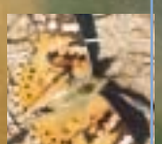
Two Common Blues Mating

A Range of Butterflies









By Gary Llewellyn, Student,
MSc in Environmental Education, Trinity College, Carmarthen.

Brownslade Burrows on the Castlemartin Range, looking towards Frainslake Beach

The Ministry of Defence (MOD) is one of the largest landowners in the United Kingdom and this fact prompted me to question whether the MOD actively encourage wildlife to prosper on their estate, or if the wildlife present is merely a coincidental by-product of military training. It came as a big surprise to me, that not only did the MOD incorporate the needs of a vast array of species within their Integrated Land Management Plans (ILMPs), but they also published an annual conservation magazine called 'Sanctuary'.

The butterflies found on any given piece of land can offer a useful insight into the health, vitality and diversity of the habitat

Two Male Common Blues

The objective of my dissertation was to evaluate the compatibility of military training with wildlife conservation and the associated management plans implemented by Defence Estates. In an attempt to answer my questions, I decided to undertake a case study on the Castlemartin Army Firing Training Range within my home county of Pembrokeshire, West Wales. The Castlemartin Range has occupied some 2,400 hectares of land since 1939 and lies within the Pembrokeshire Coast National Park. The Range area extends along a coastal strip 10 km long and 1-3 km wide and contains some of the finest limestone coastal scenery in the UK. In order to evaluate the wildlife conservation claims made within the Castlemartin ILMP, the decision was made to embark on a comparison-based study using butterflies as a key biodiversity indicator.

The butterflies found on any given piece of land can offer a useful insight into the health, vitality and diversity of the habitat, as well as uncovering a number of ecological processes intrinsically linked to that site. In order to evaluate the butterflies of the Castlemartin Range two separate transect walks were established. A transect walk or route is basically a very simple method of recording butterflies and is currently used nationwide within the Butterfly Monitoring Scheme (BMS). The concept requires the establishment of a fixed transect or route which is walked once a week from April to September for some 25 weeks. Whilst

walking the pre-determined route, the recorder logs the number and species of butterflies seen within an estimated distance of five metres ahead and on either side. The aim of transect walks is not to count all the butterflies witnessed while traversing the route; rather those butterflies observed whilst walking at a steady pace are recorded.

The first transect walk was established within the Range on an extensive area of sand dunes known as Brownslade Burrows, which is located behind Frainslake Beach. The second transect walk was established just outside the Range on a neighbouring sand dune site known as Broomhill Burrows, which is located behind Freshwater West Beach. For my comparison study to be scientific and unbiased the number of similarities or constants between the two transect walks should significantly outweigh the differences or variables. The similarities between the two sites are as follows, both transect walks were located on very similar types of sand dune habitat and followed similar successional changes in vegetation as distance from the sea increased. The two sites were separated geographically by a mere 1.5 km and were located behind two southwesterly facing beaches, which are connected on very low tides. Both transect walks were near identical in length and traversed through a mixture of good and bad habitat areas for some 2.2 km. Finally, both sites

The Results of both transect walks 2003

Table One	Broomhill Burrows (Freshwater West)	Brownslade Burrows (Castlemartin Range)
Butterfly Species	Annual Index of Abundance (Sum of weekly counts)	
Small Skipper	140	56
Large Skipper	2	0
Dingy Skipper	8	0
Clouded Yellow	5	7
Large White	55	34
Small White	13	15
Small Copper	15	6
Brown Argus	46	60
Common Blue	1106	1095
Silver-studded Blue	0	80
Red Admiral	5	6
Painted Lady	41	48
Small Tortoiseshell	33	13
Peacock	45	5
Dark Green Fritillary	54	14
Wall	103	18
Grayling	17	0
Gatekeeper	296	88
Meadow Brown	1293	2883
Small Heath	724	121
Ringlet	14	145
	Total Number = 4,015 Total No of species = 20	Total Number = 4,694 Total No of species = 18

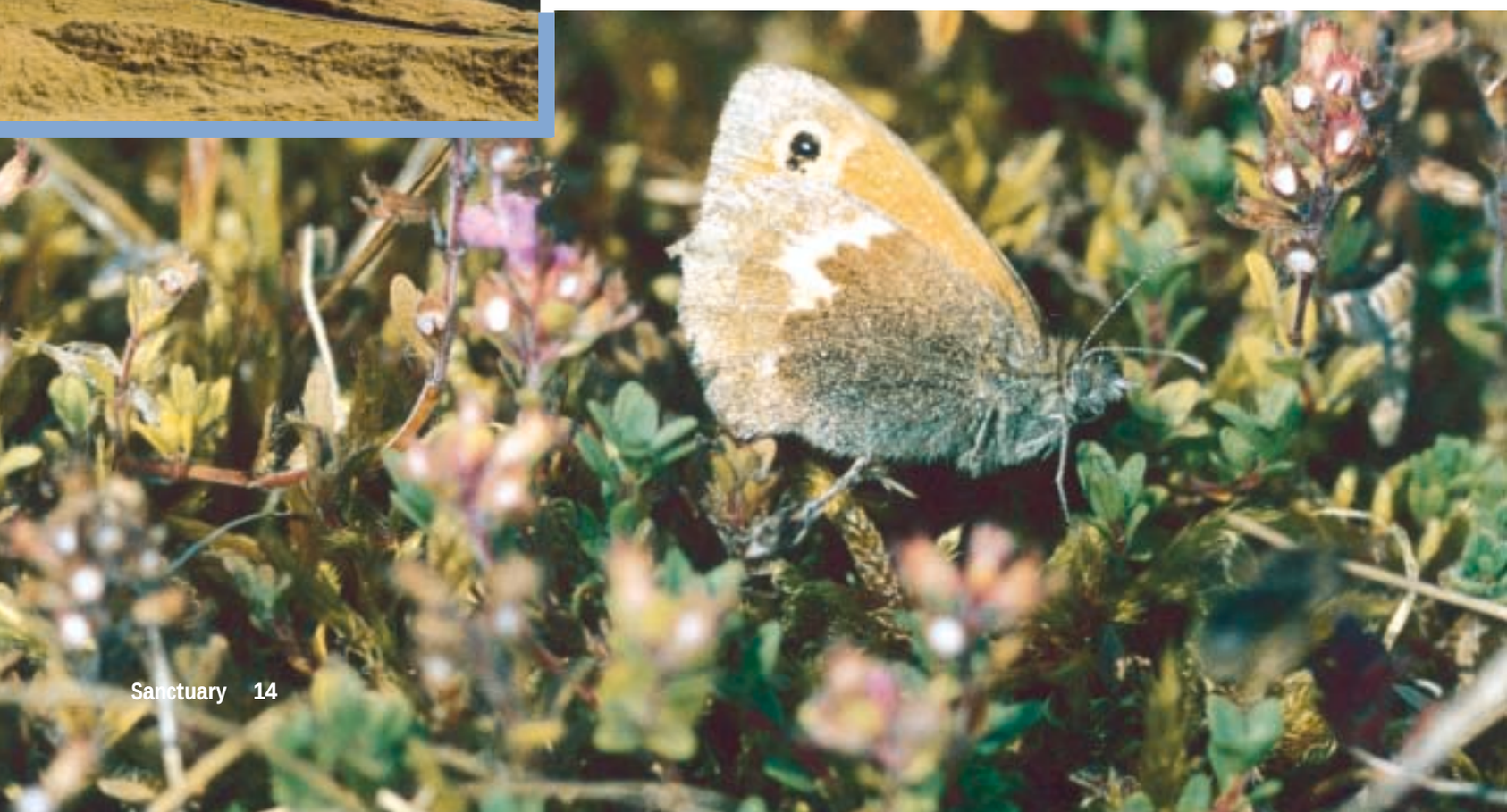
have formerly been utilised for sand extraction and are currently designated as Sites of Special Scientific Interest (SSSIs). After a thorough examination of both sites some subtle variations in the geomorphology, geology and hydrology were apparent. These natural variables could have a small but significant influence on my results. However, the most influential variable is the management regime adopted at both sites, especially the grazing regime, which can significantly alter the composition and structural diversity of the vegetation. The overall use of the land and the amount of public access permitted on both sites was also dissimilar. It was hoped that these variables, especially the grazing regime would prove useful when interpreting my transect walk data.

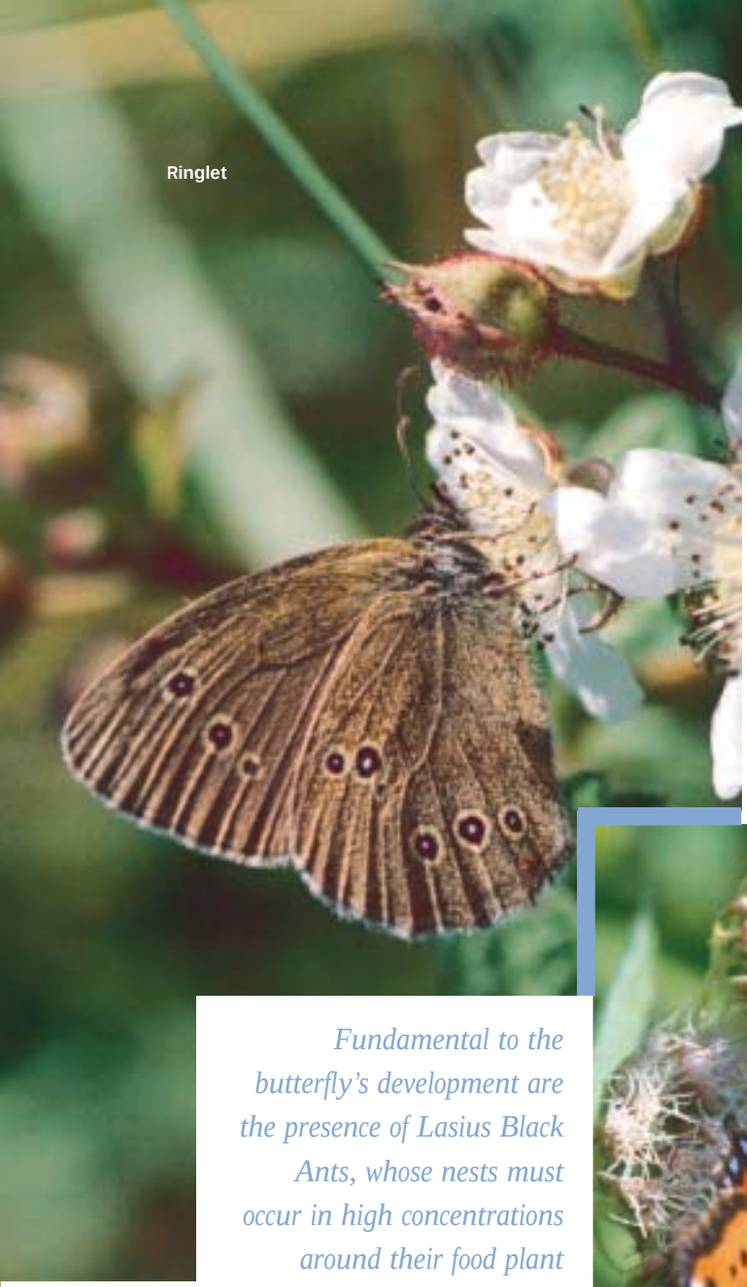
By the end of September 2003 a vast amount of data had been collected on the numbers, species and associated distribution of butterflies across both transect walks. At Brownslade Burrows a total of 4,694 butterflies had been recorded over the 25 weeks compared with 4,015 at Broomhill Burrows behind Freshwater West. Although Brownslade Burrows yielded the highest total numbers of butterflies, Broomhill Burrows recorded the highest species richness, where 20 separate species were found, compared with 18 at Brownslade Burrows. The species with the highest annual count were the Meadow Brown where a truly massive 2,883 butterflies were recorded at Brownslade Burrows and 1,293 at Broomhill Burrows. Whilst walking the Brownslade Burrows transect at the height of summer some difficulties were encountered in logging the extremely numerous Meadow Brown Butterfly. Often a large swarm containing some 15 plus individuals would suddenly take flight making accurate recording somewhat problematic. Another numerous species was the Common Blue and both sites recorded very similar totals. In fact the results were amazingly close, at Brownslade Burrows 1,095 individuals were logged and at Broomhill Burrows only eleven more were recorded over the entire 25 weeks to give a total of 1,106. A full list of all the butterfly species recorded and their associated numbers can be found in Table (1).

The grazing regime implemented within the Castlemartin Range appears to have the affect of significantly slowing the successional transition from grassland to scrub and encourages the development of flower-rich dune grasslands. This type of habitat appears to be ideal for the Meadow Brown, which flourishes within Brownslade Burrows and probably throughout the whole of the Range. Although this grazing regime is generally beneficial to most species, it can be detrimental to a few species of butterfly such as the Small Heath, which was found to be far more numerous outside the Range at Broomhill Burrows. The reason for this variation may well be connected to the fine grasses, especially fescues upon which the Small Heath caterpillars feed. The thousands of sheep grazing the Range during the winter months would obviously prefer to eat the finer grasses first and therefore destroy some of the butterfly's larval food plants and subsequently hold their numbers in check. Whereas at Broomhill Burrows the sand dunes immediately behind the beach are never grazed, open to the public all year round and owned by the National Trust. The second half of my transect walk at Broomhill Burrows proceeds inland through an old sand pit and gains in elevation until reaching Hoary Rock. This area of land is privately owned and is occasionally grazed by

Broomhill Burrows, above Freshwater West Beach, with Linney Head, Castlemartin Range in the distance.

Small Heath

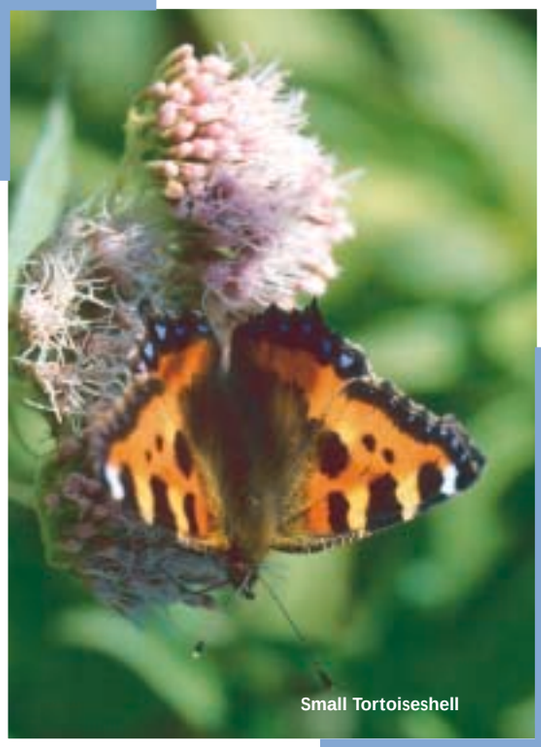




Ringlet

Brownslade Burrows some 80 individuals were logged over the 25 weeks whilst at Broomhill Burrows the species was absent. Fundamental to the butterfly's development are the presence of Lasius Black Ants, whose nests must occur in high concentrations around their food plant Birds-foot Trefoil. The Butterfly also requires areas of bare soil or short vegetation and disturbance created by military training, including fires, can therefore be beneficial to this rare species. Although the periodic burning of small areas of ground can be advantageous, at the height of summer fires may prove disastrous to a single colony.

A moderate level of grazing by sheep on the calcareous grasslands and sand dunes of the Castlemartin Range from mid-November to early May should maintain suitable habitat conditions for the Silver-studded Blue indefinitely. If a similar grazing regime was re-instated at the neighbouring site of Broomhill Burrows then it is unlikely that the species would colonise the area. This is mainly due to the population structure and highly sedentary nature of the species. The butterfly exists in metapopulations, which are basically a collection of local populations connected by occasional dispersal, in which there are extinctions and colonisations. The persistence of the Silver-studded Blue therefore depends on a suitable habitat being continuously made available over a relatively large area or within a closely linked network of smaller sites. The large, un-interrupted areas of neutral grasslands, heathlands and sand dune systems found across the whole Range represent a huge potential habitat of 2,400 hectares where the Silver-studded ▶



Small Tortoiseshell

Fundamental to the butterfly's development are the presence of Lasius Black Ants, whose nests must occur in high concentrations around their food plant Birds-foot Trefoil

cattle. It is interesting to note that a significant proportion of all the butterflies observed at the Broomhill Burrows were logged within this second part, which received occasional grazing and was not freely open to the public. The limited grazing on Broomhill Burrows appears to benefit the Small Heath, but this situation will only be maintained by a healthy population of rabbits, which help to graze the dune grasslands. Although this theory cannot be fully proved, it appears to be a plausible concept and the most likely explanation for the differences in Small Heath numbers between the two sites. This situation does not appear to influence the Meadow Brown Butterfly whose tastes' are less catholic and therefore able to exploit a wider range of coarser larval food plants if the finer varieties of grasses become diminished.

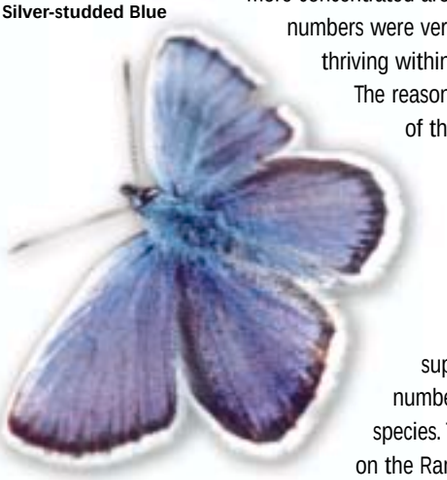
On the Castlemartin Range the nationally scarce Silver-studded Blue, designated as a medium priority species under the UK's Biodiversity Action Plan is believed to inhabit the entire Range. Within my study area at

Meadow Brown

Blue can find their niche. Whereas at Broomhill Burrows, the size of habitat is restricted by intensive agricultural techniques that border the site and do little to encourage wildlife. A large area of habitat becomes even more significant when you consider the highly sedentary nature of the butterfly. Thomas (1985) has demonstrated from studies in North Wales that the Silver-studded Blue is unlikely to stray more than 400 metres from their colony and the vast majority move less than 20 metres per day. Migration and colonisation over one kilometre is considered exceptionally rare.

So how do the two sites compare? It was immediately apparent that both sites provided an excellent habitat for butterflies, both had their advantages and disadvantages and to label one site as superior to the other would be a little unfair. Broomhill Burrows had important populations of the Grayling and Dingy Skipper. Both of these species have declined in range in recent years but are still locally abundant in many areas of the United Kingdom. The total number of butterflies recorded at both sites was very similar, although at Broomhill Burrows the numbers were spread more evenly across all of the species. Whereas at Brownslade Burrows on the Castlemartin Range the overall spread of the data was more concentrated around three species whose numbers were very high and appeared to be thriving within the grazed sand dune habitat. The reasons for the very large populations of the Meadow Brown and Ringlet are not only connected to the grazing regime but to the huge area of neutral grassland present on the Range, which can support massive numbers of grassland species. The grazing regime on the Range and disturbance created by the military helps to maintain a habitat favoured by the nationally scarce Silver-studded Blue. This single butterfly is a great asset to the Castlemartin Range and its continued survival is in safe hands as the land management plans are well suited to their specialised needs.

Silver-studded Blue



The Silver-studded Blue butterfly is a great asset to the Castlemartin Range and its continued survival is in safe hands as the land management plans are well suited to their specialised needs.

An old armoured vehicle in the sand dunes at Brownslade Burrow, Castlemartin Range

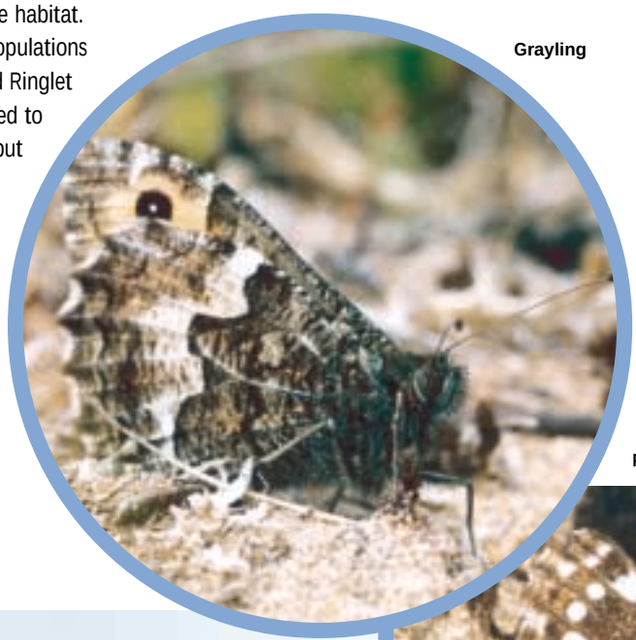
My thanks go to the Commandant of Castlemartin Army Field Training Centre Colonel Johnny Rogers and to Mr B Hathaway for allowing me access to the Range and Broomhill Burrows respectively. Thanks also to Miss Lisa Payne of Defence Estates for all of her help and information she gave me during the early stages of my research. Thanks also to the South Pembrokeshire Range Recording and Advisory Group for their interest in my research. Finally, thanks to Dr Glenda Tinney from Trinity College Carmarthen for all of her advice and assistance throughout the course of my dissertation.

This article is based on student MSc research carried out independently of the National Trust and Country Countryside for Wales.

For further information please email the author Gary Llewellyn at: - garyllewellyn78@hotmail.com.

All photographs by Gary Llewellyn

Grayling



Painted Lady

The Old Red Sandstone of Old Castle Head

Air Defence Range Manorbier

by [1]Lance B Morrissey, [2]Brian P J Williams, [3]Susan B Marriott and [4]Robert D Hillier

The Air Defence Range at Manorbier, near Tenby, Southwest Wales lies within the spectacular landscape of the Pembrokeshire Coastal National Park. The Park includes locations such as the Preseli Hills, Milford Haven Waterway and Pembrokeshire's offshore islands. It is renowned for its rich biodiversity, with unique marginal-coastal and offshore island habitats, offering nesting sites to rare bird species and quiet refuges to marine mammals. The Pembrokeshire Coastal Path is a naturalist's paradise, meandering gently along the rugged cliff tops and through manicured farmland for 299 km, and is undoubtedly the best way to see and enjoy the flora and fauna of the area.

Pembrokeshire has also attracted much attention from geologists (including Roderick Murchison; a pioneering British geologist of the 1830s), with the highly accessible cliffs and wave-polished rock platforms offering excellent opportunities to document and study the local geology. Many different rock types can be seen including those formed in the depths of the ocean by the activity of volcanoes, and in the rivers of ancient continents. The layers of strata record a unique story of the past environmental conditions that have affected Pembrokeshire throughout geological time (over 600 million years).

Recent palaeontological research, undertaken by Lance B Morrisey, on rocks of a specific age and type from Pembrokeshire, has involved studying the geology exposed at Old Castle Head, Air Defence Range Manorbier, where important new material and evidence of ancient animal activity have been found. Therefore, we aim to present a brief history of the geological research undertaken in South Pembrokeshire in the context of the Old Castle Head site and describe and discuss the geology and new fossil finds.

View of the Old Red Sandstone deposits looking north towards Sandy Hole from the east side of Old Castle Head.

[1, 3] School of Geography and Environmental Management, University of the West of England, Bristol, UK

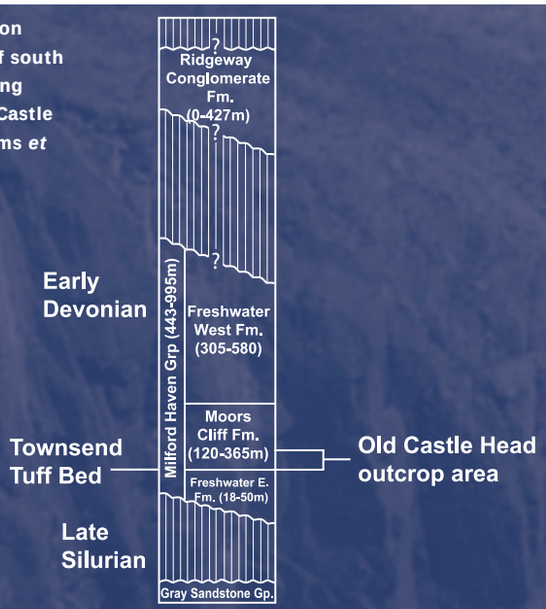
[2] Department of Geology and Petroleum Geology, University of Aberdeen, Aberdeen, UK

[4] Foxes Walk, Old Welsh Road, Stepaside, Narberth, Pembrokeshire, UK

Geological Background

The South Pembrokeshire Coast is particularly noted for the exposures of a period of geological history known as the Devonian, approximately 400-350 million years ago. The Devonian period lies between the older Silurian and younger Carboniferous periods, times when an ocean covered Pembrokeshire. The Devonian rocks have a striking red coloration (due to their iron content) and have been given the name of 'Old Red Sandstones' (ORS). They record a period in Pembrokeshire's past when the area lay on the margin of a large continental landmass, situated approximately 10º south of the equator. The environment was semi-arid in character, with a seasonal climate. It was dominated by large rivers, which flowed southwards through an ancient landscape similar in nature to south-central parts of present day Australia. Fossil remains of some of the earliest soils, vascular plants and freshwater fish have been found in the Lower Old Red Sandstone rocks, as well as the footprints of the first arthropods to walk on land (Morrissey and Braddy 2004).

Figure 1(a) Classification scheme of the rocks of south Pembrokeshire including those exposed at Old Castle Head (based on Williams *et al.* 1982).



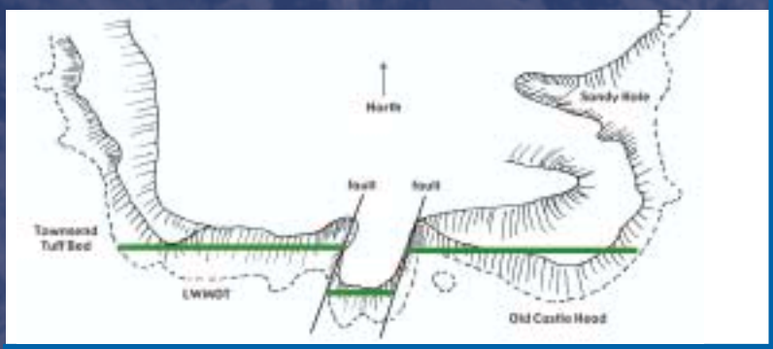


Figure 1(b) Geological map of Old Castle Head (based on Allen and Williams 1982).

Figure 2. Geologist standing on the Townsend Tuff Bed (east side of Old Castle Head).

The Geology of Old Castle Head

The Geological Survey of Great Britain began mapping 'The Geology of the South Wales Coalfield' in the early 1900s. The area around Pembroke and Tenby (including Old Castle Head) was incorporated into this study, and documented by E.E.L. Dixon, who published the first comprehensive report on the Devonian (ORS) geology in 1921. In addition, Leach (1933) further commented on and photographed the outcrop at Old Castle Head (Leach 1933, Plates 16-18). Of particular interest is a photograph of Old Castle Head (Leach 1933, Plate 17B) taken from a boat by Leach, as he made his way along the spectacular coastal section. However, both of these early studies failed to recognise and appreciate the true significance and importance of specific sections of the outcrop that had indeed been photographed by both workers, but were not fully understood until 50 years later.

In the mid-1970s, Prof. John R. L. Allen (University of Reading) and Prof. Brian P. J. Williams (University of Bristol) generated a resurgence in geological interest in the Devonian rocks of the South Pembrokeshire coast. Their programme of research (that lasted for seven consecutive years and continues in part today) included re-mapping the coastline, classifying and naming the different strata, and ultimately interpreting how the rocks were formed. Figure 1(a) shows their classification scheme for the Devonian rocks of South Pembrokeshire, including those exposed at Old Castle Head. During their period of research they discovered several layers of volcanic ash (1-5 metres thick) that could be traced along the South Pembrokeshire Coast. One of these ash layers, named the 'Townsend Tuff Bed' could be traced throughout the whole of South Pembrokeshire, from Skokholm Island to Old Castle Head. This volcanic ash (a lime green coloured, very hard rock) proved to be of great significance as a stratigraphic geological time marker-horizon (as it was later discovered in the Welsh Borderlands and locally defines the Silurian-Devonian boundary) and for preserving the delicate signs of activity of ancient creatures. The best exposure of this ash in the whole of Wales is at Old Castle Head, and it was here that Allen and Williams visited in the mid-late 1970s, to document and study the geology.

The rocks exposed at Old Castle Head consist of dominantly sedimentary units (sandstones and mudstones) interspersed with volcanic ash horizons. Figure 1(b) shows a simple geological sketch-map of Old Castle Head based on one drawn by Allen and Williams (1982). As a result of folding and faulting, the rocks are now almost vertical. The red sandstones and mudstones were deposited by the action of wide, shallow rivers, that would have flooded seasonally and dried up during the dry season (Figure 3). Fossil soil horizons are also visible and would have formed on the floodplains away from the main river channels. Three ash deposits can be traced along the cliffs at Old Castle Head, the oldest of which runs along the base of the cliff below the launch platform. The deposits were named by Allen and Williams (1981) as the 'Rooks Cave Tuff', 'Townsend Tuff' and 'Pickard Bay Tuff'. The thickest of these is the Townsend Tuff (Figures 4, 5), which was divided into three distinct layers or falls, based on changes in colour, grain size and break in ash deposition.

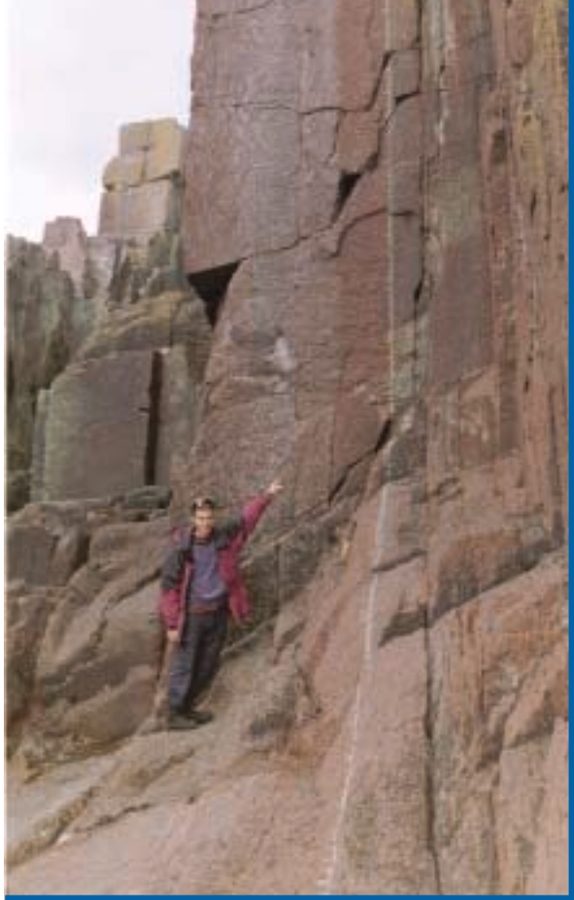


Figure 3. Ancient river deposits on the east side of Old Castle Head (LBM for scale).

Figure 4. A wave rippled surface in the Townsend Tuff Bed suggesting that the volcanic ash may have fallen onto a lake floor and then subjected to the action of waves.

Figure 5. A trumpet shaped burrow at the top of the Townsend Tuff Bed.

Palaeontology

Two types of fossils can be found at Old Castle Head. Body fossils, the preserved remains of ancient creatures, and trace fossils that represent the activity of these animals. These trace fossils are currently being studied by Lance B Morrisey in the context of the whole of the Devonian of the British Isles, to understand the environments in which the animals lived and the type of animals that left them. The volcanic ash horizons preserve in abundance, many different trace fossils including burrows (Figures 5, 6), trackways and in particular faecal pellets (Figure 7), all left by the animals that inhabited the area. The ash records not only the condition of the ancient land-surface that it smothered (in terms of the environment), but also how animals re-colonised the surface after each ash fall. By studying modern trace fossils and their producers, we can compare ancient examples to help to decipher the animal that may have left them in the Devonian, 400 million years ago. The trace fossils found within the ash were all probably produced by arthropods (segmented) and vermiform (worm-like) organisms. These would have been similar to modern beetles, fiddler crabs and earthworms. The animals would have found rich pickings in the nutrient rich ash that fell on a low-lying, muddy coastal floodplain (with rivers and lakes) that occupied the whole of Pembrokeshire some 417 million years ago. The red coloured sandstones and mudstones again preserve different types of trace fossils including arthropod trackways (Figure 8), small U-shaped burrows and horizontal burrows made by deposit feeding organisms. They also preserve the remains of the earliest fish (Figure 9), which would have inhabited the rivers and fed on the abundant arthropods.

Life on land during the early phase of the Devonian was clearly quite diverse and at Old Castle Head we can see a 'snap shot' of these ancient times. Other sites along the south coast of Pembrokeshire exposing the same age rocks as found at Old Castle Head preserve trackways made by scorpions and millipede-like animals, as well as fossils of small plants e.g. Cooksonia that would have flourished around the margins of floodplain lakes and river channels.

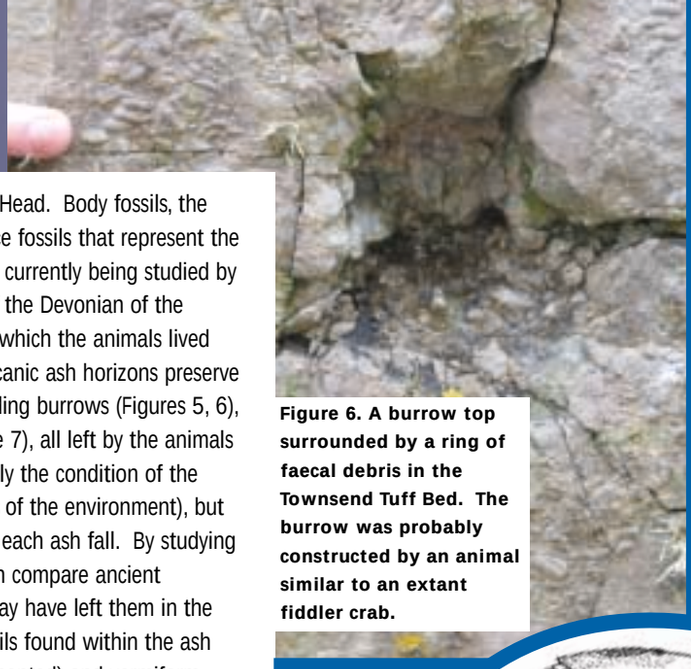


Figure 6. A burrow top surrounded by a ring of faecal debris in the Townsend Tuff Bed. The burrow was probably constructed by an animal similar to an extant fiddler crab.

Figure 9(b) Reconstructions of the complete fish.

Figure 9(a) Headshield of a Cephalaspid fish.

Conservation

The pristine condition of the Townsend Tuff Bed and the nature of the trace fossils preserved within it are unique to Old Castle Head. Outcrops, elsewhere in Pembrokeshire that expose this tuff are highly vulnerable to damage and disfigurement by collectors and field study groups. Therefore field party leaders are urged to proscribe unnecessary hammering/sampling at Old Castle Head. Continued protection of the site by the MOD will be of great value to further geological conservation.

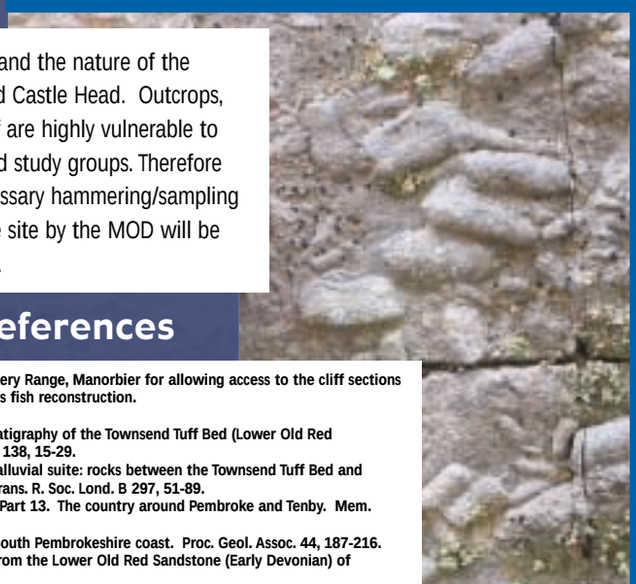


Figure 7. Faecal pellets of different sizes in the Townsend Tuff Bed.

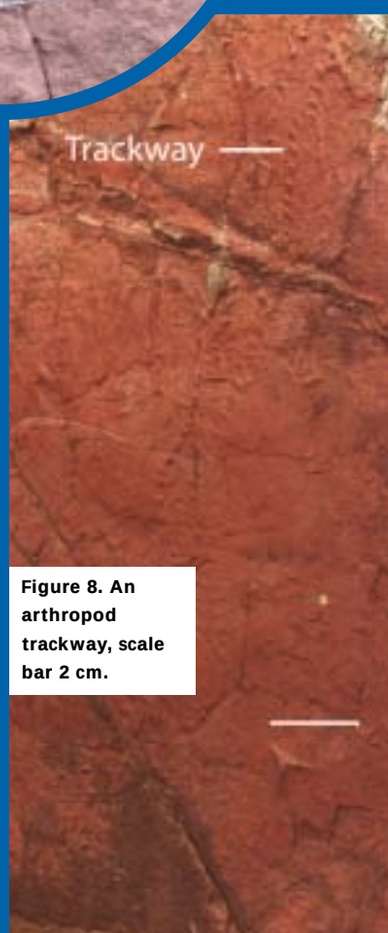


Figure 8. An arthropod trackway, scale bar 2 cm.

Acknowledgements & References

Many thanks to Major Blaize Warburton and personnel at the Artillery Range, Manorbier for allowing access to the cliff sections last summer. Mr John P Bennett is gratefully acknowledged for his fish reconstruction.

1. **Allen, J. R. L. and Williams, B. P. J. 1981. Sedimentology and stratigraphy of the Townsend Tuff Bed (Lower Old Red Sandstone) in South Wales and the Welsh Borders. J. Geol. Soc. 138, 15-29.**
2. **Allen, J. R. L. and Williams, B. P. J. 1982. The architecture of an alluvial suite: rocks between the Townsend Tuff Bed and Pickard Bay Tuff Bed (Early Devonian), southwest Wales. Phil. Trans. R. Soc. Lond. B 297, 51-89.**
3. **Dixon, E. E. L. 1921. The geology of the South Wales Coalfield. Part 13. The country around Pembroke and Tenby. Mem. Geol. Surv. Gr. Br. 220 pp.**
4. **Leach, A. L. 1933. The Geology and Scenery of Tenby and the south Pembrokeshire coast. Proc. Geol. Assoc. 44, 187-216.**
5. **Morrissey, L. B. and Braddy, S. J. 2004. Terrestrial trace fossils from the Lower Old Red Sandstone (Early Devonian) of southwest Wales. In press, Geol. Jl. Sp. Pub. 2004.**
6. **Williams, B. P. J., Allen, J. R. L. and Marshall, J. D. 1982. Old Red Sandstone facies of the Pembroke peninsula, south of the Ritec Fault. In: Bassett, M. G. (ed.) Geological Excursions in Dyfed, Wales. National Museum of Wales, Cardiff, 151-174.**

Mammals on the Castlemartin Range

By Annie Poole,
County Mammal Recorder
for Pembrokeshire

Fox

...is that movement in the grass a shrew, mouse or vole, and what is the bundle of fur that buzzard is carrying off to its nest?

With coastal grassland, heath, scrub, small copses, wetlands, pools, sand dunes and of course the magnificent limestone cliff habitats, Castlemartin Range ought to be an excellent home to mammals. There are relatively few humans to worry about, and no pesticides or sprays to deplete the food supply. The only potential downside is having to put up with your noisy neighbours, the tanks!

Despite this apparent idyll for wildlife, we know very little about the mammals of the Range. Wild mammals by nature tend to be secretive and nocturnal, and the vast majority of people using the ranges are not on the lookout for them. However, we are gradually building up a picture of the residents, thanks mainly to observations from members of the South Pembrokeshire Range Recording and Advisory Group (SPRRAG) and in particular Peter Hughes of the Range Staff.

Take small mammals, for example; is that movement in the grass a shrew, mouse or vole, and what is the bundle of fur that buzzard is carrying off to its nest? Most of our knowledge of these tiny creatures comes from barn owl pellets. An analysis of pellets from Brownslade Farm at the western end of the Range has revealed the presence of Common, Pygmy and Water Shrews, House and Wood mice, Field and Bank Voles. We might have hoped for Water Vole and Harvest Mice, as there is some suitable habitat, but they haven't been recorded in the area for at least 20 years. ▶

Grey Seal Pup

Grey Seal

Grey Seals can be found along the coast in small numbers at any time of year...

Moles of course, leave much evidence of their presence, with particularly large molehills always visible near the Green Bridge Car Park. Local people collect these mounds of soil in spring for use in their greenhouses. Rabbits too are fairly common. Population monitoring by Peter Hughes was instigated when rabbit viral haemorrhagic disease arrived, and has shown that their numbers decreased significantly in the sand dune areas, whilst their numbers were stable elsewhere.

Brown Hares were also very common a hundred years ago, as the game bag records of the then Stackpole Estate testify. However, they had disappeared by the 1960s. An attempt was made to re-introduce them in the late 1980s, but the hares had other ideas. Although they have been seen on the Range, most sightings have been on nearby farmland.

Grey Squirrels might be expected in the trees around Brownslade Farm and Longstone, although these are rather isolated clumps. However, slightly more surprising are sightings in the scrubby Castle Lady Valley, and even out near the cliff-tops in Range East. Brown Rats are rarely seen, but leave signs of their winter occupation around many of the buildings and disused bunkers, having taken advantage of the abundant food sources available on the Range.

The normally nocturnal Badger is occasionally seen trundling across the Range during daylight hours. Some 25 badger setts have been mapped, though many of these are probably outlying setts and boltholes, used occasionally, and mainly by wandering males in search of a clan to join. The rich grassland provides plenty of roots and invertebrates for Badgers, while the abundance of Badgers may account for the lack of Hedgehogs. These endearing slug-eaters make a tasty snack for Badgers! In late summer, Badgers also reveal the locations of bumble and carder bee nests as they dig for honey and grubs.


Common Shrew


Woodmouse


Hare, Dr Tracey Rich © ARWP Ltd

With an abundance of small mammals, there is bound to be a variety of predators. Foxes are seen the most often, but Stoats, Weasels, and Polecats are all present. Otters frequent the pool and swampy valley at Frainslake and almost certainly hunt along the coast, as fresh tracks are occasionally found on the nearby beaches.

Grey Seals can be found along the coast in small numbers at any time of year, but from August to October over 20 pups are born on the beaches or in caves between Flimston Bay and Linney Head. Also, from the coast, it is possible to see Harbour Porpoises and Common and Bottlenose Dolphins, but reports are few and far between. Even rarer, are sightings of whales, including Killer Whales well offshore.

Bats are perhaps a little more difficult to see and identify than land-bound mammals, but several species occur at Castlemartin. Droppings have been found in some of the old farm buildings, and radio-tracking and bat detector work has revealed that Noctules, Common and Soprano Pipistrelles, Long-eared, Greater Horseshoe, Lesser Horseshoe and Daubenton's Bats are found here. With such a huge area that has not been subjected to pesticides, there are lots of insects around for them to feed on. The caves along the coast are also important as hibernation sites for Greater Horseshoes (An article was featured in Sanctuary no. 28 entitled 'Greater Horseshoe Bats and the Castlemartin Range').

Overall, at least 18 of the 25 species of land mammal (excluding feral species) recorded in Pembrokeshire and at least seven of the 14 species of bats have been recorded on the Castlemartin Range. These records will be incorporated into a planned Pembrokeshire Mammals Atlas. Future records of mammals from Castlemartin and other Pembrokeshire Ranges will also be welcomed.

Stoat

Mole hills on the Castlemartin Range

Grey Squirrel

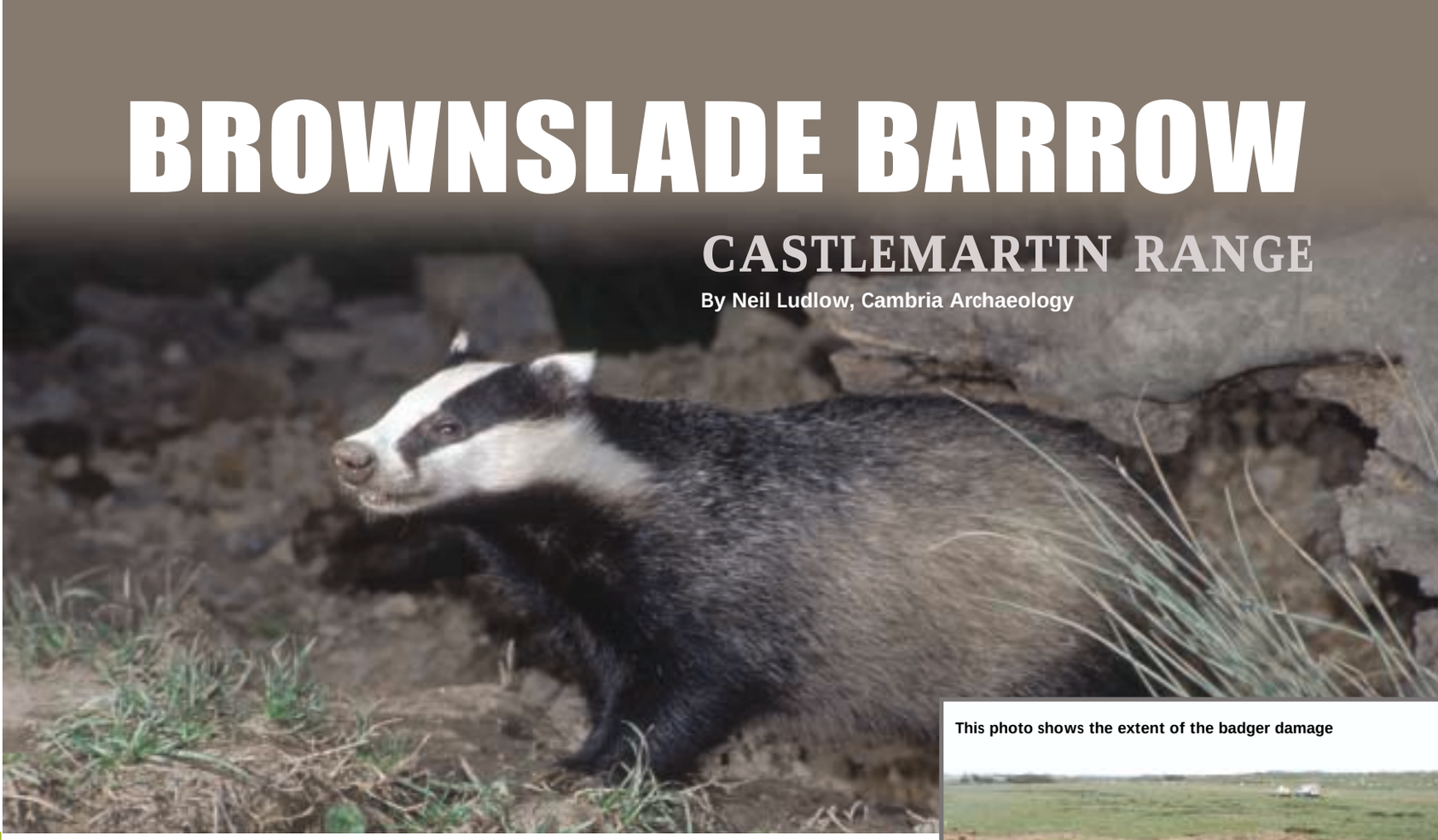
Rabbit

All photos except Hare © Annie Poole

BROWNSLADE BARROW

CASTLEMARTIN RANGE

By Neil Ludlow, Cambria Archaeology



Badgers have established a large sett right on the edge of the site

Eurasian Badger © Jason Venus, Natural Visions

This photo shows the extent of the badger damage

Castlemartin RAC Range boasts some of the most magnificent coastal scenery that Wales has to offer. It occupies a coastal plateau, between Freshwater West, an area of sand dunes to the west, and steep limestone sea-cliffs to the south. Most of the Range is covered by a very fine, wind-blown sandy soil or 'loess'. The soils are deep and rich, and the area was heavily settled, being considered the best corn-growing land in Pembrokeshire.

It was first used as a military tank training area in 1939, and in 1948 was purchased by the MOD from the Cawdor Estate. This meant that the pattern of large farms and arable fields were safe from any subsequent development.

The Range features a wealth of geology, archaeology and wildlife interests. It is known for its Chough population and is also the home for many rare species of butterflies and plants. Its wildlife value is recognised by its designations as a Site of Special Scientific Interest, a candidate Special Area of Conservation and as a Special Protection Area for birds.

The Range features a wealth of geology, archaeology and wildlife interests

Unfortunately, this wildlife can also pose a threat to the archaeology of the Range. Brownslade Barrow (NGR SR 905 972) is a low mound of sand, just inland from the dunes of Freshwater West. It is thought to be Bronze Age in origin. However, when it was excavated in the 1880s, a large number of Christian burials were discovered both in and around the barrow. Some of these burials were in stone-lined graves or 'cists'. An earlier burial, possibly from the Roman period, was also discovered.

The barrow is a Scheduled Ancient Monument, meaning that it is nationally important. Nevertheless, a colony of Badgers have established a large sett right on the edge of the site. The damage that Badgers can do to archaeological sites, through tunnelling has been explained in a previous issue of 'Sanctuary' ('Badgers, Archaeology and Chocolate Cake', Sanctuary No. 32, 2003). So serious were concerns that similar damage may occur at Brownslade that in 2002, Defence Estates commissioned Cambria Archaeology to undertake a geophysical survey of the site. This aimed to identify the extent of the archaeology and the amount of damage already done and to come up with suggestions of how best to deal with the future threat.

Ground-penetrating radar (GPR), which can detect structures and features beneath the ground surface proved that at least three tunnels were heading into the heart of the barrow itself, and the badgers were bringing a large quantity of human bone to the surface. Additional surveys also picked up the remains of a building to the north of the barrow, which incorporates a large upright stone and may have been a chapel and a possible burial enclosure.

These discoveries led MOD to request further archaeological work. An archaeological trial-trench was dug across the east end of the building, but the results were inconclusive. No graves were uncovered, or any other evidence that it was a chapel, although the possibility remains open. In addition, the loose human bone was gathered up from the barrow, and taken to specialists for analysis and radiocarbon (C14) dating.

The bones were extremely well preserved. At least six individuals were present, three females and three males ranging in age from teenagers to adults of 40 years or more. They were a healthy population with good teeth and a good diet. The bones from three individuals were dated. All dates fell within the early medieval period (or 'Dark Ages'), that is AD 410-1100, and the average dates suggest that burial was at its peak in the 7th and 8th centuries.

They were a healthy population with good teeth and a good diet

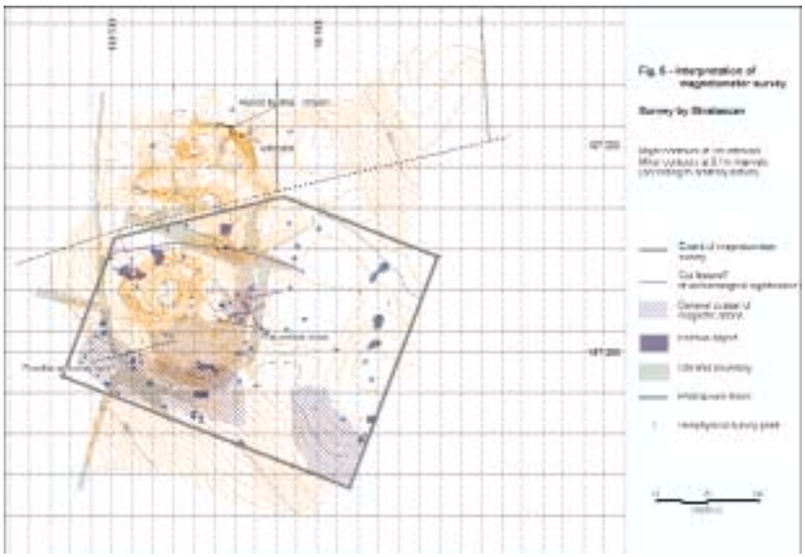
This was a very important discovery. Very few Christian cemeteries in West Wales have been proved to be this early. In fact, Brownslade is one of only five in the region that have been scientifically dated to the Dark Ages, and of these it has the largest number of individual burials so far discovered. However, it may be that the site has a very long history of burial indeed, perhaps stretching back to the Bronze Age and forward to the Middle Ages. So, although it has enormous research potential, the most important aim must therefore be to protect the site from any further badger damage. A proper badger survey is going to go ahead and, it is hoped that it will be followed by their exclusion. If all goes according to plan, some more excavation will take place to assess badger damage and minimise its effects. This will also allow more useful information to be retrieved.

Thanks to Stratascan for the geophysical survey and to Ros Coard of Lampeter University for the bone analysis. The radiocarbon dates were provided by Beta Analytical of Miami, Florida.

A 19th Century illustration of one of the 'cist' burials at Brownslade

The trial trench within the building showing the large upright stone

For further information, visit http://www.acadat.com



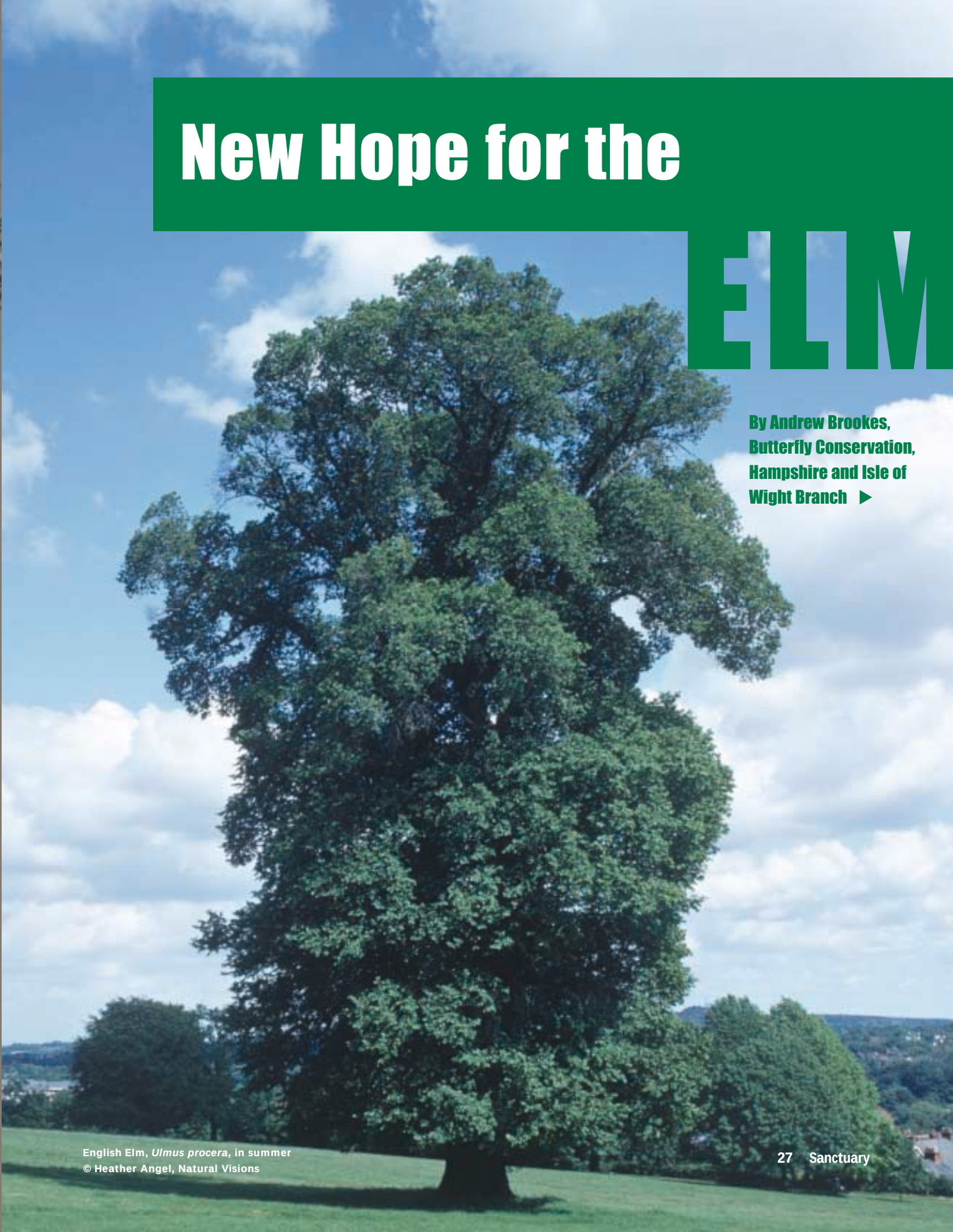
The topographic survey of Brownslade

The Stratascan team carrying out the magnetometer survey at Brownslade

Brownslade Barrow and one of the geophysics team. All photographs courtesy of Neil Ludlow, Cambria Archaeology

New Hope for the ELM

By Andrew Brookes, Butterfly Conservation, Hampshire and Isle of Wight Branch ▶



English Elm, *Ulmus procera*, in summer
© Heather Angel, Natural Visions

As most over the age of 40 will remember, the elm was once perhaps the most striking feature of the English landscape, a 40 metre leviathan occurring at densities of over 1000 per square kilometre in some counties. By the mid-1970s, these trees had all but disappeared, killed by a new, lethal strain of Dutch Elm Disease *Ophiostoma novo-ulmi*. As elm is the sole larval food plant of the elusive White-letter Hairstreak butterfly, *Satyrium w-album*, the insect's fortunes declined commensurately with those of the tree. The butterfly is now designated as a Priority Species. The Hampshire & Isle of Wight Branch of Butterfly Conservation has been evaluating new disease-resistant elm hybrids and exotic species at a dozen sites in the county, including Horsea Island [HMS Excellent] and Defence Munitions Gosport, as a means of conserving the insect.

Dutch Elm Disease

Dutch Elm Disease (DED) is caused by a fungus, possibly a hybrid between the one that afflicted Europe's elms after the First World War and another endemic to Asia. Whatever its origin, its effect across Europe has been devastating, and over 25 million trees have perished in the United Kingdom alone. The earlier strain of the disease was also accidentally introduced to the USA in the 1930s, and their native elms soon proved to have as little resistance as ours. To date, over a hundred million have been killed; the loss to their countryside and townscape, like ours, has been incalculable.

In Southern England, the commonest elm was the so-called English Elm *Ulmus minor var. vulgaris* (formerly *U. procera*), once one of the tallest and fastest growing trees in Europe. Although the tree hardly ever sets seed in the UK, it still survives, courtesy of its ability to readily sucker from roots. Further north in upland Britain, our only truly native rather than archeaophytic species, the Wych Elm *U.glabra*, was predominant. As the tree does not sucker and only occasionally produces fertile seed, the disease has had far more serious consequences. Although the tree is usually older than English Elm before it attracts the bark beetles that act as vectors for the disease; it ultimately has no more resistance.

Disease Resistance

Like all other trees, elms cannot simply develop immune systems to combat disease. Resistance is dictated solely by genetics; ergo, if the species or variety lacks the combination of genes responsible for the chemical suppressing the germination of the disease fungus within the plant's vascular system, it will inevitably die when infected. At the Ressources Genetiques Station, Nogent-sur-Vernisson, France, over 300 varieties of the three European species of elm were inoculated with the disease fungus, but not one revealed a significant resistance. Therefore, the only hope, in the short term at least, of successfully reintroducing the elm to the countryside lay in hybridisation with Asiatic species.

Hybrids

Hybridisation experiments began in the Netherlands in 1928 and continued, uninterrupted even by the Second World War, until 1992. Unfortunately, the introduction to the UK of early hybrids, such as Dodoens and Clusius, coincided with the outbreak of the much more virulent strain of DED. These new trees proved no match for the disease, and it wasn't until the mid-1980s that Dr Hans Heybroek developed a tree that was completely immune. It was called Columella and it never as much as turned a leaf, when inoculated with massive doses of the fungus. Unfortunately, its rather fastigiate shape made it more suitable for planting in town than country, but Heybroek persevered, and after a few years produced hybrid number 812, later christened LUTECE ® by the French 'Institut Nationale de la Recherche Agronomique' [INRA]. Quick to

The waterlogged elm thicket at Horsea Island, (HMS Excellent), Andrew Brookes

appreciate the tree's potential, INRA bought the patent and began growing the tree by the thousand for planting across France. Again totally immune, LUTECE ® is a much more rounded tree, resembling the European Field Elm *Ulmus minor*, of which English Elm is just one of many varieties.

Meanwhile in Italy, research by the 'Istituto per la Protezione delle Piante', Florence, lead to the release of two new hybrids in 2002. Both trees feature the Siberian Elm *U. pumila*, in their ancestry, the tree having widely introgressed into the Italian (and Spanish) countryside following its deliberate introduction in the 1930s.

White-letter Hairstreak, *Strymonidia w album*, on a bracken frond
© Heather Angel, Natural Visions

Across the Atlantic, the Americans initially responded by continually crossing clones of the American Elm *Ulmus americana* to produce varieties such as Valley Forge, exhibiting moderate resistance to disease. Tougher hybrids were developed by exclusively crossing Asiatic trees, to produce the likes of Sapporo Autumn Gold and New Horizon, although their size and form often compared poorly with the native tree.

Asiatic Species

Chinese species, of which there are over 20, were also evaluated in their own right by Professor George Ware at the Morton Arboretum, Illinois, and were often found to make worthy landscaping trees, again if often rather small. There were exceptions; however, notably the Siberian Elm. Planted in huge numbers in the shelterbelts, it hastily established across the Great Plains in the wake of the Dustbowl disasters; its wider introduction later proved a disaster. Although fast growing and very resistant to DED, it is extremely weak-wooded and prone to all manner of other ailments. This lead to the American horticultural writer, Dr Michael Dirr to describe it as "one of, if not, the worst trees in the world"; a cautionary reminder that DED resistance is far from the only criterion to be considered.

The White-letter Hairstreak

As the sole food plant of the White-letter Hairstreak butterfly, the elm's demise has inevitably had a profound effect on its conservation. The problem is acknowledged in Butterfly Conservation's South Central Regional Action Plan, which calls for experimentation with disease-resistant trees to see if they can improve the butterfly's fortunes. There are grounds for optimism that they can, as evidenced by the butterfly's peculiar distribution worldwide, indicating that it has a catholic appetite within the elm genus. The White-letter Hairstreak is found in two regions of the Northern Hemisphere, but thousands of miles apart: Europe and the Far East. In England it feeds on English Elm, and Wych Elm of course; meanwhile out in Siberia, Manchuria and Japan, it feeds on, amongst others, Siberian, Manchurian and Japanese Elm.

In Southern Hampshire, two of the butterfly's habitats were to be found on MOD sites, Horsea Island (HMS Excellent) and Defence Munitions Gosport, where they survived on suckering elm. Inevitably, as the suckers mature, they succumb to disease and die; the White-letter Hairstreak colony on Horsea was lost in 2001. ▶

Butterfly Conservation's Trials

Butterfly Conservation's Hampshire Branch has so far planted over 200 trees, comprising a dozen hybrids and exotic species, at eleven sites comprising a wide range of soil type, drainage and microclimate. Although the trees will not attract gravid female White-letter Hairstreaks until they are mature enough to flower, the trials have already revealed some interesting results, indicating that several hybrids and species, for all their disease resistance, are often poorly suited to local conditions. At Defence Munitions Gosport and Horsea Island, both flat, low-lying, poorly-drained sites, the performance of Asiatic hybrids and species has been disappointing. Many trees died owing to the waterlogged conditions over winter, whilst others exhibited dieback of their outer branches; of the remainder, new growth has been negligible. However, growth of these trees elsewhere, notably on free draining chalk soils has often been spectacular, with several growing by more than a metre a year.

Measuring the growth of a hybrid at Defence Munitions Gosport, Andrew Brookes

Measuring the growth of a hybrid "New Horizon" at Defence Munitions Gosport, Andrew Brookes

Butterfly Conservation volunteer with elm hybrid at Horsea Island, note dead elms in background, Andrew Brookes

Overall, it is the complex Dutch hybrid LUTECE® that has so far been the best performer, proving tolerant of saturated ground conditions and capable of very rapid growth. The tree so impressed the Island 2000 Trust on the Isle of Wight that they have recently taken delivery of 1525 saplings from France for establishment in the island's hedgerows. Of the Asiatic trees, the American hybrid Accolade (wilsoniana x japonica) has fared best; proving particularly resistant to drought during the recent hot, dry summer. Unfortunately, it is not commercially available in the UK.

On the advice of elm researcher M. Eric Collin, of Ressources Genetiques, the trials will be extended this year to include the third European species, the White or Spreading Elm *Ulmus laevis*. An unusual elm more closely related to *Ulmus americana* than other European and Asiatic species, it is a large, riparian tree most commonly found along the great Eastern European rivers such as the Volga, and thus well adapted to saturated ground conditions. Although possessing negligible resistance to DED, it holds little attraction to the vector beetles and is therefore only very rarely infected.

As already mentioned, it is too early to gauge the reaction of the White-letter Hairstreaks to the trees, but there has already been one small encouraging sign, with the discovery of some very plump Comma *Polygonia c-album* caterpillars readily feeding, and indeed pupating on several Asiatic hybrids.

Acknowledgments

The author is indebted to Mr Ian Mackfall, Energy & Environment Manager, HMS Excellent, and Mr Antonio Keating, Environment & Energy Manager, Defence Munitions Gosport, for their generous assistance with the elm trials.

Coastal Plant Communities of

Mullock Bay

Kirkcudbright Ranges

By Dr Roland Randall, Girton College, Cambridge

Yellow Horned Poppy, Keith Hutcheon/SNH

View of Mullock Bay, Dr Roland Randall

Ramping Fumitory, Keith Hutcheon/SNH

Mullock Bay is a south-facing cliff-rimmed bay on the north coast of the Solway Firth. The site is limited by a rocky coast to the east and the headland of Little Raeberry in the west. It has remained almost totally undisturbed over many years by external factors other than maritime influences, and provides a particularly good example of the natural, sequential development of vegetation on coastal shingle.

Most of the area comprises coarse shingle between rock outcrops with some sandy matrix on the foreshore. Most pebbles are 60 mm - 120 mm diameter, but foreshore material grades up to over 200 mm. Several small streams, including Dunrod Burn and Brandy Burn, enter the bay giving rise to reed-dominated areas on the foreshore and wet flushes where stream-water is held back. The beach complex is very stable and resilient to erosion. Despite its relatively small size, Mullock Bay is an extremely good example of shingle vegetation because of the undisturbed nature of the raised beach and the low-energy, naturally protected nature of the foreshore, resulting in both saltmarsh shingle and extensive pioneer vegetation. Shingle shores like Mullock Bay are also important for breeding waders such as Oystercatcher and Ringed Plover, and Otters are seen in the burns.

Because this site is within the MOD land of the Kirkcudbright Ranges and has only one access point at its western end, it is almost completely undisturbed. There is virtually no military use and no domestic grazing. The greatest problem facing the site is the vast accumulation of sea-borne litter that is concentrated on the most sheltered western end of the bay. Occasional clean-ups are organised by the MOD, and this is carried out by hand and causes no damage to the vegetation. For security reasons, public access is not allowed. A small area in the northwest corner of the raised beach has been 'improved' and is used for agriculture.

Mullock Bay is part of the 'Torrs to Mason's' Site of Special Scientific Interest. One of the botanical excitements of this site is that it is the meeting point of the northern species Scottish Lovage *Ligusticum scoticum*, which has its southernmost location here, and Yellow Horned Poppy *Glaucium flavum*, which is virtually at its northern limit. Lovage ▶

grows on the cliffs at the rear of the bay, whereas Yellow Horned Poppy is found on the sandy shingle of the backshore. Another rare species, Yellow Vetch *Vicia lutea* also reaches its northwesterly limit on the Solway Firth and is found on the cliffs of Little Raeberry at the western end of the bay. Oysterplant M*ertensia maritima* has been retreating northwards in recent years and is now found mainly in the Inner Hebrides, Moray Firth and the Northern Isles. However, this too has a healthy population at Mullock Bay, near the outlet of Dunrod Burn. It is also one of the only Scottish sites for Sea Spurge *Euphorbia paralias* and has a healthy population of the generally more southerly Sea-Kale *Crambe maritima.*

As well as rare species, Mullock Bay possesses a wide range of vegetation communities, some of which are rarely found elsewhere. The shingle drift line vegetation to the west of the bay includes unusual associates such as Common Ramping Fumitory *Fumaria muralis* and Great Mullein *Verbascum thapsus*, more normally expected on waste ground inland, but found here because of the sheltered location. To the east there is a more sandy shingle grassland containing Red Fescue *Festuca rubra* and Plantain *Plantago lanceolata* but also with one of the most southerly stands of coastal Red Bartsia *Odontites vernus ssp.* litoralis in Britain.

The front areas of the raised beach at Mullock Bay are covered with grassland of Cock's-foot *Dactylis glomerata* and False Oat *Arrhenatherum elatius* with Bramble *Rubus fruticosus,* a typical community for such locations, but here Sea Radish *Raphanus maritimus* is also important. Indeed, at the rear of this zone a very distinctive, almost pure stand of Sea Radish marks the line of High Water Mark High Spring Tides and neatly separates the stable grassland and scrub communities further inland from the pioneer communities nearer the sea.

Scrub vegetation has developed on the rear of Mullock Bay raised beach in three quite distinctive bands: prostrate Blackthorn *Prunus spinosa* dominated near the sea, then Gorse *Ulex europaeus* dominated and finally Bracken *Pteridium aquilinum* dominated up to the cliff face. In all these scrub zones plants of Sea Radish and Wood Sage *Teucrium scorodonia* occur. These species would normally be found elsewhere nearer the shore. It may be that, at Mullock Bay, occasional storm surges have driven drift material way inland and brought the light, corky sea radish seed capsules in drift debris.

Thankfully this interesting example of natural coastal vegetation exists, protected within the confines of this important Ministry of Defence site.

Coastal Red Bartsia
Steward Angus/SNH

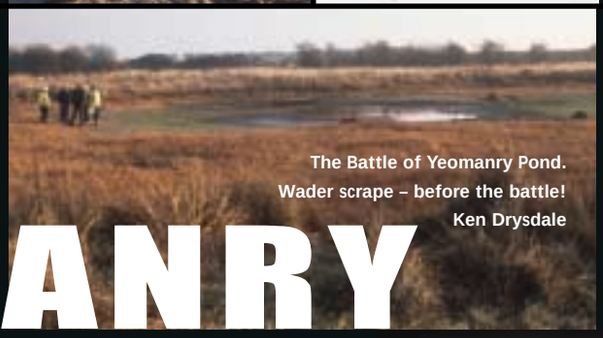
Beach litter at Mullock Bay, Dr Roland Randall

Spurge,
Dr Roland Randall

Sea Radish,
Dr Roland Randall

The author Dr Roland Randall carried out an Inventory of Shingle Vegetation of the Solway Firth for Scottish Natural Heritage, which has been published as a CD Rom. Mullock Bay was one important site investigated as part of that survey.

Heavy machinery working on the scrape, Ken Drysdale



The Battle of Yeomanry Pond. Wader scrape – before the battle! Ken Drysdale

The Battle of YEOMANRY

By Bob McCurley and Alan Brennan at Barry Buddon

The original Yeomanry Pond 'wader scrape' was created at Barry Buddon in 1996 at the request of Scottish Natural Heritage. The remit was to create a habitat to attract migrating waders, which would compliment existing nearby ponds and improve productivity of a sparse area of rank grassland. Upon completion the resulting scrape did exactly that, attracting a wide diversity of bird species during their critical migrating periods in spring and autumn. Red-necked Phalarope *Phaparopus lobatus*, Temminck's Stint *Calidris temminckii*, Wood Sandpiper *Tringa glareola* and Green Sandpiper *T. ochropus*, as well as the usual residents all made good use of the scrape. Bonus winter migrants such as Woodcock *Scolopax rusticola*, Jack Snipe *Lymnocryptes minimus* and Redshank *Tringa totanus* were also observed.

From its inception the scrape has slowly but surely been losing the battle for survival. The onslaughts from emergent vegetation, willow carr and other terrestrial invaders have all played their part in the demise and ultimate downfall of the Yeomanry Pond wader scrape.

Something had to be done, and with the help of money contributed by the Army for use towards the 'Rural Elements of the Estate Strategy' objectives. The Barry Buddon Conservation Committee (chaired by Major Colin Markie) and armed with a budget of £2K set about coming up with a plan that could defeat these alien invaders.

Tuesday 11th November 2003; it was cold, as the sun rose to illuminate the battlefield. The ground shook as heavy machinery trundled onto the horizon and into position. One final look at the battle plan, then without hesitation the order to attack was given. The battle was long and hard, sometimes echoing long into the night as Charlie Fraser and his team from Land Engineering slowly scraped away at the very foundations of the invaders. Within four days the Battle of Yeomanry Pond was won and this precious ecosystem was being returned to its former glory.

It is hoped that the lessons learned here can be used as a benchmark in counteracting the demise of these fragile habitats across the United Kingdom. Our thanks go to Major Markie, Dave Reynolds, Lachie Gillies (Land Engineering) and of course Charlie and his team. A splendid job, well done!

Green Sandpiper, David M Cottridge

Jack Snipe, David M Cottridge

Temminck's Stint, David M Cottridge

Red-necked Phalarope, Eric McCabe

"The Haunt of Ravens and Goshawks"

Raeberry Castle and the historic landscape of the Kirkcudbright Training Area

by Jane Murray, with Dave Cowley and Niall Hammond

The Ministry of Defence owns and uses many spectacular sites, with landscapes of great historic depth and value. Nowhere is this better seen than at the Army's Kirkcudbright Training Area (KTA) in Dumfries and Galloway. Here, on the southern Irish Sea coast of Scotland, the KTA stretches for five miles from Kirkcudbright Bay to the Abbey Burn, below the Cistercian Abbey of Dundrennan, founded by Fergus, Lord of Galloway in 1142. This dramatic coastal landscape contains a wealth of historic sites dating from prehistory to the Cold War. Since 1942, when the ranges were first created as a part of the war effort, the military land use has seen little intensive farming. The historic landscape has escaped much of the ravages of the post-war plough, forestry and the land improvement seen elsewhere in lowland Scotland.

Aerial photograph showing the ruined church of Dunrod in its enclosed graveyard and the nearby rectangular, moated homestead surrounded by ridged field systems. Crown Copyright: RCAHMS.

It is essential to have a detailed record of an area's archaeology and its condition in order to manage it. As part of an on-going programme of archaeological surveys of the Defence Estate, a partnership has been developed between Defence Estates and the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS), the Scottish Executive's national archaeological and historical survey body. In 2002 and 2003 the RCAHMS and Defence Estates (DE) carried out an archaeological survey of the KTA. This survey not only looked ▶

at specific sites such as Neolithic/Bronze Age carved rocks and medieval moated homesteads, but also paid attention to the wider landscape within which these sites exist. Individual historic sites and monuments lose much of their meaning without an understanding and record of the historic landscape in which they sit. For instance, the landscape with its hedgerows, drystone dykes and extensive areas of medieval and later ploughing (preserved as rig and furrow under later permanent pasture) is vital to the interpretation of key archaeological sites.

Prehistoric Kirkcudbright Training Area

Glennap and Wall Hill are the most notable prehistoric remains recorded, in addition to the earth ramparts of the forts at Doon Hill. They consist of a remarkable distribution of cup-and-ring marked rocks. Galloway is well known for its prehistoric rock art, with enigmatic carvings covering earth-fast slabs dating from the Neolithic and Bronze Ages of 2,500 to 1,500 BC or so. The sites in KTA display a wide range of motifs, including simple cups, concentric rings, large irregular rings, linear gutters, 'key-hole' shaped impressions and a rosette of mini-cups. Of the 35 prehistoric sites now known, 25% are new discoveries. The survey also identified two other prehistoric sites, a hut-circle and an Iron Age homestead; both are rare survivals in a lowland setting.

Raeberry Castle and the Medieval Landscape

The accompanying illustration shows the complex of ridged fields around the vanished village at Dunrod, towards the western end of the Range. A pair of medieval sites survive at Dunrod, a ruined 12th Century parish church and a nearby rectangular moated manor house. The latter was shown by exploratory excavation to have been occupied from the end of the 12th Century. In 1160, Fergus of Galloway as Lords of Galloway in the mid - 14th Century saw the Maclellans, in common with other native families who had supported the original Lordship, somewhat eclipsed. By the mid - 15th Century, the Douglases began to overreach themselves and became increasingly contemptuous of the law. When the Earl of Douglas refused to provide recompense for robberies carried out by his men, Patrick Maclellan, the so-called Tutor of Bombie and Sheriff of the Stewartry of Kirkcudbright, made a punitive raid on the Earl's lands. As a result, in 1452, he found himself being besieged at Raeberry, captured, and taken to Threave Castle, stronghold of the Douglases. The story is told that King James II sent an order that the prisoner should be released, but the Earl entertained the messenger to dinner so that he could have Bomby beheaded before reading the missive! James II assassinated Douglas shortly after, ending the Douglas sway over Galloway. This enabled the Maclellans and other local families to recover their positions.

As for Raeberry Castle, its coastal rock-stack position suggests a concern with sea-based, rather than landward threat. This may have been related to the Isle of Man, whose Norse lords presented a constant threat. The Norse may have first used the site, whose presence around Kirkcudbright is attested by the names of the coastal forts of Borgue and Borness and perhaps also Raeberry. ▶

Prehistoric rock carving at Balmae.
Crown Copyright: RCAHMS

Raeberry Castle from Raeberry Head.
© Crown Copyright: RCAHMS.

An aerial photograph showing the ditched promontory at Raeberry Castle with rigg and furrow to landward.
© Crown Copyright: RCAHMS.

Clifftops are a common choice for the location of medieval castles in Scotland, despite the lack of access to a convenient harbour, as can be seen at several locations elsewhere on the Galloway Coast. Across Wigtown Bay, to the west of Raeberry, Cruggleton Castle, a seat of the Lords of Galloway, occupies a rocky outcrop on cliffs very reminiscent of Raeberry Head. Excavations here have shown that the summit had been built up to form a level platform, or motte, probably in the late 12th Century. The raised stack at Raeberry may well be another such site, designed to make visual impact seaward over the Solway. Such Galloway sites are often idiosyncratically adapted to local topography, and they frequently lack an enclosure, or bailey, designed to accommodate troops. Instead, they may represent the activities of status-conscious native landowners during the 13th Century, rather than the implantation of feudal overlords by a centralising Scottish monarchy following a separatist Galloway rebellion in 1174. Elsewhere, such as at Cruggleton, a transition to stone from the original materials of timber and earth occurred probably in the late thirteenth century, when massive but simple curtain walls and a tower were built. A similar sequence may have occurred at Raeberry where it was the massive defences of the outer wall that impressed later commentators, even if insufficient to deter the Douglas besiegers, or the stone robbers of more peaceful times.

A 19th Century Landscape

The stone from Raeberry Castle and its wall was doubtless put to good use as a local pattern of farmsteads and enclosures was created in the 17th and 18th centuries. The RCAHMS survey noted broad swathes of rig and furrow surviving in what is now rough grazing around Raeberry. This shows that, what now seems a remote castle, was not without a potential economic base. The broad, slightly curving ridges seen in the accompanying RCAHMS photograph, suggest a pre-improvement date. The survival of such detail results from the development of the cattle trade in the 18th Century, which saw the extent of arable cultivation with pasture taking over. It also owes much to the creation of the range in 1942, and the consequent low intensity of agricultural use since. However, agricultural activity did not cease altogether but there have been few of the improvements that have transformed much of rural lowland Scotland over the last 50 years. Thus we have today a fossilised landscape of small fields, scattered plantations and trackways, which is essentially 19th Century in character. Elements of the medieval past are still visible on the fringes and in the gaps within the area.

Many of the boundaries have been maintained to stay in good condition and include drystone walls and hedges. The emphasis on pasture and dairying from as early as the late 18th Century has also contributed to the survival of extensive areas of rig. Also of note are flat field surfaces scored at wide intervals by straight, sharply- defined grooves, rare field evidence of cultivation techniques from the 1940s.

Unfortunately, settlement remains have not survived in such good condition. Many of the 19th Century farmsteads, cottages and the fine house at Balmae have been reduced to low footings by the less enlightened military practices of the mid 20th Century. Target practice in the 1940s accounted for much of the damage; however, there has been continuing attrition through 'consolidation' of derelict buildings. The 1st and 2nd edition Ordnance Survey 6-inch maps, and the aerial photographs have, on the other hand, provided an insight into understanding and illustrate the development and form of these farmsteads.

A Military Landscape

The RCAHMS survey also looked in detail at the 20th Century history of KTA. There is increasing interest in military and Cold War studies through such projects as the Defence of Britain. The use of KTA as a tank training and weapons testing area from 1942 to the 1990s is of considerable interest.

The functional parts of the range include firing positions connected by a tank road around the north and targets and bunkers scattered across an 'impact zone' to the south. During the 1940s there was also mechanised vehicle training in the east. The churned ground is clearly visible on aerial photographs. Headquarters, range control and accommodation lie, not surprisingly, at the fringes of the range.

During the 1970s elaborate tracked targets were installed and tank hulks were used for target practice, the latter including an interesting set of vehicles dating back to World War II. More recent works are associated with the development of the Challenger Tank, the Milan Missile and the testing of ammunition.

The survey of KTA has provided RCAHMS with the opportunity to record a unique army training facility in a rare lowland landscape, and to make locally significant enhancements to the record of rock art. A combination of field mapping with a global positioning system and analysis of early OS maps and vertical aerial photographs taken between 1946 and 1988 has resulted in 193 sites being added to the National Monuments Record of Scotland (NMRS). The information has also been incorporated in the Dumfries and Galloway Sites & Monuments Record and, for direct care and management, into Historic Environmental Management System and GIS mapping. Text, aerial photographs and scanned extracts of early maps will all now support and inform the integrated management of the historic landscape of KTA.

The survey involved the skills and assistance of a great number of people including the Commandant, the Range Staff, the KTA MOD Conservation Group, DE and of course the field team and officers of the RCAHMS. The NMRS can be consulted with mapping through Canmore/Canmap (www.rcahms.gov.uk). Edited copies of the report can be obtained by email from DE Archaeologist Niall Hammond (niall.hammond@de.mod.uk)

SURVEYING THE REPTILES

At the North and East Yorkshire Ecological Data Centre (NEYEDC) we like a challenge! Perhaps this is why we made the decision to set up a survey for reptiles – elusive creatures at the best of times. There are so many factors involved in determining their numbers, choosing a good day to go out looking for them proves to be very tricky indeed. If it is too cold they are inactive. Too hot and they are too active, disappearing from sight before you can get anywhere near them. The time of day and time of year also have a major influence, as well as wind speed and sunshine. However, despite these difficulties we decided to go ahead and see what we could find.

How do we protect a species if we do not know where it is?

Four species of reptile are widespread throughout England, namely the Common Lizard *Lacerta vivipara*, Slow Worm *Anguis fragilis*, Grass Snake *Natrix natrix* and Adder *Vipera berus*. All four are found in North Yorkshire; however, most people rarely, if ever, see them due to their secretive nature. The Adder is Britain's only venomous snake. It is generally feared by people and has often been subject to persecution. However, the truth is that an Adder would sooner get out of the way, than bite a human being. Even if it does bite, the venom is unlikely to be life threatening. Because reptiles are difficult to find, their presence often goes un-noticed, and their distribution is not as well documented as other more obvious animal groups, such as birds. This makes their conservation challenging – how do we protect a species if we do not know where it is? Indeed, how do we know if it requires any protection at all if we cannot accurately assess its status? NEYEDC was established in 2000, with the aim of collating and managing ecological records and acting as a central point from which this information would be available. There are often gaps in our knowledge of species or habitat distribution, either because the information is inaccessible, or sometimes because no one has carried out a survey. NEYEDC staff have noticed a distinct lack of reptile records for North and East Yorkshire, particularly from within the North Yorkshire Moors area, where there is extensive and apparently suitable habitat. This is of particular concern for the Adder, which has recently been adopted as a regional indicator species by English Nature. With this in mind, and the fact that Defence Estates are currently producing management plans for the area, NEYEDC set out in Spring 2003 to find out which species of reptile inhabit several sites in the North Yorkshire Moors, including land at RAF Fylingdales.

Fylingdales Moor is situated within the North Yorkshire Moors National Park. It consists predominantly of dry heathland, at an altitude of approximately 250m. The moor is owned and managed by the Ministry of Defence, and public access is restricted for security reasons. Our survey covers a relatively small part of the area, called the 'tracker site'. This is where, until about 1995, three radar stations stood (known locally as 'the golf balls'). These have now been replaced by a single pyramid-like structure, which stands several hundred metres away. Little evidence remains of the golf balls, except for some small patches of concrete. According to the literature, there does not appear to be a standardised methodology for surveying reptiles, although, most surveys employ the use of sheets of metal, or 'tins', to act as artificial refugia. These heat up in the sun, and reptiles are attracted to the underside where they can warm their bodies to an optimum temperature. We acquired our tins from a local scrap yard and cut them to an appropriate size. Twenty tins were positioned on four transects across the site, and these were checked on four separate occasions between May and September during suitable weather conditions (warm temperatures and low winds).

Checking the artificial refugia for reptiles, Simon Pickles

Common Lizard. James Mortimer

at RAF Fylingdales By James Mortimer, North & East Yorkshire Ecological Data Centre

We were disappointed not to find any reptiles on our first site visit, despite being informed by various MOD staff that Adders are seen regularly and have been known to bite dogs. In fact, one unfortunate individual has apparently been bitten four times! We did however have success on our second visit (1st August), when we discovered a Slow Worm taking shelter under one of our tins. Unfortunately, on this occasion we had forgotten our cameras, and so we missed a very good photo opportunity (which, with reptiles, don't seem to come along too often, since they tend to be rather camera-shy!). Our third visit was the most successful, with several Common Lizards and Adders spotted, including juveniles of each species. In addition to the animals themselves, two Adder sloughs (shed skins) were found.

We noted that the Slow Worm was found under a tin positioned on steeply sloping grassland with a southerly aspect, but the Adders and Adder sloughs were all amongst the dry heathland. This may suggest a difference in habitat preferences between these two species. Common Lizards were spotted in heathland and grassland, perhaps suggesting that they are more cosmopolitan in their habitat choice.

We soon discovered that the tins are not only used by reptiles, but by other animals too. Ant nests were found under many of the tins, as well as several adult and immature Common Toads *Bufo bufo*. It was noted that the presence of ants and toads often coincided, suggesting that the toads enjoyed a plentiful supply of invertebrate food in addition to the shelter the tins provided. Evidence of small mammal activity was also observed under several tins.

A young Adder and a young Common Lizard, both of which would have been born earlier in the summer, were found. This indicates that both these species bred in 2003. Young Slow Worms were not seen; however, this is not surprising since it is said that juveniles of this species are even harder to find than adults. It is likely that Slow Worms are breeding successfully in the area because they have poor dispersal capabilities and are unlikely to have travelled any great distance from other areas. Grass Snakes were not recorded during the survey. However, there is anecdotal evidence to suggest that the Grass Snake is rare or perhaps absent in this part of North Yorkshire. This apparent absence could be due to a lack of recording efforts.

An adder slough. Simon Pickles

Male Adder basking. Clive Wyatt

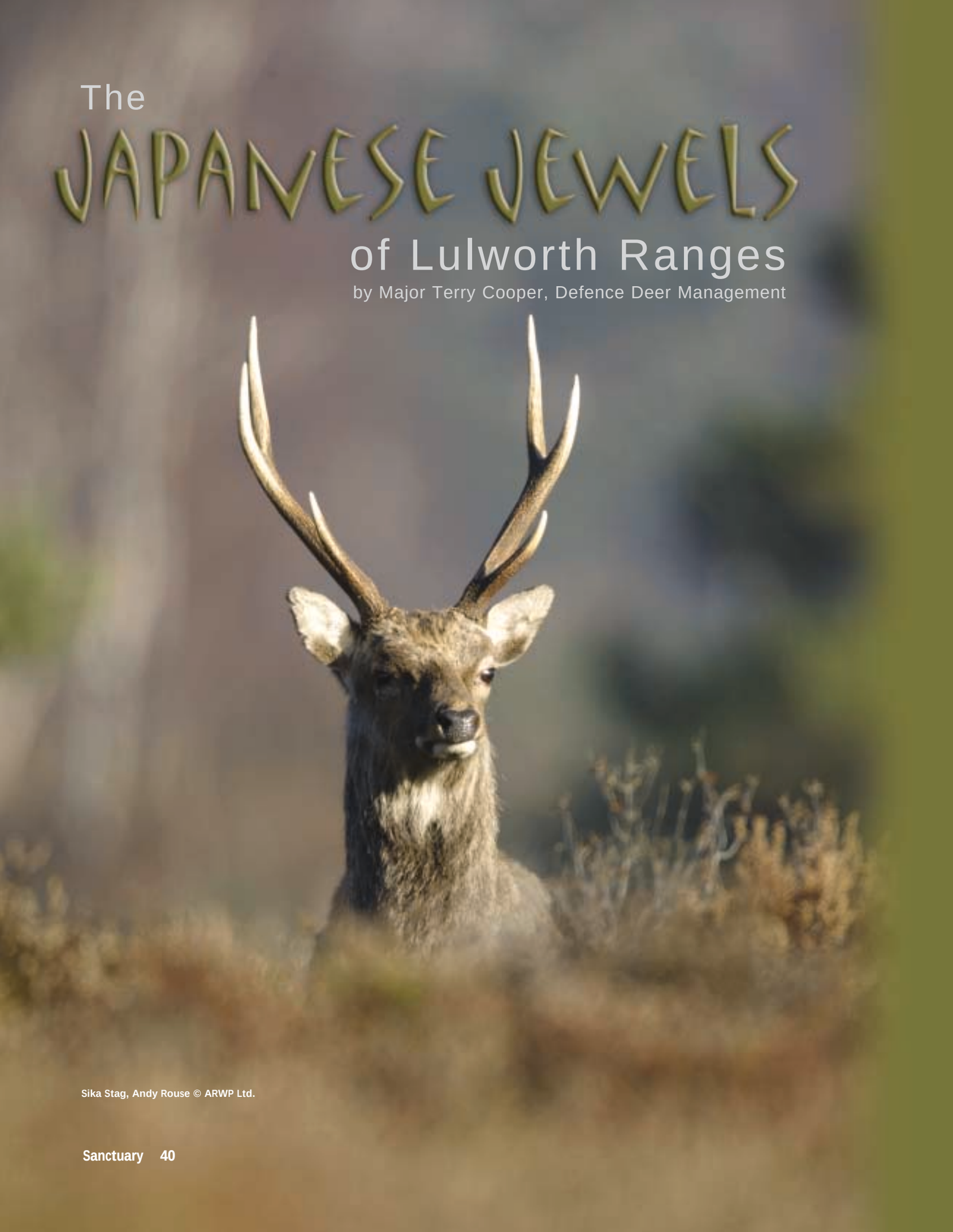
The information from this survey has been incorporated into the NEYEDC species database and has also been forwarded to Defence Estates for use within the new Integrated Rural Management Plan for the site. We plan to leave our tins in place at Fylingdales, so we can continue the survey in 2004. We also hope to expand the survey to other sites in the region, in the hope that we may increase our understanding of the distribution and ecology of this fascinating group of animals.

NEYEDC would like to thank RAF Fylingdales staff for allowing access to the site and for their help in setting up the survey. We would also like to thank Phil Shaw and Richard Sunter for assistance with fieldwork.

James has worked for NEYEDC since the summer of 2001 as an Ecological Information Officer. His role includes managing the database, responding to requests for species and habitat data and carrying out surveys.

The JAPANESE JEWELS of Lulworth Ranges

by Major Terry Cooper, Defence Deer Management



Sika Stag, Andy Rouse © ARWP Ltd.

Lulworth is such a unique and special place for nature, it contains three Sites of Special Scientific Interest

A Challenger 2 Main BattleTank at Lulworth Ranges - the Armoured Fighting Vehicle School is an important and busy military establishment.

The Armoured Fighting Vehicle School at Lulworth in Dorset is well known for its biodiversity, in particular the mosaic of habitats that support a wide diversity of rare and endangered species. In fact Lulworth is such a unique and special place for nature, it contains three Sites of Special Scientific Interest. The site has also been recognised internationally as a Special Area of Conservation, Special Protection Area for birds, and more recently, a World Heritage Site. However, there is one group of animals that have received comparatively little recognition - the creatures that I call 'the Japanese Jewels of Lulworth Ranges'.

An Introduced Species

The story begins in the mid 1800s when it is thought that Japanese Sika Deer *Cervus nippon* were first brought to England and presented to the Zoological Society of London. Thereafter, many parks and gardens came to introduce the species. Escapees and deliberate releases led to feral populations of Sika. Dorset saw at least two separate introductions, and the Lulworth population originates from either or both of these. They were introduced first to Hyde House in Wareham in 1895 and the next year to Brownsea Island in Poole Harbour. Rumour has it that the Sika escaped from Brownsea Island on the day of their release, by simply swimming off of the island. Imagine the frustration of the proud new owners of this so-called 'captive herd'. If they had read the 'small print', they would have known that Sika, like most other species of deer, are very strong swimmers!

Sika Deer are currently at the forefront of the national mammal debate. Their ability to hybridise with our native Red Deer *Cervus elaphus* has led to predictions that in just 20 years, purebred Red Deer may no longer exist on the British mainland. However, the Sika at Lulworth are believed to be pure *Cervus nippon*.

As an introduced species, the Japanese Sika have long been thought of as interlopers. As they have been established in Dorset for over 100 years, even by rural standards, they should by now be considered locals! They happily co-exist with a thriving and healthy population of our native Roe Deer *Capreolus capreolus* and the occasional Fallow Deer *Dama dama*.

Sika are a large, predominantly grazing species that feed heavily on grasses, broadleaf buds, twigs, heather, fruits and fungi. They display a bright chestnut coat with white spots in the summer months. Stags typically appear darker than hinds at all times of the year. The winter coat of the hind is a uniform light grey. In both summer and winter coats, adults may or may not have a black line down the dorsal surface of the tail. Sika males have a similar antler shape to their cousins the Red Deer; however, unlike the Red, who typically have about 12 points or tines to their antlers, Sika will only have around eight when fully mature.

Their rut takes place from mid-September to the end of November, and is an exciting time in the Sika calendar. Stags are highly aggressive and demonstrate their intent or frustration by thrashing the ground cover of heather and gorse with their antlers. Whilst patrolling the ▶

boundaries of his territory, a stag will seek out hinds. He will then try to subdue them or drive them to a rutting stand where, if in season, he will mate with them. Hinds attempt to move out from the rutting stands in the evening to feed, and so the stag continues to patrol in order to see off interlopers and gather up wandering hinds. A hind in season may well bleat to an interested stag, which can lead to all stags within earshot turning up to contest her. This frequently ends in the hind being chased around by a number of suitors, with presumably the strongest winning. The competitive nature of rutting is nature's way of selecting only the strongest to produce future generations.

Wallowing is a universal Sika stag rutting behaviour. The stags are generally left with a filthy matted appearance, their war paint, embellished by fronds of grass, heather and bracken, which can stick in their antlers as a result of fraying. They complete this impressive ensemble with a shaggy and enlarged neck. Perhaps the most attractive feature to the hinds is the fact that the stags stink! They emit an odour of musk and urine, which they regularly add to their wallows! If that enchanting aroma fails to attract the local ladies, the stag can always turn to his astonishing rutting call that can be heard echoing across the Lulworth Ranges. The call, which has terrified many an unsuspecting stranger, is a single whistle, which rises to a peak before tailing off. This astounding call has led to Sika being known as the 'whistling deer'!

Due to the lack of natural predators in the UK, most deer species have to be managed in order to keep them in balance with their environment

After the rut in November, hinds and calves congregate together, and exhausted stags thereafter tend to seek the solace of stag groups. In March, strong stag calves may well leave their mothers to join stag groups, while hind calves will be driven away by their mothers at their next calving. Their calves are born anytime between May and July.

Deer Management

Due to the lack of natural predators in the UK, most deer species have to be managed in order to keep them in balance with their environment. Without being kept in check, deer numbers grow exponentially leading to damage to agriculture and rare habitats, with subsequent losses in biodiversity along the way. Defence Deer Management (DDM), on behalf of the MOD, manage deer on the ranges to prevent this, whilst ensuring the welfare of a healthy, thriving deer population. Lulworth has been recognised as a centre of excellence for deer ecology and management training. A state of the art deer processing facility & training centre has recently been opened by DDM for the site.

Sika Hinds, note their distictive uniform grey winter pelage, Andy Rouse © ARWP Ltd

Sika Hinds, Andy Rouse © ARWP Ltd.

Deer, especially Sika, are seasonally migratory with a large range that extends well beyond the boundaries of MOD land. It is therefore necessary to manage all deer species on a much wider 'landscape' scale. Therefore, DDM join their neighbours and play a key role at the local 'Poole Basin Deer Management Group'.

Cooperative Sika Research

DDM has cooperatively funded a project along with RSPB and English Nature to carry out an initial investigation into the ecology and population dynamics of Sika Deer in the Purbecks. This Bournemouth University project, supervised by Professor Rory Putman, aims to determine the impact of Sika on the rich mosaic of internationally important wildlife habitats. The project comprises several key elements, which include comparisons of an unmanaged population of Sika at Arne (a local RSPB reserve), with those on the Lulworth Ranges. An investigation to identify potential overlap between these separate populations will be carried out, and the study will also examine the impact of Sika grazing on the vegetation community and structure of heathlands.

DDM has supported the project financially, facilitating the purchase of vital equipment like radio-collars for tracking the deer. MOD Deer Managers have also been responsible for providing samples from the rumen of deer, to allow Sika feeding habits to be analysed. I look forward to reporting on the findings of the study in the next edition of Sanctuary.

The Sika Deer, along with their native cousins are a well-established part of Lulworth's rich ecosystem. With the continued support of DDM, working hand in hand with neighbouring landowners and Statutory Bodies, we hope to ensure that the Japanese Jewels of Lulworth are protected alongside other biodiversity species of this unique part of the Defence Estate.

A Roe Doe - Our native Roe Deer live alongside Sika Deer on the Lulworth Ranges. Dr Tracey Rich © ARWP Ltd.

Lulworth's Lower Plants

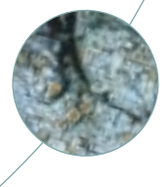
Bryophytes, fungi, lichens and seaweeds of the Army Fighting Vehicle School

By Bryan Edwards, Botany Section, Lulworth Ranges Conservation Committee.

The AFV Gunnery Ranges occupy approximately 2994 hectares of the South Dorset coast between Lulworth Cove and Kimmeridge. In this very varied area one can walk inland from dramatic limestone cliffs to quaking acid bogs in only three and a half kilometres. On this short journey you will pass through flower-rich meadows in the clay vales, unimproved chalk downland on the Purbeck Ridge, shady oak-hazel woodlands and the famous heathlands renowned for their rare plants, insects, birds and reptiles. Since becoming a training area much of the land has not been subject to intensive agricultural practices, and today, 62 % of the area is protected within various Sites of Special Scientific Interest.

When I took over the botany section on the Lulworth Conservation Committee from Maggie Martin, I realised that the flowering plants, grasses, sedges and ferns had been relatively well recorded. However, the 'lower plants', as they are affectionately known, had not received much attention. The exception being lichens in the Tyneham woodlands, which were surveyed by Dr Francis Rose in 1975 and by Rachel Palmer in more recent years. Thus in 1994 I began to record the lichens, mosses and liverworts found in the many different habitats within the Ranges.

At the end of 2003 a total of 344 lichens, 162 mosses and 39 liverworts have been recorded from the area, including several rare and scarce species. In addition 127 marine algae (seaweeds) have been recorded, mostly due to the work of the late Elsie Burrows in the 1970s. Fungi have been very neglected, as there is no resident mycologist in the county. ▶



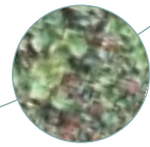
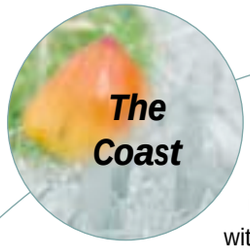


Table 1. Summary of lower plants groups recorded on the Lulworth Ranges

	Total number of species	Red Data Book species	Nationally Scarce species
Lichens	344	7	23
Mosses	163	3	10
Liverworts	39		1
Marine algae	127		
Total	673	10	34

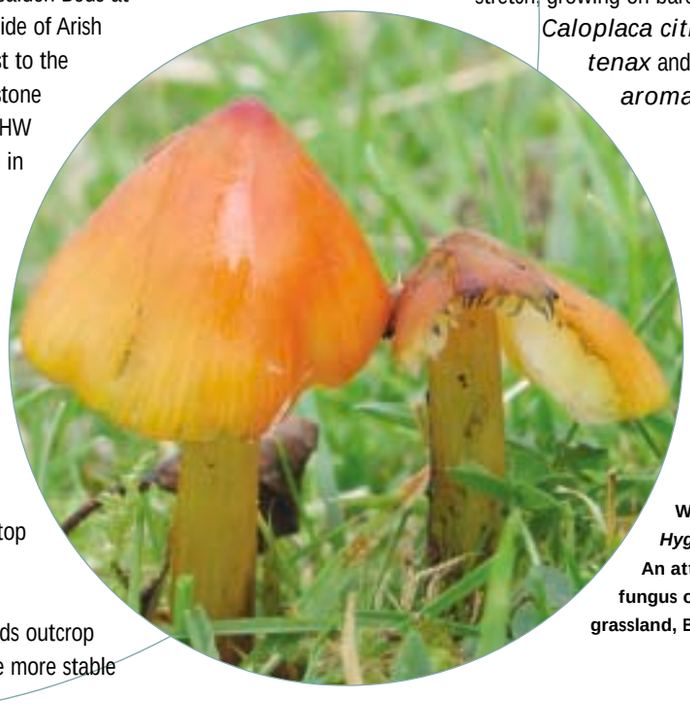


The Coast

There is approximately nine and a half kilometres of coast with the Ranges, much of which is internationally important for its geology and is included within a World Heritage Site. The underlying rocks greatly influence the vegetation. Between Charnel and Brandy Bay, the Kimmeridge clays and shales dominate. The intertidal ledges and rock pools in this section are very rich in marine algae with 108 species recorded here by the late Elsie Burrows. Deeper water supports the larger kelps, *Laminaria digitata, L. hyperborea* and *L. saccharina*. The numerous rock pools are extremely diverse with species of brown, green and red algae well represented. Of particular note are the beautifully iridescent *Cystoseira tamariscifolia* and the rare and spectacular *Padina pavonia* or Peacock's Tail.

Perhaps the most dramatic feature along the coast is Gad Cliff. Fifty metre high cliffs of Jurassic limestone tower above a wild clay undercliff of grassland, scrub and scree, which is frequented by a small feral goat herd. The sea has broken through the limestone to expose the Wealden Beds at Worbarrow and Mupe, and the dramatic chalk cliffs either side of Arish Mell. The limestone is exposed again from Mupe Rocks east to the boundary of the Ranges at the Fossil Forest. The hard limestone rocks support a limited maritime lichen flora. Just above MHW is a narrow band of the black *Verrucaria maura*, which in turn is sometimes colonised by *Caloplaca microthallina*. Above this the orange zone species *Caloplaca marina* and *C. thallincola* are locally abundant. At Gad Cliff there are small exposures of chert. This hard siliceous rock is much favoured by lichens and supports *Lecanora helicopis, Pertusaria pseudocorallina* and *Ramalina siliquosa*, while sheltered under-hangs support a more specialised flora with *Dirina massiliensis f. sorediata, Lecanographa grumulosa* and *Opegrapha mougeotii.* Soils along the parched cliff top above support a number of interesting mosses including *Pterygoneurum ovatum* and *Tortula lanceola*. Between the limestone and the chalk ridge the Wealden Beds outcrop at Worbarrow Bay, forming colourful but unstable cliffs. The more stable areas support a limited but specialised 'soft cliff' lichen flora with *Lecanora zosterae* and *Solenopsora vulturiensis* locally abundant. The rare *Placidiopsis custnani* was recently found here, new to Dorset. Mosses include the nationally scarce *Tortula atrovirens*, with the uncommon *Drepanocladus polygamus* in a wet flush, which also supports the only colony of the horsetail *Equisetum variegatum* in the county.

The scenically dramatic coastal chalk from Flower's Barrow to Mupe is largely inaccessible and poorly recorded, but at the junction of the chalk and Greensand the Biodiversity Priority moss *Acaulon triquetrum* has one of its six British localities. From Mupe Rocks to the Fossil Forest we rejoin the limestone. The rocks here provided the first lichen record from the Ranges by Walter Watson, who collected the rare *Lecanora agardhiana* here in 1930. The species is still found here on some of the larger rocks. The slope above is home to the Red Data Book lichen *Endocarpon pusillum*, which is locally frequent along a150 metre stretch, growing on bare soil with *Caloplaca citrina, Collema tenax* and *Toninia aromatica.*



Whiteway Hill, *Hygrocybe conica,* An attractive waxcap fungus of tightly grazed acid grassland, Bryan Edwards

The Chalk Ridge

The Purbeck chalk ridge spans the seven kilometre width of the Ranges and rises to 187 metre on Povington Hill. The chalk has been subjected to faulting and is very hard and splits rather than crumbles. Much of the ridge is coarse grassland dominated by Tor Grass *Brachypodium pinnatum,* with large stands of Gorse scrub. West of Flower's Barrow superficial deposits of flints give rise to a more acid flora. Bindon Hill is the outstanding site for lichens and bryophytes. The summit supports an area of broken turf strewn with chalk pebbles and flints. On closer inspection these are well colonised by many minute crustose lichens. The flints support large thalli of *Aspicilia caesiocinerea, Caloplaca crenularia* and *Ochrolechia parella.* Chalk pebbles are richer with *Acrocordia conoidea, Caloplaca lactea, Clauzadea metzleri, Hymenelia prevostii, Lecidea lichenicola, Petractis clausa* and *Protoblastenia calva* among the many species recorded. Mosses include the largest colonies of *Tortella tortuosa* in the county, and the only population of the Mediterranean species *Eurhynchium meridionale* in the British Isles away from the Isle of Portland. Another interesting feature of the exposed summit of the hill is that a number of normally epiphytic lichens are found on the soil or among mosses, such as the lichens *Flavoparmelia caperata* and *Ochrolechia subviridis,* along with the liverwort *Metzgeria furcata*. Further east interest is patchy but the uncommon moss *Entodon concinnus* and the Nationally Scarce moss *Pleurochaete squarrosa* both occur on Povington Hill. The short grazed turf on the summit of West Creech Hill is home to a number of grassland fungi. Most prominent are the colourful 'waxcaps' or *Hygrocybe* species, including the orange-red *H. conica* (see previous page) and *H. miniata*, the yellow *H. chlorophana* and the green *H. psittacina.* The strange finger-like structures of *Clavinulopsis helvola* are also present.

Woodland

The Ranges are not particularly well wooded with only 55.5 ha regarded as ancient woodland, but there are larger areas of secondary deciduous woodland and conifer plantations. Despite this, the few ancient woodlands, along with the many pasture and hedgerow trees, support a rich epiphytic lichen flora of national importance. The woodlands in the Tyneham Valley were surveyed by Dr Francis Rose in 1975, who found the spectacular *Lobaria pulmonaria* in Tyneham Great Wood, plus *Bacidia incompta*, *Cryptolechia carneolutea* (see overleaf) and *Parmelina quercina* (see overleaf) on elms around the village. Sadly the large elms have gone but all these species have thankfully survived.

The woodlands north of the chalk ridge remain largely unexplored until the mid-1990s. Great Wood, Povington Wood and the area around Gough's Shoot are extremely rich. The unpolluted air, high humidity and continuity of old trees help explain its richness. The Lobarion community is well developed with *Lobaria pulmonaria* and *L. virens (see overleaf)* both present, with the latter forming extensive fertile colonies several metres up the trees trunks. There are numerous associated crustose species present including *Bacidia biatorina, Biatora sphaeroides, Catinaria atropurpurea, Dimerella lutea, Lecania chlorotiza, Pachyphiale carneola, Porina coralloidea, Strangospora ochrophora, Thelopsis rubella* and *Wadeana dendrographa.* The oldest trees support a specialised 'ancient dry bark community' with abundant *Creponea premnea,* plus *Bactrospora corticola, Lecanactis subabietina, Lecanographa lyncea, Opegrapha prosodea, O. xerica* and *Schismatomma cretaceum.* Deep in the bark fissures lurk 'pin-head' lichens such as *Chaenotheca hispidula* and the uncommon *C. stemonea* in one of its two Dorset sites. Plantation woodlands are not without their interest. Old Marl Plantation is around 200 years and dominated by Beech and Sycamore. A total of 48 lichens have been recorded including the fast declining *Anaptychia ciliaris* on several Sycamores, and the Biodiversity Priority species *Bacidia incompta* inside the trunk of a hollow Beech tree.

Interest within the woodlands is not just restricted to lichens. Pollution sensitive mosses such as *Leucodon sciuroides, Leptodon smithii, Orthotrichum lyellii* and *Tortula papillosa* occur on well-lit tree trunks, and the southern-oceanic liverwort *Cololejeunea minutissima* is found widely in the woodlands. Tree bases in Great Wood provide a habitat for the liverwort *Lejeunea lamacerina* in one of its few recent county sites. Chalk pebbles in the wood are home to minute mosses such as *Fissidens gracilifolius, Seligeria calycina* and *Tortella inflexa*. A large flint in Alm's Grove provides a home for the uncommon oceanic liverwort *Lophocolea fragrans.*

Table 2. Summary of lichens found in the larger areas of woodland

Site	Number of species	Number of indicators
Gough's Shoot area	**100**	**24**
Great Wood	**103**	**22**
Povington Wood	**110**	**26**
Tyneham Great Wood	**109**	**20**
Tyneham Gwyle	**80**	**11**

Heathland and Mire

The heathlands within the Ranges are among the most extensive in the county and are of international importance. Dry and humid heath are dominated by Bell Heather, Dwarf Gorse and Ling. Beneath these small shrubs a whole community of Cladonia lichens can be found on the bare peaty soil. Robust, branched species such as *Cladonia ciliata, C. portentosa* and *C. uncialis ssp. biuncialis* are most obvious, but a closer look reveals the red fruited *C. diversa* and *C. floerkeana,* the brown fruited *C. chlorophaea, C. squamosa* and the bizarrely tiered 'stalks' of *C. cervicornis ssp. verticillata.* The wetter heaths support a similar range of species, but importantly are home to the uncommon *Cladonia strepsilis* and *Pycnothelia papillaria*, both of which are very local in Southern England.

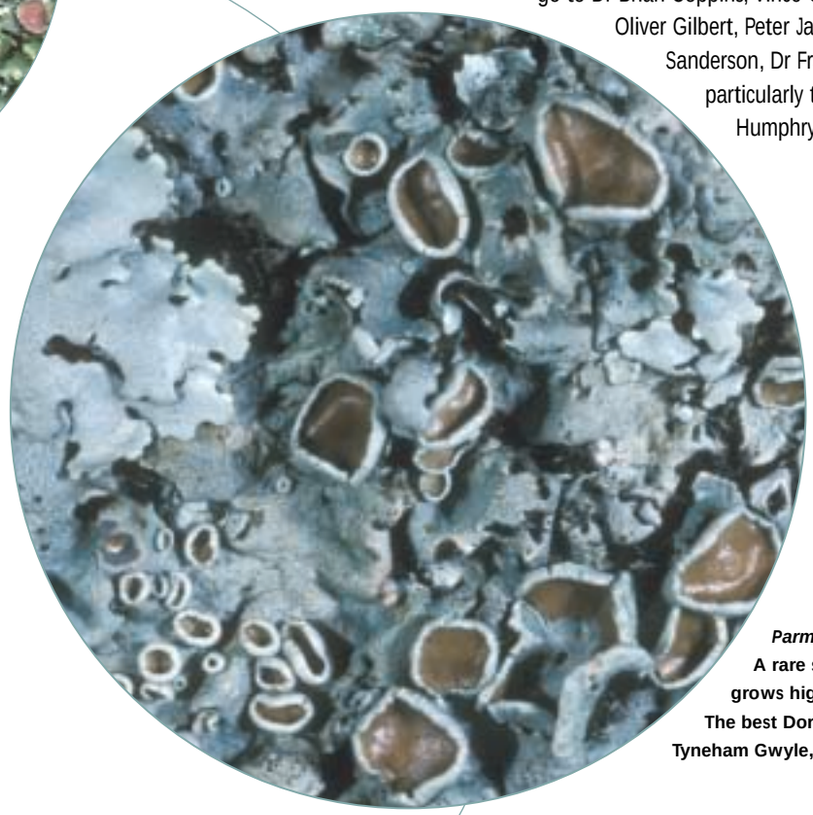
The bryophyte flora of the dry, humid and wet heaths is very limited, but a number of interesting species are found. Of particular importance are the two small populations of the Red Data Book moss *Dicranum spurium,* which occurs within tightly grazed humid heathland and are the only current sites for the species in Dorset. Sphagnum species begin to occur within the wet heath zone, and are often accompanied by the hummock forming mosses *Campylopus brevipilus* and *Leucobryum glaucum. Sphagnum compactum* and *S. tenellum* are both widespread, with uncommon and delicately coloured *S. molle* present in several sites.

The Sphagnum species really begin to dominate in the valley mires forming vivid and colourful displays, particularly in the autumn and winter. The real speciality here is the rare golden-orange *Sphagnum pulchrum*, a Purbeck speciality, which is co-dominant in several mires with ochre-brown *S. papillosum.* The dark red *Sphagnum capillifolium* and *S. magellanicum* occur in smaller quantity, with the green *S. cuspidatum* and *S. denticulatum* often found submerged in bog pools. Creeping between the hummocks of Sphagnum the delicate stems of several 'bog hepatics' can be found including *Cladopodiella fluitans, Kurzia pauciflora, Mylia anomala, Odontoschisma sphagni* and *Riccardia latifrons.*

In summary, the Ranges support a rich and varied lower plant flora mostly due to the underlying geology and past and present land use. Communities and species of high conservation importance are present, and with correct management and careful monitoring should continue to enhance the flora of this very special part of Southern England.

In the course of recording the flora of the Ranges I have had the help of many colleagues both in the field and in identifying species. Warm thanks go to Dr Brian Coppins, Vince Giavarini, Dr Oliver Gilbert, Peter James, Neil Sanderson, Dr Francis Rose and particularly the late Dr Humphry Bowen.

***Lobaria virens,* Povington Wood. A large leafy lichen which is bright green when wet. It grows on ancient trees in areas with almost pure air, Bryan Edwards**



***Parmelina quercina*, Tyneham. A rare southern lichen which grows high up in the canopy. The best Dorset population is in Tyneham Gwyle, Bryan Edwards**

Cryptolechia carneolutea, Povington wood. This very rare lichen has declined due to the loss of old elm trees. The populations on Ash and Sycamore at Lulworth are of national importance, Bryan Edwards

Dicranum spurium, Povington Heath. A rare moss with distinctive curled leaves when dry, Bryan Edwards

An aerial shot showing part of the Lulworth Ranges from Flowers Barrow north-east to Povington Wood. © Dorset County Council 1997

A Fresh Start

Holcombe Moor Training Centre

By Jeremy Kalkowski, Defence Estates

As the rain beats down on the windscreen of my car and I resolve to venture out into the elements, I often wonder what it is I enjoy about Holcombe Moor.

It is often said that some areas have their own individual climate and this can certainly be said about Holcombe, the typical weather condition here being rain. However, to be fair, the wet and misty weather contributes considerably to the atmosphere of the landscape, which in my opinion is one of the most attractive locations on the MOD Estate.

Holcombe Moor Training Centre is situated 20 kilometres north of Manchester on the outskirts of Ramsbottom. The camp was built during the 1940s, but the area has been used by the military since before the First World War. Holcombe is used as an all year-round general purpose camp for Reserve Forces and Cadet Association training at weekends. Regular Army Units carry out low level tactical training and live firing too.

Like many smaller and more remote parts of the MOD Estate, Holcombe Moor has suffered in the past from under-funding and has been unable to realise its full potential as a training asset. As Holcombe is now part of the Army Training Estate (North West), the establishment finally has the financial backing and support it deserves. This has been strengthened with the implementation of a new five year development plan. The plan covers all aspects of estate management, with particular attention being paid to any potential training and conservation improvements.

The training area covers over 300 hectares of freehold land, consisting of a wide range of habitats including open moorland to the north and rolling farmland and steep sided wooded valleys in the south. The area has five public rights of way, all of which have been upgraded and repaired with

considerable effort being directed at improving the waymarking on the estate. The dedication of a new public Right of Way by Bury's Metropolitan Council Footpaths Officer is underway.
Holcombe Moor has been in the limelight in the past, as the home of the Krypton Factor Assault Course. The original structure was demolished in 2003 for health and safety reasons. However, a new and more challenging assault course is now under construction.

With funds being made available through the Rural Elements of the Estate Strategy and with assistance and guidance from the recently formed Conservation Group, several exciting new conservation projects have been started across the estate. These range from the restoration of the dilapidated drystone walls (once a prominent feature of the landscape), to the regeneration of the existing woodlands and hedgerows.

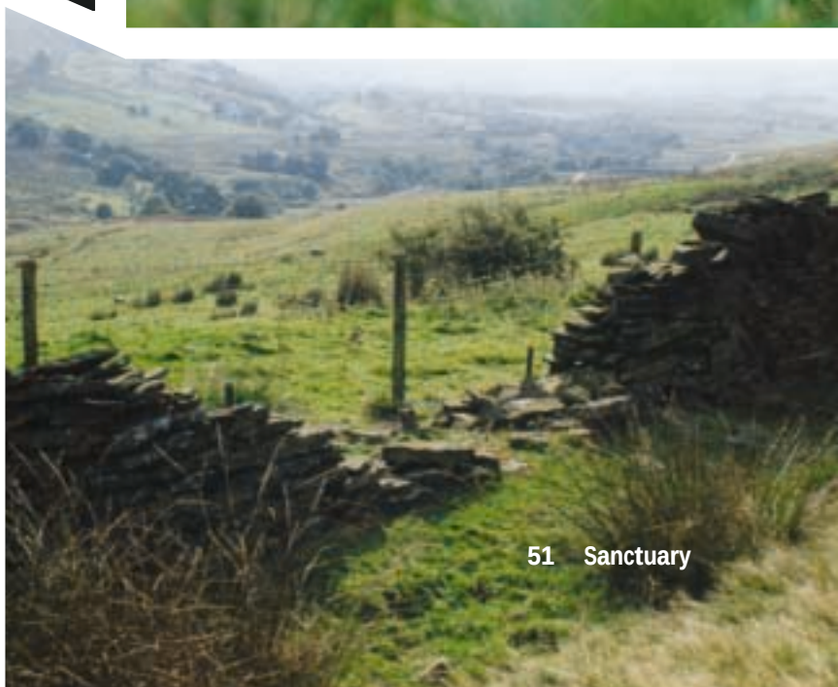
Following discussion with the Forestry Commission, work has started on the restoration of Saplin Wood, an ancient semi-natural oak woodland on the eastern boundary of the estate. This type of woodland is an enormously valuable natural habitat and is particularly rare in the Greater Manchester area. Selective felling of small groups and individual trees has been carried out to encourage the natural regeneration of the woodland. This will contribute significantly to the overall age structure of the wood and will greatly improve the biodiversity potential of the area.
Over 500 metres of new hedges have been established along the south western boundary of the estate, with several hundred metres of existing ancient hedgerows being reinstated and developed. These new hedges are a valuable natural and visual element of the estate and ensure the sustainability of the traditional rural landscape.

The estate has several ponds including Black Dog Fisheries, a large man-made lake. This is a relic of Holcombe Moor's industrial past that was used as a water supply for the textile bleaching and dying mills in Ramsbottom. The area is now a haven for wildlife and is rich in aquatic flora and fauna.

With the future of Holcombe Moor being more certain and with the backing and financial support of the Army Training Estate, work being carried out will not only help maintain the area as a valuable military training resource, but ensure the future sustainability of the natural environment.

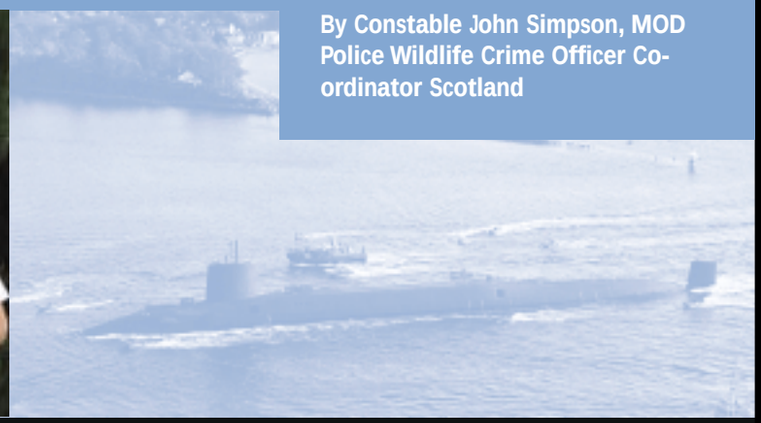
Holcombe is regularly used by the Reserve Forces and Cadets Association and also regular Army units. © Crown Copyright

Views of Holcombe by Jeremy Kalkowski



The Feathered Friends of HMNB Clyde

Visitor holding chick, Constable John Simpson



By Constable John Simpson, MOD Police Wildlife Crime Officer Co-ordinator Scotland

Based on the shores of the Gare Loch and flowing into the Clyde Estuary, Her Majesty's Naval Base (HMNB) Clyde is without doubt one of the most fascinating wildlife sites in central Scotland. Home to the Trident nuclear submarine fleet and an active industrial site in its own right, it boasts an intriguing blend of habitats, office complexes, berths, vessels service accommodation and shopping facilities. It also includes a remnant stretch of Victorian woodland to add even greater diversity.

The site is completely enclosed by high security fencing topped with razor wire and is actively patrolled by the MOD Police. The base also plays host to a contingent of Royal Marines and the Military Guard Service, all in all a formidable image, and not exactly the conditions in which you might expect wildlife to flourish. However, the high security and austere facade belies quite a different story. For a number of years now, MOD Police Wildlife Crime Officers, along with colleagues from the Clyde Ringing Group and the Scottish Ornithologist's Club have been monitoring two keys species within the Base; the Eider *Somateria mollisima* and the Common Gull *Larus canus.*

"Nests are made of anything a duck can acquire, from bin bags to tin cans. Everything seems to make its way into the fabric of an eider nest."

Remarkably, the Eider, now a common and widespread species around the Clyde Estuary, was at one time a rarity. The first record of this attractive sea duck in the Clyde area was in 1904. However, in a recent winter survey 20,000 birds were recorded. This is a staggering increase in the space of a century. Given that they are quite common around the Gare Loch shoreline, no nests had been located. However, a nest was found by complete accident under a roadside bush in the centre of the base. Its discovery sparked a long-term study into the breeding biology of this species.

The surprise discovery led to a thorough search of the base. Several breeding sites were identified and 125 sitting females were located. The core area is in a contractor's compound close to the shoreline. It holds the highest breeding density of Eiders in the country! The birds start breeding in late April or early May and lay approximately five eggs, within the eider down ringed nest. The image of a nesting female sitting motionless on some picturesque Scottish island is not matched by the reality of Faslane. Nests are made of anything a duck can acquire, from bin bags to tin cans. Everything seems to make its way into the fabric of an eider nest. The birds must be adaptable to avoid numerous hazards if they are to be successful.

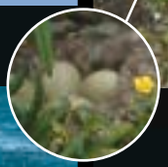
The study looks at a variety of factors affecting Eiders and compares them to other colonies along the west coast of Scotland. What is evident is that productivity is poor. This is primarily because of predation by Brown Rats *Rattus norvegicus*. This tends not to be a limiting factor for island populations of Eider.

Another interesting area for investigation is the nesting sites of female Eiders year on year. Do they always return to the same nest site? The ringing programme, combined with the use of Global Positioning Systems should establish this part of the birds breeding behaviour. Anyone who has worked with this species will testify how messy and disgusting an excited Eider can be! However, data gleaned from the study is being put to good use and is valuable on many levels. Volunteers are

Swimming Eider, Constable John Simpson

An enthusiastic volunteer pointing out an eider nest! Constable John Simpson

School children discover an eider nest, Constable John Simpson



Male and female Eider, Bob Glover

If you have any wildlife crime concerns in the HMNB Clyde area contact :
Constable John Simpson
on 01436 674321 ext 6148

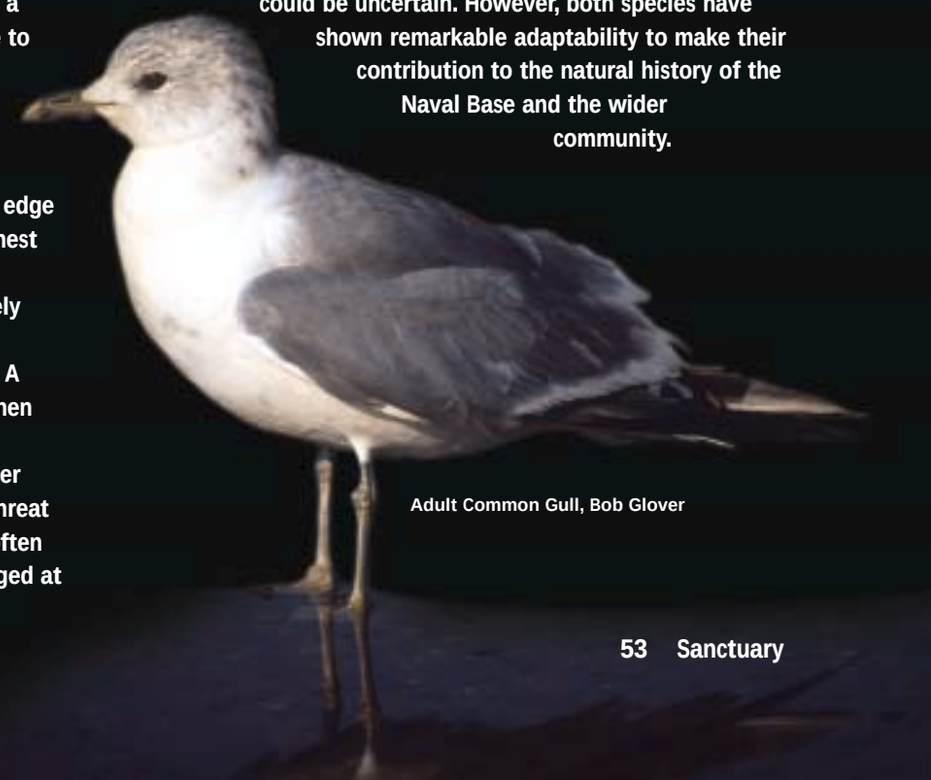
monitoring the post breeding distribution by watching for marked females. The unusual nature of the site and the close proximity of nesting females has given an unparalleled opportunity for nature interpretation. From school classes to university groups, all have been given the chance to come into experience a truly unique situation in Scottish ornithology.

The Common Gull population presents a greater challenge. No matter the species, gulls can cause a "public relations problem" in naval environments. With 150 pairs, the base colony is divided into three areas and given the operational nature of the base the gulls must be closely monitored. The birds can present a hazard to workers when they nest too close to buildings or on vital equipment necessary for the efficient running of the submarine fleet. However, conflicts are now rare thanks to a considerable education process and structures put in place to handle the problem breeding pairs.

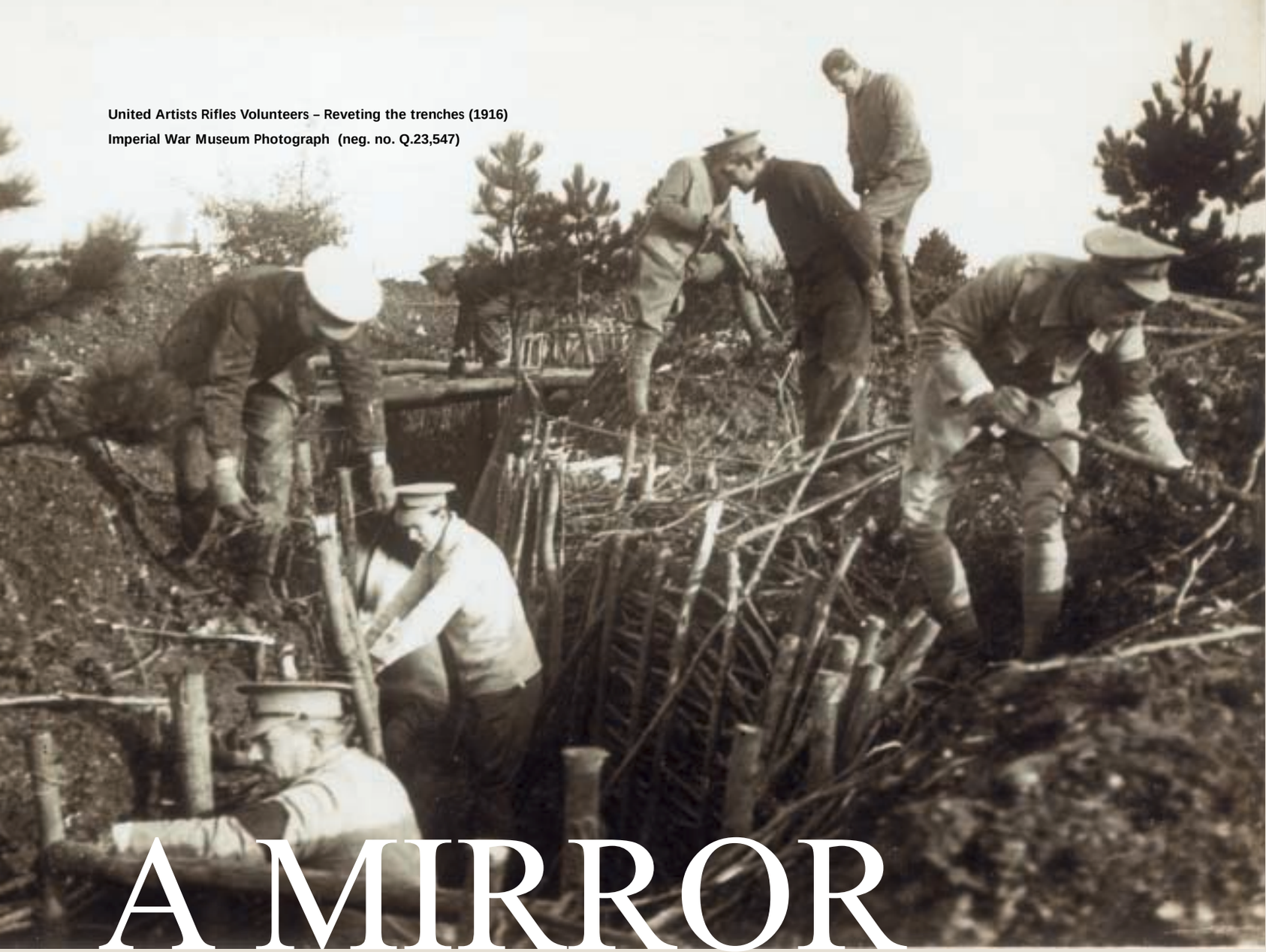
The birds feed on invertebrates on neighbouring farmland and their clamouring nest building is a welcome sign that spring has arrived. The birds should be nesting around the edge of some distant hill lochan and why they have insisted to nest with the machinery of an active naval base is not fully understood. Some nests have been built in the most unlikely locations and considerable ingenuity must be employed to ensure the birds continue to nest without any disturbance. A nest can be built and three eggs laid within a few hours, then aggressively defended by both parents.
The colony continues to grow each year and unlike the Eider population, Common Gulls tend to be able to handle the threat of predation by rats. Productivity is high with three eggs often translated to three young fledged. The young birds are ringed at around three weeks and recoveries have been very interesting, from local sightings, to an adult recovered from the coast of Portugal.

For many natural historians the highlight of their visit is the opportunity to see Common Gull chicks hatch from their eggs. Monitoring suitable nests means that a hatch date can be established and visits programmed to coincide with their emergence. From an experienced natural historian to a school child from inner city Glasgow, watching a young bird struggle out from their egg is a truly memorable experience.

The environment within the base is in constant flux with ground for development at a premium, so the future for each species could be uncertain. However, both species have shown remarkable adaptability to make their contribution to the natural history of the Naval Base and the wider community.



Adult Common Gull, Bob Glover



United Artists Rifles Volunteers – Reveting the trenches (1916)
Imperial War Museum Photograph (neg. no. Q.23,547)

A MIRROR OF THE APOCALYPSE

Great War Training Trenches

By Martin Brown, Archaeologist, Defence Estates Environmental Support Team.

Soldiers hate digging in, several have told me so, but it is an essential part of their training. Amongst the usual archaeological remains encountered on military land, such as barrows and settlements, we can see the polygonal traces of military practice trenches. The forms created during the Great War are the most impressive and extensive examples of these monuments. When first encountered, it is quite bizarre to see a Great War landscape in Wiltshire or West Wales. However, these landscapes form an important part of our archaeological heritage, particularly as they relate to the history of our country, but why were they created?

Trenches at Penally Training Area, Pembrokeshire, Wessex Archaeology Photograph

Even before the Battle of the Marne in 1914 British troops had been used to trenches. Bloody experiences during the Boer War had taught the British Army the value of traversed (kinked) trenches and there are said to be trenches of this period on Salisbury Plain. However, these trenches were not the semi-permanent fortifications seen in the Great War. The first mobile phase of the war of late summer 1914 didn't last. The front stabilised as both sides dug in, creating rudimentary trench systems. These gradually developed into complex networks of fortification that evolved in response to changing tactics, situations and weapons. They also had to take account of terrain, geology and local circumstance. The changes in topography along the Front meant that troops had to be aware of how trenches should be constructed in a variety of substrates from Picardy chalk to Flanders clay, as well as for a range of uses, both offensive and defensive. Skills involved in the construction of individual emplacements and features had to be learned and honed. As the war progressed the development of strongholds or keeps (strongly defended points formed within the wider trench system) which are visible in later war trenches were developed in response to the introduction of 'stormtroop tactics' by the German Army.

The steep learning curve encountered by the British Army in 1914 can be detected in a series of notes made by officers which were published after the war. At one camp (Crowborough Camp in Sussex) officers' memoirs demonstrate the rapidity with which training changed. In mid September 1914 Henry Williamson noted:

"Each man had to dig a mound for himself as cover when under fire."

Yet only one week later an anonymous source noted that the men were….

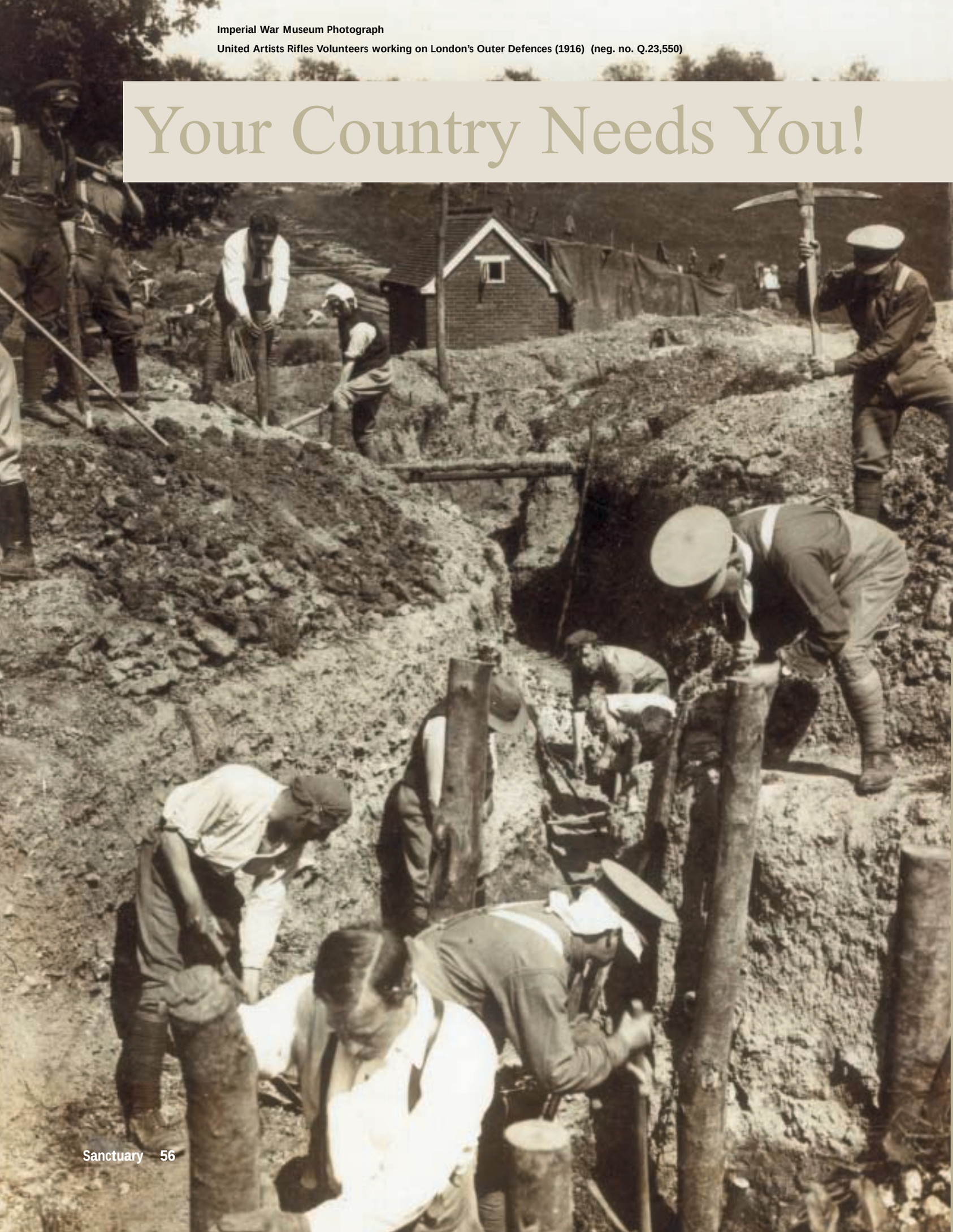
"….digging real trenches with picks and shovels, not scrapes made with entrenching tools. Disguised them with sods and gorse bushes."

While only one month passed before the same man recorded that the….

"….company paraded with picks and shovels for trench digging…We made little pillars every three yards in a parapet and parados, with poles and cross slats to take sods of turf. It is then supposed to be shrapnel proof. It was quite a work of art, with a drain, a gangway, a firestep, and neatly measured off, and it was a pity to fill it in."

This extract describes the sort of trench one imagines during the Great War and shows how quickly the necessity for this type of field fortification had been realised. Even so, the shelters described seem to be fairly primitive arrangements and in no way as secure as the dugouts that were to come. It is interesting to note the person's reference to filling the trench in, which suggests that the whole purpose of the exercise is construction training, rather than trench routine or combat training.

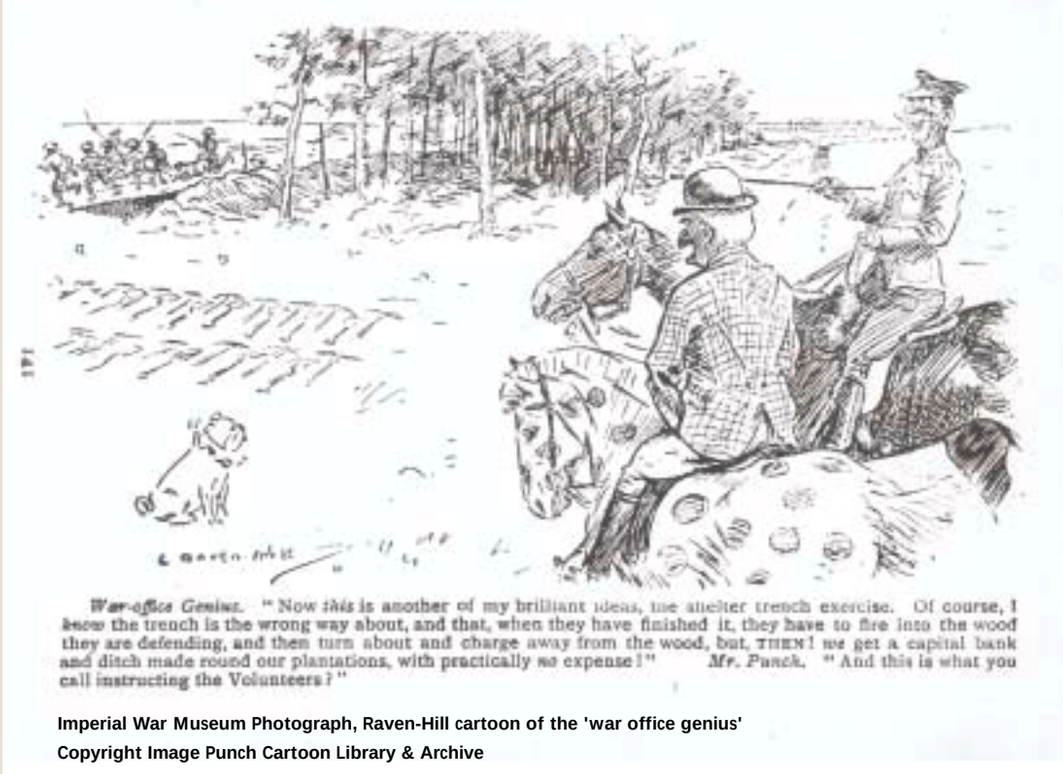
Your Country Needs You!



Imperial War Museum Photograph

United Artists Rifles Volunteers working on London's Outer Defences (1916) (neg. no. Q.23,550)

Exceedingly Good Training



Imperial War Museum Photograph, Raven-Hill cartoon of the 'war office genius'
Copyright Image Punch Cartoon Library & Archive

Digging trenches was about more than acquiring skills. It provided a solution to an unexpected problem for the War Office. At the outbreak of war men rushed to the colours, Lord Kitchener had sought 100,000 men and received one million. The massive response swamped the Army who had neither camps, nor matériel, nor uniforms to equip the recruits. Sending the men home until they could be properly received was politically unacceptable, so summer training camps were reopened and new sites were acquired. Without equipment there was little practical training that could be done beyond marching and drill. However, the growing importance of trenches meant that all ranks needed only to acquire readily available tools to learn the new skills. At the same time, it was realised that trench digging would help raise the level of fitness in the ranks and help to build team spirit. Newly commissioned officers had other key skills to acquire, which included surveying, mapping and troop organisation. This was not always a joyous process. During December 1914, the 7th Battalion Royal Sussex Regiment was training at Folkestone. The Battalion history records state that the men paid *"special attention…to trench digging and field exercises. Much valuable experience was gained through the C.O. insisting that the trenches must be dug under all conditions – rain, cold and darkness."* Troops training on land at Penally must have been equally unimpressed, not only were they on a cliff top in Pembrokeshire, but the trenches are partly cut into the rock!

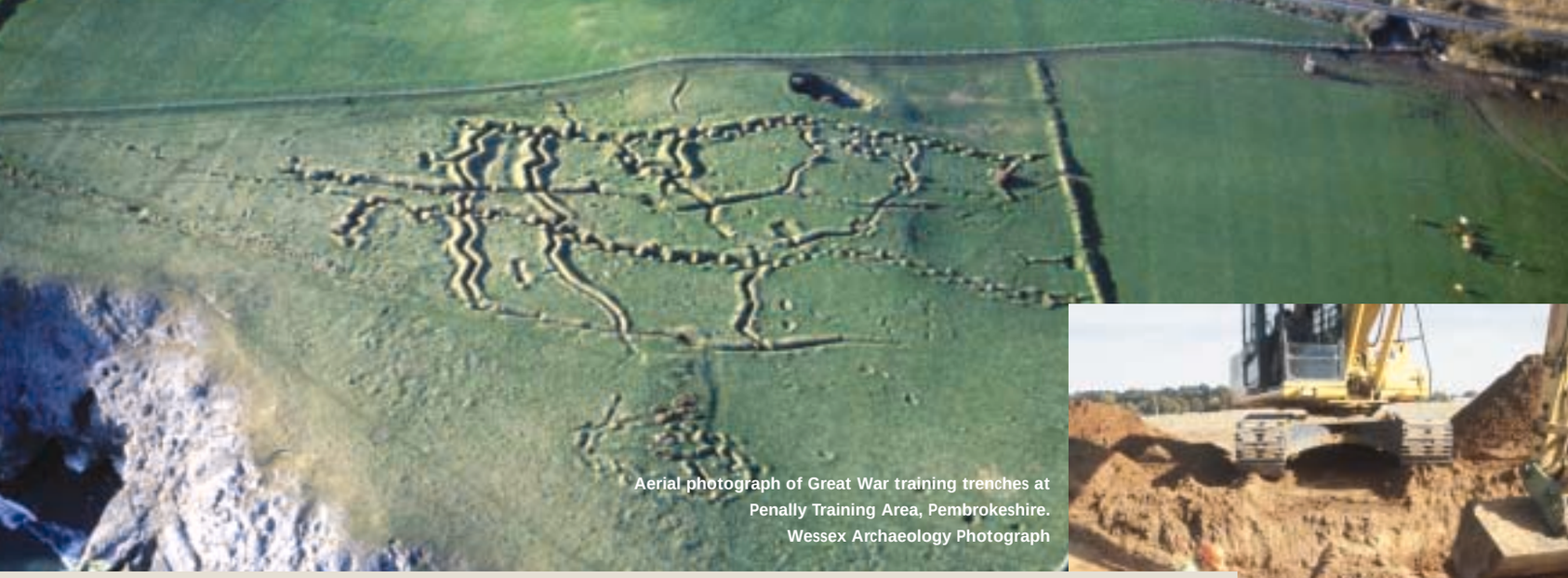
As the war dragged on, the creation and use of practice trenches became one of the staples of basic training. The popular Great War historian, Lyn Macdonald writes *"on open land and commons the sight of Tommies digging and revetting trench systems was a popular spectator sport. They dug trenches the length and breadth of the country…by spring there were eight miles of trenches on Berkhampstead Common alone and it was rumoured there were more trenches in Great Britain than there were in France."*

The trenches also helped train specialists, such as the Royal Engineers. A trench map of part of Salisbury Plain (GSGS 3074, Trench Map of the 19th Division, Shipton Bellinger) was printed in early 1915. Currently this map is only known from its listing and no copy has been seen recently, so if you have one please get in touch! Trenches were dug by 81st and 82nd Field Companies Royal Engineers. The works were inspected by Lord Kitchener who thought them *"exceedingly good training"*! In fact, the set seen by Kitchener is probably one of those recorded in English Heritage's survey of Salisbury Plain Military Training Area and still visible, at least from the air.

Trenches were also constructed for combat training. At Colchester Barracks archaeological works connected to major developments following the creation of the Air Assault Brigade have revealed evidence of bombing practice. Troops were trained in the use of grenades during close combat, "bombing along" (the origin of the phrase) the traverses of contested sections of trench. Elsewhere a variety of evidence shows trenches were used for gas training and for experiments with the earliest tanks. Tank training necessitated the construction of a section of the Hindenburg Line in Dorset so that men at Bovington could practice using the new secret weapons. In addition, the Royal Artillery and Royal Flying Corps used trenches to gain experience in ranging and bombardment.

Recruits gained experience in setting barbed wire by night and the construction of dug-outs and machine gun posts. Various techniques were used to remove the wire, including the Bangalore Torpedo and, more experimentally, mortar-fired grapnels, which appear not to have been developed further. Troops also experimented with trench mortars and hand grenades. One year on from the start of the war training trenches were being used as a basis for a whole raft of activities.

Practice trenches were also used for propaganda purposes, allowing people to see the Front at a safe distance. Trenches were dug in at least two locations – Hyde Park and Blackpool - to allow the public to see trenches. Public access was unlikely at any of the examples seen on the Army Training Estate. However, it is known that a section of trench on Salisbury Plain was used as a film set. Footage showing men going "over the top" was edited into the documentary film 'Battle of the Somme', shown all over the UK after the Battle. It is still a major source of images for the Western Front today.



Aerial photograph of Great War training trenches at Penally Training Area, Pembrokeshire. Wessex Archaeology Photograph

The Subterranean War

While trench warfare is the defining tactic of the Great War, an entire subterranean war was also fought beneath the Western Front. A range of troop shelters, stores and medical and command centres were created underground, sheltered from the effects of all but the heaviest shells. Meanwhile, a war was conducted in tunnels and galleries underground. Both sides mined, and excavated saps under the enemy line, seeking to explode charges and create gaps that could be exploited. The Royal Engineers were responsible for tunnelling operations and trained troops in the UK, many of whom had worked in mines and on other major projects such as the London Underground. Tunnel systems beneath trenches are known to have been created in Colchester and North Wales; readers may know of others. The presence of other underground features, including dugouts, are known at a number of sites, including the Ashdown Forest in Sussex.

Systems developed with front line, support and reserve trenches that allowed both deeper defences and opportunities to rotate soldiers, ensuring no-one spent too long in the front line itself (despite the image fostered by Blackadder). All these features were replicated in training and survive in the UK often on the Defence Estate as earthworks. Examples survive at Otterburn and can be seen on aerial photographs.

Despite their appearance not all practice trenches are of 1914-1918 vintage. It is a truism that 'armies train for the last war'. During the 1938 Munich Crisis, Territorial Army units dug practice trenches. During the so-called Phoney War in 1940 British troops in France created trench systems that were very similar to Great War examples. The Blitzkrieg put an end to trench warfare as we know it.

Excavations at Colchester Barracks connected to major developments revealed evidence of trench bombing practice.

"A Better 'Ole…"

As the Great War passes into history the archaeological significance of its remains become increasingly important, practice trenches reflect a particular moment in British military history. Activities, including training for trench routine as well as combat training, have left their physical evidence including personal ephemera and military matériel. At Colchester, champagne bottles were found along with grenades. Some trenches were in-filled during and after the war and survive today only as features visible from the air. Others remained open for some time and as at Barry Buddon or Penally, now survive as earthworks. As a monument type these trenches will not be universally significant. However, certain examples that survive well, demonstrate a range of features or have historical documentation or some other association that will warrant preservation. Some examples have already been protected under archaeological legislation, others could become the focus of archaeological investigation. This class of monument speaks to us, whether soldier or civilian as we are all touched by the Great War. It is worth remembering the tales these lumps and bumps can tell!

FOREIGN INTERESTS

and the Army Ornithological Society

By Lt Col Roger Dickey, Army Ornithological Society (AOS)

1

2

When so many of the 'minority interest' groups in the Services have fallen by the wayside through belt-tightening and the requirement to fall back on core interests, it is a rare pleasure to note the expanded commitment and interest of some of the Services' 'endangered species'. These rarities are the ornithologists of the Army Ornithological Society! In 2003 the Society mounted three major expeditions abroad, to the Gambia, Poland and Ascension Island. In 2004, the Society will visit Ascension Island for the ninth time and Texas in the USA. Regular readers of Sanctuary and Osprey (the annual Army/RAF Ornithological Societies' (RAFOS) magazine) will be aware of the rolling 18 monthly surveys of Sooty Tern colonies on Ascension Island and the contribution that this work has made to the Conservation Plan of Ascension Island. Less well known is the work that the AOS conducted on behalf of the Makasutu Trust in The Gambia, West Africa.

The Gambia, as a long-standing member of the Commonwealth has very close ties with the United Kingdom and is particularly well known amongst the birding community for its diversity of spectacular birds. It was therefore a surprise to hear from Mr Craig Emms and Dr Linda Barnett of the Makasutu Wildlife Trust that no full survey had ever been conducted of the riverine species of birds in particular, but also of the mammals and reptiles of the Central and Upper Regions of the River Gambia up to the border with Senegal.

There is never difficulty in finding military or ex-military 'old Africa hands' and new people who are ready for a challenge. So began 'Exercise Night Heron', a mix of The African Queen (in a boat of the same era) and Apocalypse Now, without the bangs but with Jungle Cobra, rabid dog and thousands of birds thrown in. Most of the river is freshwater (355 kms),

lined with remnant gallery forest, swamp forest, thickets, seasonal swamps, rice-fields and including numerous islands. The remaining 200km is saline and lined with mangrove swamps. The river is home to a large proportion of the fauna of the Gambia, including vulnerable populations of water birds, mammals and reptiles. Resident water birds and Palaearctic birds also use the river itself when they return from Europe and spread through the African continent. The latter use the river as a stopping off point and feeding ground on their journeys further east and south.

Twelve members of the Society took part in the expedition, an initial exploratory study, which covered 456 km of river, not including the islands and bolongs. They spent 11 days recording a total of 49,647 individual birds of 221 species. Extraordinary numbers of White-faced Whistling Duck (1,451), Black Kite (1,027), Marsh Harrier (67), Spur-winged Plover (1,710), and Barn Swallows (1,118) were complemented by the jewels of the river – Little Bittern, African Finfoot, Egyptian Plover, Marsh Owl, Golden-tailed Woodpecker, and Zebra Waxbill. Small motorized outriders were used to survey the islands, the smaller tributaries and the upper reaches that the 'mother ship' could not reach. A combination of craft produced 1,265 counts of 13

Despite a considerable number of overseas expeditions, the AOS conduct field days on weekends throughout the year as well as assisting Defence Estates Conservation with their annual bird-count, and local groups with bird monitoring projects on the MOD Estate. Far from requiring skill and expertise, the Society finds its main strength from the enthusiasm and dedication of its members. Details of the Army Ornithological Society can be found in Defence Council Instructions or by contacting Maj Andrew Bray at MOD Abbey Wood on 0117-91-31501 or WO2 Richard Seargent at 3 Para, Colchester on 01206-783208.

Conditions were hot, cramped, and at times, somewhat intimate with the local wildlife

mammal species including Hippopotamus, African Clawless Otter, Spotted Hyena and Baboon. Less easy to count were reptiles, with minimal numbers of Nile Crocodile, African Slender-snouted Crocodile, Cobra, Water-snakes and Nile Monitors amongst others. Conditions were hot, cramped, and at times, somewhat intimate with the local wildlife, but made bearable by a culinary resourceful crew and backup from the Gambian National Army.

Having set the tempo for future surveys of this type by the Makasutu Wildlife Trust, the AOS returned its attention to Ascension Island to conduct the first of a series of surveys of sea-bird breeding sites following the successful cull of wild cats in 2003. The AOS has been providing sound scientific data on the decline of Sooty Tern colonies and the unsuccessful breeding on the main island of other seabirds due to cat predation for ten years. Initial signs are optimistic that despite a legacy rat population and increased predation from Mynah Birds, breeding numbers of Sooty Terns are on the increase. The expedition once again brings together the societies from the three Services, bird-ringing being conducted by a member of Royal Air Force Ornithological Society and the adventure training qualifications from a Royal Marine member of the Royal Navy Bird-watching Society.

1. The boat 'Alagi' on the River Gambia, Lt Col Roger Dickey

2. Team photo taken on the Gambia/ Senegal Border, Lt Col Roger Dickey

3. Western-banded Sea Eagle, Lt Col Roger Dickey

4. Hammercop, Lt Col Roger Dickey

5. Egyptian Plover, Lt Col Roger Dickey

6. The River Gambia, Lt Col Roger Dickey

7. Baboons on the banks of the River Gambia, Lt Col Roger Dickey

8. Vervet Monkey, Lt Col Roger Dickey

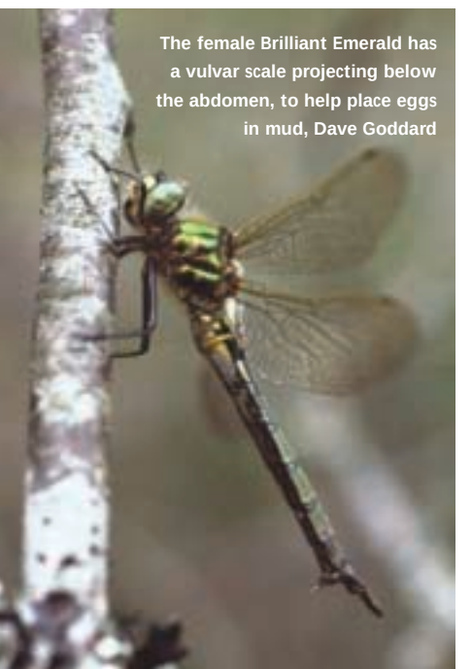
Pippingford

the Tranquil Home of Sussex Dragons

By Alan Gillham, Crowborough MOD Conservation Group

The Banded Demoiselle has consipicuous wing markings, Bill Furse

Pippingford Park Training Area is situated in the High Weald of East Sussex, extending over more than 800 acres of mixed woodland, fields and heathland, all on acid soil. A deep valley running through the centre of the area holds a mile long chain of lakes.



The female Brilliant Emerald has a vulvar scale projecting below the abdomen, to help place eggs in mud, Dave Goddard

The Training Area is a mix of MOD freehold and leasehold land, while some of the lakes are private and not part of the Training Area. However, human ideas of ownership are irrelevant to other species, which are interested only in finding good places to feed and breed. Pippingford is part of the Ashdown Forest Site of Special Scientific Interest (SSSI), Special Protection Area (SPA), candidate Special Area of Conservation (cSAC) and Area of Outstanding Natural Beauty (AONB). Ashdown Forest includes six and a half thousand acres of heath and woodland accessible by the public, as well as various private estates.

The Small Red Damselfly has red legs and red pterostigmas (patches on the front edge of the wing), Stuart Melville

Pippingford is a very pleasant, varied piece of countryside, similar of course to much of the surrounding Ashdown Forest landscape. But for wildlife it is special, it is more than just another part of the Forest. There are far more lakes and ponds here than on the rest of Ashdown. Some date back more than half a millennium, when they powered iron forges, and they have provided a continuous home for aquatic wildlife well away from the effects of agricultural chemicals of the 20th Century. It is even thought that one lake originated at the end of the last Ice Age, when the terminal moraine of a glacier blocked the valley.

The acidity of heathland waters limits what can live in them. However, one group that has evolved to positively enjoy these conditions are dragonflies. The warmer climate is encouraging more species of dragonfly to move into Britain, but at present there are about 40 species living with us. Around 25 can be found at Pippingford, 21 of which probably breed, while the others are occasional visitors. This is not the best site in England (Thursley in Surrey has recorded 28), but it probably harbours the greatest number of species in Sussex. The distribution of these flying jewels between ponds is interesting, but the reasons are not always obvious.

Blue-tailed Damselfly, Lee Manning

The Red-eyed Damselfly spends much of its time on water lily leaves, so inhabits the lakes where these grow, whereas the Ruddy Darter, a blood-red late summer insect with waisted abdomen and black legs, likes vegetated ponds and only occurs in the south of the leasehold land. The sheltered, wooded lakes provide ideal conditions for both Brilliant and Downy Emerald. These similar, uncommon species are tricky to distinguish as they both fly actively and are reluctant to perch near an observer.

The owners of the leasehold land have a great interest in the wildlife of their estate and have dug many ponds in recent years, while more have been created on the MOD's freehold land. With a few long-established lakes and ponds as a source, dragonflies have colonised the new waters enthusiastically. Even the rare and sedentary Small Red Damselfly can now be found at six widely separated ponds (see previous page).

The highest point of the Training Area is the prosaically named 'Hill 170' – that being its metric height above the sea. This can be a very bleak place in winter, catching winds from every direction, but on a warm summer day it can really feel like the top of the world. The Training Pond just below the summit seems very exposed, but in summer everything changes and it can be alive with dragonflies. It is the best spot for seeing the Common Blue Damselfly, which needs close examination to distinguish it from the very similar Azure. Shallow ponds warm up quickly in the sun, and with the water a couple of feet below ground level, this is quite a suntrap. Although training activities disturb part of the pond at times, it is large enough to have quieter areas. Two species of newt could be easily seen in the clear water last summer. It is amazing how the Training Pond managed to hold water better than most in the hot, dry summer of 2003, despite being located almost on a hill top. It is fortunate that the ground on Ashdown Forest contains a high proportion of clay, preventing water draining out of ponds, although we have no defence against evaporation!

In spring, the Large Red Damselfly is the first out in numbers, but is soon overtaken by the Azure Damselfly, the most abundant species with 800

The Training Pond at Pippingford Park

being seen one mid-June day in 2003 and certainly more sunning themselves along the miles of hidden lake shoreline. In May the largest British dragonfly, the Emperor takes to the wing. The apple-green females and blue males seem to prefer smaller ponds and are out several weeks before the superficially similar Southern Hawker. Mid-July to mid-August is usually the time of greatest abundance for dragonflies. Actual flight periods for each species vary considerably, depending on the prevailing weather conditions.

Some species are particularly easy to identify. The Demoiselles, both Banded (see previous page) and Beautiful, with their strongly coloured wings are only present in limited numbers, the latter favouring the stream north of the lakes. The notable White-legged Damselfly can be seen in surprising numbers along the lakes and the stream between them. This

delicate insect, named after its prominent legs, flies quite weakly and can sometimes be picked out of the air with little effort. The Brown Hawker is a large summer dragonfly that, as well as a brown body, has brown-tinged wings, which show up clearly from quite a distance as it patrols over a lake.

Heathland specialists have only a limited number of places to live in Sussex, so Pippingford is honoured with the presence of the Four-spotted Chaser that favours still water and the Golden-ringed Dragonfly that prefers fast-flowing streams. Occasional visitors to Pippingford include Black-tailed Skimmer, which breeds just a couple of miles away, and Keeled Skimmer which has recently colonised the adjacent Nature Reserve – there must be a good chance that a pair of each might visit and establish a new colony. In September 2002 a rare, inappropriately named for Sussex, Common Hawker put in an appearance.

The Golden-ringed Dragonfly is unmistakable, I Hulme

During September as days shorten and the weather cools, the number of active dragonflies diminishes quickly. In a warm autumn a few, mostly orange-coloured Common Darters, may remain on the wing as late as November. Pippingford offers a good range of subtly different waters. A lot of wildlife is sensitive to small variations in the environment, which humans are not aware of. With each species using several ponds, they are insured against major changes at one or two. The value of numerous water bodies has been demonstrated by the fluctuating weather conditions of the early 21st Century. The wet autumn of 2000 nearly filled Three Wards Lake with silt, reducing its attractiveness to dragonflies, but this did protect the other lakes. Then in 2003, with at least eight months of below average rainfall, several ponds dried up completely. This can be valuable as drying prevents use by predatory fish, while some aquatic invertebrates have evolved to cope with droughts.

It is hoped to enhance the ponds with small-scale works including tree removal on the south sides to let in sunlight and warmth, increasing depth to minimise summer drying and removing some excessive vegetation. This work should increase the already impressive number of species and individuals present.

More dragonflies could well appear in future, as the site is not really far from Europe, and such species as Red-veined Darter are increasingly frequent in other parts of the Southeast. The Small Red-eyed Damselfly is actively colonising Southern England, so far being reported from three places in Sussex, including a 2003 sighting at East Grinstead only six miles from Pippingford.

As well as being a member of the Crowborough Conservation Group, I am Voluntary Manager of the adjacent Sussex Wildlife Trust Old Lodge Nature Reserve. One or two new ponds are dug here each year and a good dragonfly community has developed, very much linked to Pippingford. It is interesting to be able to compare the dragonflies of the two properties. Often, populations and their fluctuations are similar, but some species are

The Brown Hawker has brown wings as well as brown body, Charlotte Murray

perplexingly different. The tiny Black Darter has happily adopted new ponds at Old Lodge, but is very limited at Pippingford. Conversely, Blue-tailed, Common Blue and Emerald Damselflies rarely appear at Old Lodge, but are fairly easy to find just a few hundred yards across the fence. The common, powder blue Broad-bodied Chaser which flies from early May is quick to colonise new ponds, so is more frequent at Old Lodge.

Although the dragonfly community at Pippingford is special, there is much else of wildlife interest to be seen. Large numbers of Silver-studded Blue butterflies are on the wing in July, Grey Wagtails fly along the lakes enjoying the waterfalls at the weirs at the downstream end of each, and bats feed on the abundant insects. Plenty of other butterflies can be seen and Fallow Deer find the area a sanctuary from the busier parts of Ashdown Forest.

Why not visit the British Dragonfly Society website to find pictures and further information about these magnificent insects: www.dragonflysoc.org.uk

A Trip Down Memory Lane.....

The Tale of Post Hill

By Mike Preston - The Herpetological Conservation Trust

The sun shone over a cloudless blue sky; trees bustled with the activities of birds that had just arrived and with those who had stayed and waited patiently for the onset of spring. The day was crisp with just a hint of the winter days not long past. Life was good for the three lads - budding herpetologists cycling off the country lane into the green field with the disused byre (often a source of shelter when the rains came). There was no rain today. Two weeks holiday lay ahead, two weeks to roam the countryside looking for snakes and lizards.

We had arrived at one of our most prized sites - a gloriously heather-clad, south facing hill. Here lived some of the jewels of the reptile world. Our magical day had started, we had at last reached 'Post Hill'.

When I was a young reptile fancier - a herpetologist, although the word was probably unknown to me then (some 10 years, well ok, in the sixties actually) - my circle of pals and I spent much time on military land looking for snakes and lizards. Military land was a fertile hunting ground for these gems; miles of white sandy tracks, acres of heather of all ages – a wild jungle to a small, scaly lizard. Hankley Common in Surrey was one of the many sites we visited during our school holidays. As some will know Hankley is not a live-firing training area, and whilst people are requested to keep to the paths and tracks, there are no restrictions on entry. I have to say that we transgressed somewhat in respect of the former, but it is said of the young that they should have an inquisitive and enquiring nature - and that we did! Of all the delights of Hankley there was one

Illustration, Tim Marchant

area which was assured of our attention. On the map it was called Kettlebury Hill.

In the sixties, on top of the hill, there stood a tall pole. It was probably thirty feet or so in height, although we were not sure of its original purpose. There, rotting slowly but resolutely defying nature, did it stand, until eventually it fell to the ground. And so the name of "Post Hill" was born.

We kept the whereabouts of our most productive reptile sites a closely guarded secret from our rivals. Bob's Gully, Fern Hill and Bomb Alley, were the names of our most special sites, which would never be found on maps of the area concerned. To us they were instantly recognisable!

On a good day at Post Hill , all of Britain's six reptiles could be seen. However, its 'pièce de résistance' was the beautiful Sand Lizard. In full breeding colours, the male of this species is an iridescent green and an amazing sight to behold. It is a much-prized animal in the eyes of the young herpetologist. Adders, Slow Worms and an occasional Smooth Snake could all be seen at this reptile Mecca.

Sadly, the days of lizard hunting on Post Hill in the summer sun came to an end. In addition to its reptile population, the site supported a large colony of rabbits whose preference seemed to be browsing on young gorse, so keeping it in check. The mid-sixties saw the return of

Male Sand Lizard © Geoffrey Kinns, Natural Visions

Female Sand Lizard
© Mike Preston

myxamatosis and the rabbit population died out. In a few short years the gorse took over the site, the heather died, and the reptile population translocated elsewhere, or in the case of the Sand Lizard appeared to die out more or less completely. The habitat was ruined, and the beautiful swathe of purple heather had disappeared. Inevitably, the gorse jungle, for that was what the site had become burnt and for months assumed the look of an elephant's graveyard. Dead and decaying gorse stumps littered the once pristine heathland jungle in a grotesque fashion. Both heather and gorse attempted to re-colonise, but birch had set seed and grew rapidly into a copse and then a wood.

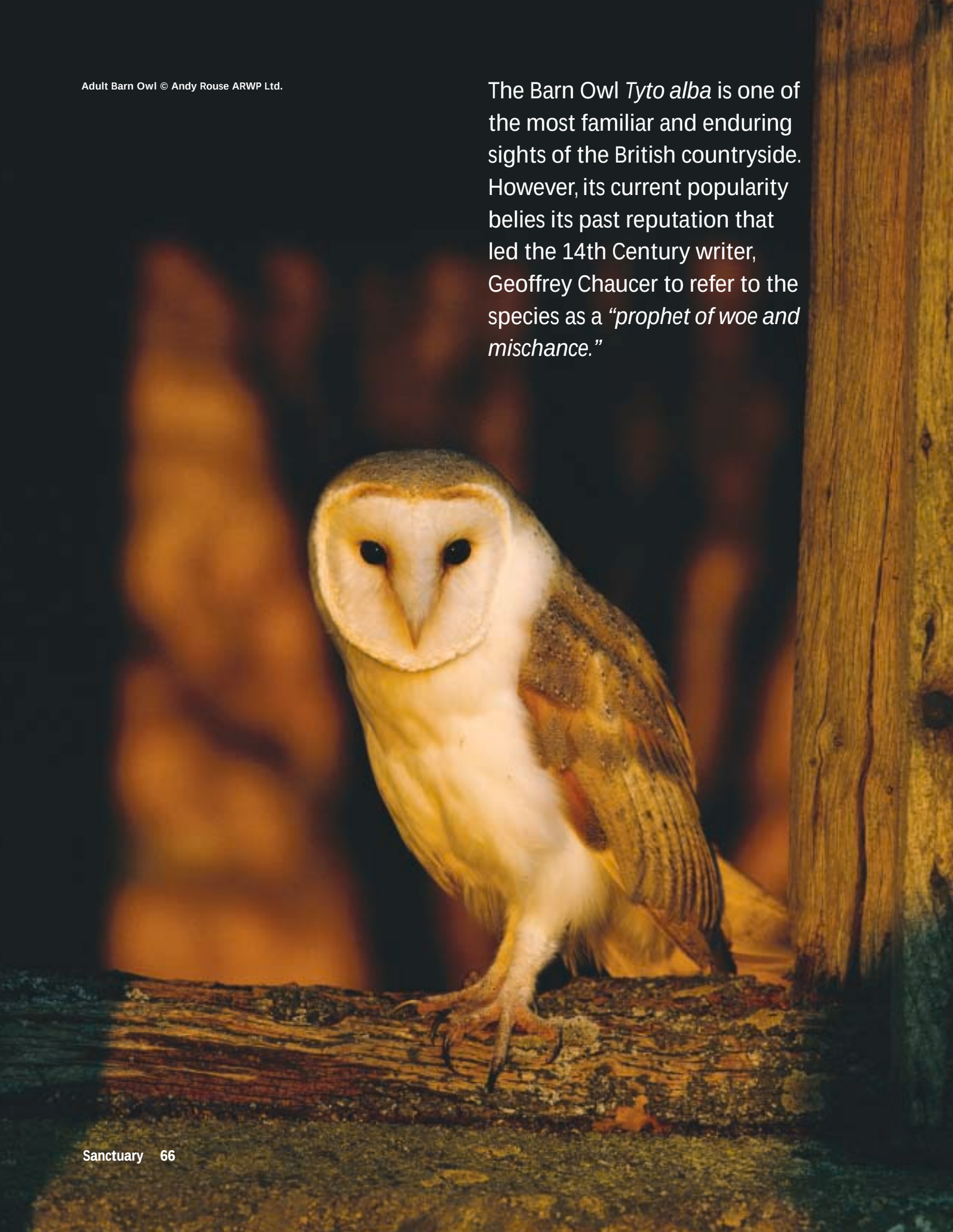
The months and years passed and with them the memories of those tranquil spring and summer days when three lads spent their precious holidays searching for the big green lizards. It seemed the birch and the pine jointly conspired to rid the memory forever.

The three lads grew up and went their separate ways: one emigrated to Canada, one became an accountant, and one went into law. However, for one, the nostalgia of times past and the ever present dream of "what if?" formed a vague but always present idea that perhaps one day the purple hill might live again. The big green lizard might again lie gleaming in the summer sun.

The logistics and cost of achieving this appeared to make the dream virtually unattainable. Enter the Herpetological Conservation Trust (HCT), an organisation especially created in 1989 to preserve and conserve British reptiles and amphibians and the habitats in which they live. In fact, yours truly was appointed Wealden Field Officer for the Trust, with direct responsibility for heathland management on Hankley Common and other Military Sites.

The Trust had for some years been involved in heathland management and restoration on Military lands, and in 1995 the MOD gave its consent for the commencement of felling operations at 'Post Hill'. The work is slow and expensive and jointly funded by the HCT and English Nature, the latter through their Reserve Enhancement (Capital Grant) Scheme. Now, the dream is almost realised: the old heather seed which has laid dormant in the ground for over 40 years is burgeoning forth, and once more the old hill offers its purple mantel to the summer sun. The big green lizards are not yet there, but they will be, they surely will be!

The byre and the green field are gone now, replaced by a modern villa, a nicely manicured garden, a shiny new car in the drive - the usual trappings of modernity and success. Today it feels as though we're a lifetime away from that age of innocence and simplicity that we all believe we remember so well. However, with common goals and successful partnership projects, we can together help to rebuild the scenes we remember so well of days gone by.



Adult Barn Owl © Andy Rouse ARWP Ltd.

The Barn Owl *Tyto alba* is one of the most familiar and enduring sights of the British countryside. However, its current popularity belies its past reputation that led the 14th Century writer, Geoffrey Chaucer to refer to the species as a *"prophet of woe and mischance."*

The Tale of the Yatesfield Three

Barn Owl Conservation on Otterburn Training Area

By Duncan Glen, Conservation Officer, Defence Estates

Otterburn Training Area, Jez Kalkowski

The three fledged Barn Owls, Duncan Glen

A BRIEF HISTORY

The Barn Owl is one of the most widely distributed birds in the world, but is at the extreme North West of its range in Britain. Scottish Barn Owls and, by geographical proximity, those on Otterburn Training Area (OTA) are probably amongst the most northerly populations in the world. The decline in Barn Owl numbers in the decades following the Second World War has been well documented and is generally attributed to changes in agricultural practices. Thousands of hectares of rough pasture hunting grounds went under the plough for arable production, hedgerows and hedgerow trees were destroyed, and old farm buildings were demolished and converted. This devastating loss of habitat was further compounded by the use of bio-accumulating pesticides, which had a particularly severe effect on top predators such as owls and other birds of prey. It has been estimated that the number of breeding pairs in England and Wales fell from 12,000 in 1930 to around 4000 in the mid-1980s. Interestingly, persecution does not seem to have been a factor in this decline, as Barn Owls were generally welcome as a highly efficient controller of rats and mice around farms. Although upland Northumberland escaped the worst excesses of habitat destruction, the effects on the local Barn Owl populations must have been significant. Barn Owls were recorded breeding on Otterburn in 2002 for the first time since 1978.

HABITAT & HABITS

Although the Barn Owl is generally recognised as a bird of mixed, enclosed farmland, OTA provides excellent habitat with vast tracts of rough grassland. These provide ideal conditions for prey animals such as mice and voles and a ready source of food for hungry owls. The main limiting factor for the expansion of Barn Owl populations on OTA is, or rather was, a lack of nest sites (but more of this later).

The home range of the Barn Owl depends on the season and availability of food with a winter range being up to three or four kilometres from the roost site. During the breeding season, the range tends to be much smaller with most hunting taking place within two kilometres of the nest. It is estimated that a pair of Barn Owls require around 1.5 hectares of rough grass within their territory to thrive and produce fledged young.

Barn Owls can breed from March to September with the average clutch of eggs being between four and seven. Incubation occurs over a period of approximately 33 days, during which time the male regularly feeds the female at the nest. When prey is abundant, stockpiles of rodent corpses can be found at nest sites. Traditionally, nests would have been in hollow trees, but Barn Owls have adapted well to nesting in farm buildings, which has given rise to their common name. ▶

Otterburn Training Area, Jez Kalkowski

A pair of owls can often have two broods in a year and it is not unusual to have three quarter grown young birds at a nest site while the female is sitting on another clutch of eggs. Feeding such a large family must be an onerous task for a bird that, despite its large wingspan and impressive appearance, weighs no more than two large apples!

THE YATESFIELD THREE

Barn Owls have become something of a 'cause célèbre' on Otterburn Training Area in recent years, and the effort put into providing nesting sites by DE staff and volunteers has paid dividends. Following the first recent confirmed breeding record in an adapted tea chest in a building at Stewartshiels Farm in 2002, the birds bred at the same site again in 2003, fledging six young. Success also struck two other farms in the same year. The successful fledging of three young Barn Owls at Yatesfield Farm happened against the odds, and the fact that the youngsters survived is a tribute to quick thinking and a huge effort from a range of people including wildlife experts and tenant farmers on the estate.

Our story begins with the early morning removal of bales from a shed by MOD tenant farmer, Selby Robson. The large round straw bales were stacked in a shed for use as cattle bedding. As Selby lifted the final bale from a stack with the front-end loader of the tractor he was surprised by the appearance of a Barn Owl that appeared to fly up from almost floor level. On closer investigation, he discovered a clutch of three eggs on a pile of straw just inches from the floor. It would appear that the owl had found itself an ideal safe nesting place, which mimicked a natural hollow tree nest but had not reckoned on the removal of the bales for other purposes.

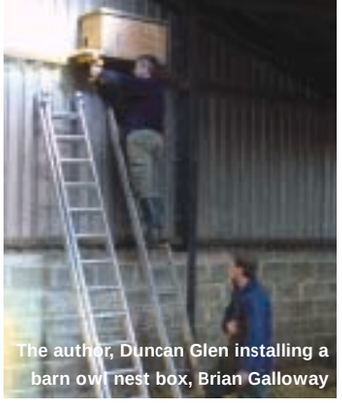
It was obvious that the eggs would soon become chilled, so Selby phoned the DE Office at Otterburn Camp and the race was on to save the eggs. In the first of a series of good fortunes, it was known that one of the other farm tenants, Richard Carruthers at Silloans breeds hens and ducks for show. A swift phone call established that he had a broody hen that could act as a foster mother to keep the eggs warm until we could decide what to do. The eggs were transported carefully across the Ranges in an egg box and were rapidly installed under the slightly surprised hen.

Stewartshiels juvenile Barn Owl, Duncan Glen

Contact was then made with Bryan Galloway, a long standing member of the OTA Conservation Group who has been carrying out ornithological work on the estate for over 20 years. Following Bryan's advice, we were again fortunate that we had a purpose built barn owl box in the stores, which had been provided by Northumberland Wildlife Trust and constructed by prisoners at Castington Prison near Newcastle as part of their rehabilitation. The box was installed on the top of the bale stack at Yatesfield in the hope that the female owl would return and lay another clutch to which we could add the first set of eggs when she laid again. Bryan Galloway had advised that, although Barn Owls were intelligent birds, their ability to count was at best, limited!

Luckily, the owl took up residence in the box

Brian Galloway ringing the owls, Duncan Glen



The author, Duncan Glen installing a barn owl nest box, Brian Galloway

BARN OWL CONSERVATION ON OTTERBURN TRAINING AREA

within a few days and now all we had to do was wait for her to begin laying again. Regular checks were made on the box, but days and then weeks passed with no sign of new eggs. By now we were starting to get worried. What would happen if the owl didn't lay again and, more to the point, what would the hen do if she hatched three young owls that expected to be fed mice and voles?

Then came another stroke of luck. One of the regular checks on the box revealed a single, new egg. The original eggs, now marked with a small cross on the shell were returned to Yatesfield from Silloans and installed in the box alongside. From this point, the box and the owl were left in peace for a few weeks in the hope that the eggs would hatch.

Finally, the time was right to see if our mercy mission had been a success. Bryan Galloway and I returned to Yatesfield, clambered up the bales and opened the box. Immediately, the female owl flew out of the shed and into nearby woodland leaving behind her three downy chicks and one unhatched egg. All our efforts had been successful and the three refugee eggs had hatched. Unfortunately, the most recently laid egg, proved to be infertile.

The youngsters were removed from the box and placed on the bales for their official photocall. Two adopted the recognised survival technique of lying down and playing dead, whilst the third and largest of the group walked slowly backwards making hissing and snoring sounds, which brought comparisons with old man Steptoe immediately to mind! All three youngsters were ringed by Bryan, who is a licenced bird ringer, in the hope that any future returns will give evidence of their movements. They were then promptly returned to their box.

A final visit to the site a few weeks later found only the female and one of the youngsters at home, both of which flew out of the box on our approach. The conclusion to the whole exciting and nerve wracking episode was that the "Yatesfield Three" had survived against the odds and will, hopefully, play their part in enhancing the Barn Owl population of OTA in the coming years.

An unusual babysitter! A broody hen temporarily incubated the barn owl's eggs while a new home was erected for the Barn Owl, Rosie Rowe

The evidence of the increased breeding of the species on Otterburn has added impetus to the Barn Owl Nest Box Programme with the ultimate aim of having at least one box on each of the thirty-one farms on the Training Area. The boxes have been built to British Trust for Ornithology specifications by the OTA Joiner, Brian Corbett and, at the time of writing, only four remain to be installed. Tenant farmers have, in the main, been more than happy to have nest boxes installed in a variety of farm buildings and have also been able to give a great deal of useful information on sightings and roost sites. This information, coupled with the discovery of droppings and characteristic pellets of regurgitated fur and bones in a number of buildings has indicated that we have more Barn Owls on the Training Area than we first thought.

The erection of the nesting boxes has tested our ingenuity to the full, but we have yet to fail thanks to lateral thinking and copious amounts of wood screws, baler twine and cable ties and the development of a series of methods named after individual OTA farms. Bryan and Duncan are giving serious consideration to documenting these in a technical manual to assist other such programmes across the MOD Estate and further afield.

At present, Barn Owls are thriving across OTA thanks to their new man-made nesting sites and an abundance of rodent food which may well have been enhanced by the increase in rough grass habitat created by grazing reductions. This has been achieved by limiting the numbers of grazing livestock across the Training Area as the vast majority of tenant farmers participate in the Countryside Stewardship Scheme which gives them payments in return for environmental enhancements. However, a note of caution should be sounded. The survival of the Barn Owl is tied to the size of the Short Tailed Field Vole population, which is known to be cyclical. Vole numbers appear to be at an all time high, but a population crash will occur in the future limiting prey available to Barn Owls and other raptors. Following the success of breeding in 2002 and 2003 and the erection or refurbishment of over twenty nest boxes, the 2004 breeding season is eagerly awaited. It is hoped that further breeding sites will be confirmed and that the Barn Owl will continue to be a symbol of the success of the conservation efforts at Otterburn.

Footnote – Due to their rarity, Barn Owls are protected under Schedule One of the Wildlife & Countryside Act 1981, which requires a licence from English Nature to check nest sites and disturb the birds. Both Bryan Galloway and Duncan Glen hold such licences. The author Duncan Glen took up the newly created post of Conservation Officer at Otterburn Training Area in October 2002 and is working on a wide range of environmental initiatives on Otterburn Training Area.

Dstl's Hidden Treasures

By Sue Ellison and Stuart Corbett, Dstl Porton Down

Behind the gates of the United Kingdom's leading defence scientific research site lie a wealth of natural beauty and wildlife, which thrives within a landscape untouched by modern agriculture. Scientists at the Defence Science and Technology Laboratory (Dstl) site at Porton Down in Wiltshire are surrounded by a landscape where time has stood still and allowed nature to flourish. The Ministry of Defence (MOD) purchased Porton Down in 1916 as an "experimental ground" in response to the first use of gas by the German Army. Agricultural work on the 7,000 acre site ceased as it became an outdoor laboratory for the new owners. Nearly ninety years on, the modern advances in agriculture which have brought pesticides and intensive farming techniques to much of the British landscape have bypassed this unique site. As a result, a remarkable diversity of species has survived undisturbed in a habitat, which forms part of the largest continuous tract of chalk downland remaining in Britain today.

Meadow Clary, Stuart Corbett

A magnificent stand of juniper on the Porton Down range

The range, which is still a working laboratory, is a sanctuary for some 60 species of birds, almost 200 species of spiders and a huge diversity of fungi and flora, including orchids and lichens. Many rare invertebrates can be found, along with an estimated 35 billion Yellow Meadow Ants that have, over time, created a landscape of over three million anthills!

As their habitats have been destroyed, elsewhere, many native butterfly species have suffered major population declines across Britain. Porton Down is now a valuable reservoir for a number of species, boasting 46 of the 55 native species of butterfly. These include the Duke of Burgundy Fritillary, Chalkhill Blue, Silver-spotted Skipper, Marbled White and Pearl-Bordered Fritillary.

The many interesting plants include the endangered Meadow Clary, Burnt Tip Orchid, Bird's-nest Orchid, White Helleborine and Fragrant Orchid. Meadow Clary is listed as endangered but at Porton Down dense patches are present, with the total population estimated to be 3,000 to 4,000 individual plants – the second largest colony nationally.

Stuart Corbett is the Dstl Porton Down Conservation Officer. He oversees this vast landscape of natural treasures, half of which is designated a Site of Special Scientific Interest (SSSI). Stuart monitors and advises on management of the diverse wildlife of the site, helping the establishment keep an appropriate balance between its vital defence work and protection of this rare ecosystem.

Stuart Corbett, Dstl's Conservation Officer

Stuart describes his job as a "dream come true". "My appointment demonstrated the recognition that the MOD gives to environmental concerns and the value of Porton Down as a wildlife site", he says. One of Stuart's roles is to ensure that Porton Down is a key player in the Salisbury Plain LIFE Project, a project which began in July 2001 to improve habitat and wildlife management at Porton Down and the Salisbury Plain Training area. The

Marbled White butterfly, Stuart Corbett

European Commission is contributing 50 % of the £2.13m required for this four-year project. The remaining funding is contributed by English Nature, Headquarters Army Training Estate, Dstl, The Royal Society for the Protection of Birds, Butterfly Conservation and The Centre for Ecology and Hydrology.

At Dstl Porton Down one of the major actions over the four-year period is the removal of 60 hectares of scrub and 40 hectares of Scots Pine from the SSSI. This work will greatly benefit the chalk grassland communities, the stands of rare Juniper, Marsh Fritillary Butterflies and the rare wader-like bird, the Stone Curlew.

View across the chalk downland of Dstl Porton Down

Juniper populations are declining throughout Europe. In Southern England the species is now confined to small areas of chalk and limestone soils. Dstl Porton Down is the most important site within this area, containing approximately 20% of the population. It is hoped that the project funding for conservation management work will significantly improve the rejuvenation of Juniper, preventing the extinction of this species at the site.

The Stone Curlew is an important summer visitor to Porton Down. The Royal Society for the Protection of Birds (RSPB) works closely with Dstl conservation staff throughout the breeding season. All Stone Curlew chicks are ringed with individual colour combinations to enable accurate monitoring of the population. It is through this and the subsequent sightings of these birds that information on breeding productivity and mortality from year to year is recorded. Intensive conservation efforts at Porton Down since the mid-1980s has aimed to halt the decline of the species in the UK. Special nesting plots have been created around the periphery of the downland on arable fields to allow for expansion of the existing breeding range. In the wider farmland and countryside surrounding Dstl Porton Down, this work also continues under the EU LIFE project with involvement of the RSPB and farmers.

Stone curlew eggs demonstrating superb camouflage, Stuart Corbett

As well as helping to manage the SSSI, Stuart regularly collects data and sends it to the Environmental Change Network (ECN). ECN is gathering environmental information from 50 sites nationwide to build up a picture of climatic and other environmental changes in the UK over a 30-year period. He analyses his collected samples for pollutants such as Nitrogen Dioxide in the atmosphere and a number of chemicals in rainwater and soil. He monitors a range of flora and fauna, including birds, bats, butterflies, beetles and plants to detect whether any population changes might be due, for example, to global warming.

Combating very dense scrub using a tractor-mounted flail

Just over 10% of Dstl Porton Down's range is woodlands. The most common tree species are Beech, Ash, Cherry, Scots Pine and Hazel, with lesser amounts of Oak, Larch, Lime, Sycamore, Lawson Cypress, Norway Spruce, Corsican Pine and Yew. Most of the woodland originates from amenity plantings towards the end of the 19th Century. However, ancient oak woodland at Thorny Down, in the southwest corner of the site, includes one of Britain's finest beech hanger habitats.

In addition to the immense natural history interest of the site, the range is an important archaeological landscape where, so far, more than 200 archaeological features have been recorded. Man has lived at Porton since early prehistory and evidence survives today in the form of barrows, cemeteries, earthworks, flint mines and enclosures. Most of these remain untouched. There are 115 Bronze Age Round Barrows, including the largest Bell Barrow in Wiltshire.

Dstl Porton Down hosts many group visits to the site, but days are booked up early, and the dates for the summer of 2005 are already filled up! For further information contact Stuart Corbett on sjcorbett@dstl.gov.uk

ATE Penhale Camp

By Oliver Howells, Defence Estates
Environmental Support Team

Penhale Beach, Defence Estates Exeter

Abseiling – one of the many activities undertaken at Penhale
Courtesy of Tony Clarke

The north coast of Cornwall has long been revered for its dramatic scenery, unspoilt beaches, sheltered woodlands and cosy fishing harbours, where walkers of the South-west Coastal Path can rest their weary limbs. The abundance of wildlife and industrial archaeology littering the clifftops has prompted conservation organisations to acquire large swathes of this dramatic landscape and seascape, which has been shaped by the pounding of the Atlantic Ocean.

This is a region where recreation and conservation are cornerstones of the local economy. But look beyond the South-west Coastal Path, holiday parks and surfing beaches and you will discover one of the jewels in the crown of the Army Training Estate. Penhale Camp encompasses cliff, maritime grassland, foreshore, sand dune, dune slack, willow carr and scrub habitats of considerable value. Like so many military sites, a benign occupation of the site has helped to preserve these sensitive habitats.

The dry training area at Penhale Camp stretches across the sand dunes, immediately behind Perranporth Beach, and the South-west Coastal Path runs for approximately three miles on the seaward side. As a training area it provides excellent facilities for adventure training and is used extensively by Regular, Reserve and Cadet units from all over the country.

The Camp lies just to the south of Newquay and is superbly situated for a range of activities, including climbing, sailing, canoeing, orienteering, swimming, surfing and mountain biking. With accommodation for up to 670 personnel, a 25 metre range and such a large dry training area, the site hosts over 10,000 service men and women each year. A manned Royal Navy Wireless Station is also located on site, so there is a permanent MOD presence. Former military use has left a legacy of WWII ordnance and two mortar rounds were unearthed last year and dealt with by a team of specialists.

All training takes place against the backdrop of a site rich in wildlife and archaeology. Penhale Camp spans over about half of Cornwall's most extensive dune system with a full range of vegetation. The lack of public access has helped these dunes remain remarkably intact. This is in marked contrast to neighbouring sites such as Holywell Bay, where visitor pressure is very high. This is reflected in the fact that the Camp lies almost entirely within the Penhale Dunes Site of Special Scientific Interest (SSSI).

Penhale Dunes have also been recognised as internationally important, with its designation as a candidate Special Area of Conservation (cSAC) under the European Habitats Directive 1992. The extent and quality of the yellow (mobile) and grey (fixed) dunes are unique in Cornwall. Amongst the more important habitats they support are the dune slacks created by periodic flooding in the bottom of dune valleys. In addition, there are the herb-rich grassland on the grey dunes that are grazed so avidly by a large rabbit population. These and other habitats at Penhale support a range of rare species.

Amongst the higher plants the internationally rare Shore Dock *Rumex rupestris* and Cornish Gentian *Gentianella anglica subsp. cornubiensis* are the most notable residents. Shore Dock is usually found at the head of beaches on rocky sea coasts. However, at Penhale it is associated with the dune slack habitats more characteristic of fens. The slacks support one of Britain's largest and most important populations of the plant.

Shore Dock
© Ro Fitzgerald

A healthy population of the Silver-studded Blue Plebejus argus butterfly is well known thanks to the efforts of the Penhale Conservation Group

Silver-studded Blue © Stephen Davis

Ligger Point, Defence Estates Exeter

Another internationally rare species is Petalwort *Petalophyllum ralfsii.* This pale green liverwort is restricted to damp calcareous dune systems at just 20 sites in the UK. The presence of the nationally scarce Scrambled Egg Lichen *Fulgensia fulgens* confirms the importance of the site for lower plants. Penhale Sands is also one of the richest sites for mosses in Cornwall, with 19 species classed as either local or nationally rare.

A healthy population of the Silver-studded Blue *Plebejus argus* butterfly is well known thanks to the efforts of the Penhale Conservation Group. This attractive blue butterfly is much more typical of heathland habitats but occurs occasionally in calcareous dunes where there is short and sparse vegetation. Another priority species on the UK Biodiversity Action Plan list is *Bombus humilis* and Cornwall appears to be a stronghold for this increasingly rare bumblebee. In total 11 nationally rare species and 36 nationally scarce species have been recorded at Penhale Camp. This includes spiders, micro-moths, macro-moths, wasps, mining bees, beetles, weevils, flies, bugs, a cricket and a dragonfly.

As well as harbouring a wealth of wildlife, stable dunes can conceal other treasures. Part of the buried remains of St Piran's church are on the MOD land. This former parish church is a Scheduled Ancient Monument (SAM) that was abandoned to the sand in 1805. It includes St Piran's Cross, a large granite cross that lies within the churchyard. A linear bowl barrow and an Iron Age cliff castle at Penhale Camp have also been designated SAM's.

In common with other parts of this coastline there are extensive mining remains on top of the cliffs. The mining of lead, tin and copper were all practised here and Ligger House on Penhale Point is the former count house for Penhale Mine. Following its designation as a Listed Building, Ligger House continues to be maintained and used by the military for non-operational purposes.

The wind blown sands are thought to preserve some of the best historic landscapes to be found in Cornwall. So the Iron Age, Romano-British and medieval pottery so far found at Penhale may hint at the further riches waiting to be unearthed.

The SSSI and cSAC designations covering Penhale Camp place certain responsibilities on the MOD, as it attempts to reconcile a heavy training load with considerable conservation interests. These are being addressed through an innovative partnership project between Army Training Estate, Defence Estates, English Nature, Cornwall County Council and Bourne Leisure who own a holiday facility nearby. Together the partnership funds a full-time Ranger, Sarah Taylor, who undertakes a variety of conservation, education and wardening tasks across the Penhale Dunes cSAC. The focus of the partnership is the SAC Management Group, which includes representatives of all landowners within the cSAC, of which the MOD is the largest (50%). The Penhale Camp Commandant chairs the group.

The partnership project and the Ranger post is already being hailed a considerable success. Sarah's work with schools, conservation bodies, special interest and community groups, as well as each of the partners, has helped improve the condition of the site and builds closer links with the local community. She organises beach clean-ups, visits local schools,

Distant dunes Penhale Sands, Defence Estates Exeter

The wind blown sands are thought to preserve some of the best historic landscapes to be found in Cornwall

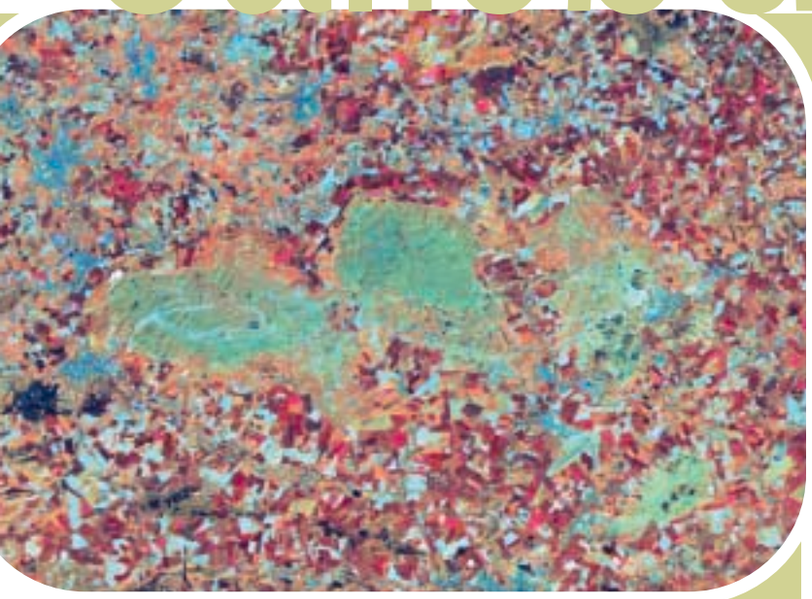
Bombus humilis, © Robin Williams

Penhale Beach, Defence Estates Exeter

hosts conservation walks, briefs military units, organises scrub work parties, and is a friendly, recognisable face to all visitors. Sarah is also assisting Defence Estates with the production of a site management plan.

The MOD Conservation Group is also supporting this plan, which will determine priorities for future management. With a local hostelry serving as the meeting place, it is perhaps little wonder that Penhale Camp has such a vibrant and well attended MOD Conservation Group! The group includes experts in many fields and through the years they have made an invaluable contribution to the site. Like so many Conservation Groups these experts provide a much needed local perspective, and they also ensure continuity as service personnel come and go. With a laid back commitment so typical of Cornwall, the Penhale Camp Conservation Group is almost as varied and interesting as the dunes themselves. With support from this group and all its local partners, the MOD is in a strong position to continue its excellent stewardship of this unique corner of South-west England.

Salisbury Plain



The above Landsat Image of Salisbury Plain highlights the whole of ATE Salisbury Plain and Dstl Porton Down (bottom right), CEH Centre for Earth Observation

The main aims of the project are to address some of the large-scale issues affecting the favourable conservation status of the chalk grassland habitats and species for which the Plain is designated

Cattle in a temporary penning, August 2003. Note the ungrazed margin outside of the penning

By Stephen Davis, Project Manager of the Salisbury Plain Life Project

Salisbury Plain and Porton Down are vast expanses of unimproved chalk grassland in a sea of otherwise agriculturally improved land. These sites are the only substantial areas of chalk grassland surviving on level ground in North Western Europe. The area forms 41% of the United Kingdom's Chalk Grassland resource. Elsewhere in Europe examples of such grassland have disappeared under the plough. MOD first purchased land on the Plain in 1897 and military ownership has since that time protected the land from the agricultural improvement and development seen elsewhere. The Landsat Image of Salisbury Plain (left) illustrates the whole of the Army Training Estate (ATE) Salisbury Plain and Defence Science and Technology Laboratory (Dstl) Porton Down (bottom right). The image is a remarkable illustration of the impacts of modern agriculture on the countryside.

The wide expanses of chalk grassland support a wonderfully rich diversity of plants, birds and insects. These include a wide variety of farmland birds, seven of which are found in nationally significant numbers. Porton Down and the ATE Salisbury Plain also support 20% of the United Kingdom's Stone Curlew populations, with 12.4% of the UK's resource located nearby on adjacent farmland. Porton Down is also home to 46 species of the 56 native butterfly species, whilst Salisbury Plain boasts the largest colony of the rare Marsh Fritillary butterfly in the UK.

The last 50 years has seen a number of rapid changes affecting the grasslands on the Plain. Early aerial photographs show a treeless landscape, the result of centuries of stock grazing, but there has been a rapid encroachment of scrub in the last 50 years. Alongside this, 2000 hectares of plantation have been planted.

The Salisbury Plain LIFE Project is a major four-year conservation restoration project centred on Salisbury Plain in Wiltshire, including Porton Down. The main aims of the project are to address some of the large-scale issues affecting the favourable conservation status of the chalk grassland habitats and species that the Plain is designated for. The Project has been fully operational for three years and has made significant progress towards achieving its objectives.

Life Project

Main targets - Project objectives

Much of the practical conservation work detailed in the project covers remedial actions to restore habitats to favourable condition after long periods of neglect.

- 294 ha of scrub cleared to benefit chalk grassland, Juniper, Marsh Fritillary and Stone Curlew.
- 100 ha of broad-leaved plantations removed to restore chalk grassland.
- 40 ha of conifer plantations removed to restore chalk grassland.
- Grazing restored to 3,600 ha of grassland.
- 'A herdsman project'. Extensive cattle grazing on the Plain introduced, enabling greater control of this form of grassland management.
- 25 new stone curlew breeding plots created on farmland.
- Increased environmental interpretation on sites and educational and promotional material produced.

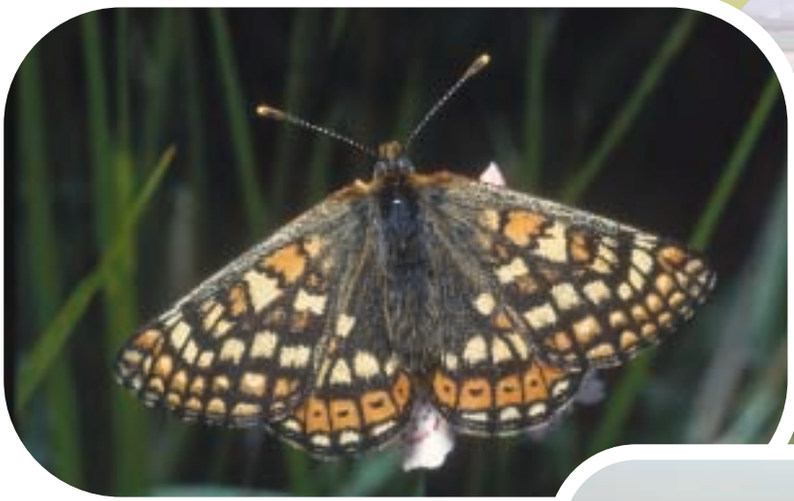
Funding Partners

The European Commission LIFE Nature fund contributes 50% of the Projects total costs of £2,130,000 over four years, finishing in September 2005. The other 50% is matched funding, provided by Headquarters Army Training Estate, English Nature, Dstl Porton Down, the Royal Society for the Protection of Birds, Butterfly Conservation, and the Centre for Ecology and Hydrology.

The four sites involved in the project, Salisbury Plain, Porton Down, Parsonage Down National Nature Reserve (NNR) and Pewsey Downs NNR are all candidate Special Areas of Conservation (under the European Habitats Directive 1992), while Salisbury Plain and Porton Down are also designated Special Protection Areas for birds (under the European Birds Directive 1979). Across these sites conservation management will benefit chalk grassland, Juniper, Stone Curlew and the Marsh Fritillary Butterfly.

Plantations on slopes of Sidbury Hill, August 2002

Marsh Fritillary Butterfly



Herdsman stock grazing in the Warminster Ranges, December 2003

MAJOR ACTIONS

Felling of plantations

The Life Project funds have enabled us to be very ambitious in our objectives and to tackle tasks that would normally be beyond Partners' existing budgets. This is very well illustrated in the restoration of chalk grassland on the slopes of Sidbury Hill Iron Age Hill Fort to the north of Tidworth (in the east of the Training Area). This has been the largest single action in the Life Project, involving the felling and removal of 40 ha of mixed conifer and beech plantations from the north, west and south facing slopes below the Hill Fort. In the context of Salisbury Plain 40 ha may not sound large; however, most other individual chalk grassland sites in other counties in the UK are actually smaller than 40 ha.

Two large chipping machines were operational on site for six months between September 2002 and March 2003 clearing approximately 50,000 trees. The machines were capable of picking up and chipping the whole tree, which reduced waste and ensured clean ground conditions after felling. This increases the potential for rapid restoration of chalk grassland. All chippings were removed from the site and were used for both power generation and composted garden mulch. Species expected to benefit immediately from this exercise include the Adonis Blue and Grizzled Skipper butterflies.

In addition to this, a further 100 ha of young broad-leaved plantations are due to be removed (80 ha are complete to date) to restore areas of species rich chalk grassland planted up between 1960 and 1990. These are all in areas previously identified as sites retaining a rich chalk grassland flora (Defence Estates National Vegetation Classification Survey 1996).

Felling and chipping plantations on Sidbury Hill, October 2002

Herdsman stock free grazing on the Imber Ranges, June 2003

Restoration of grazing

The most innovative action within the Project has been the introduction of a herdsman stock of free ranging cattle on the Imber Ranges on the west of the Plain. In June 2003, 120 cows and calves were introduced to an area of 1200 ha to the West of Imber Village. The purpose of this is to introduce a more ecologically sensitive grazing regime than is otherwise possible elsewhere on the Plain.

The 'normal' grazing regime on the Plain is to erect temporary pennings (using electric fencing) of approximately 8 ha in size for short periods (2-3 weeks) which are grazed by large numbers of stock (100 cows, or 400 sheep). This regime has been designed to fit in with military training activity. However, from a nature conservation viewpoint this regime is rather insensitive in that the long sward is reduced to ground level over a very short period. This may have a direct impact on, for example, any invertebrates or nesting birds using the penning. The pennings are located on rotation, and grazed areas are rested for anything between 6 and 24 months before grazing resumes. A five metre ungrazed margin is retained adjacent to track edges and a minimum 20 metre ungrazed margin is retained between pennings.

In contrast, the herdsman's stock are walked out from their overnight penning to spend the whole day grazing freely, being moved on by the herdsman continually during the day. They are then returned to their penning for the night, where water is supplied. This is an experimental exercise that will run for two years until the spring of 2005. The project aims to see whether such free grazing has any conflicts with military training activity. It also aims to investigate the nature conservation benefits of such grazing compared to the pennings system and to see whether it would be an economically viable option for farming livestock on the Plain.

Extensive scrub on the strip lynchets within Battlesbury Bowl, due for clearance after disposal of any unexploded ordnance

Clearance of scrub

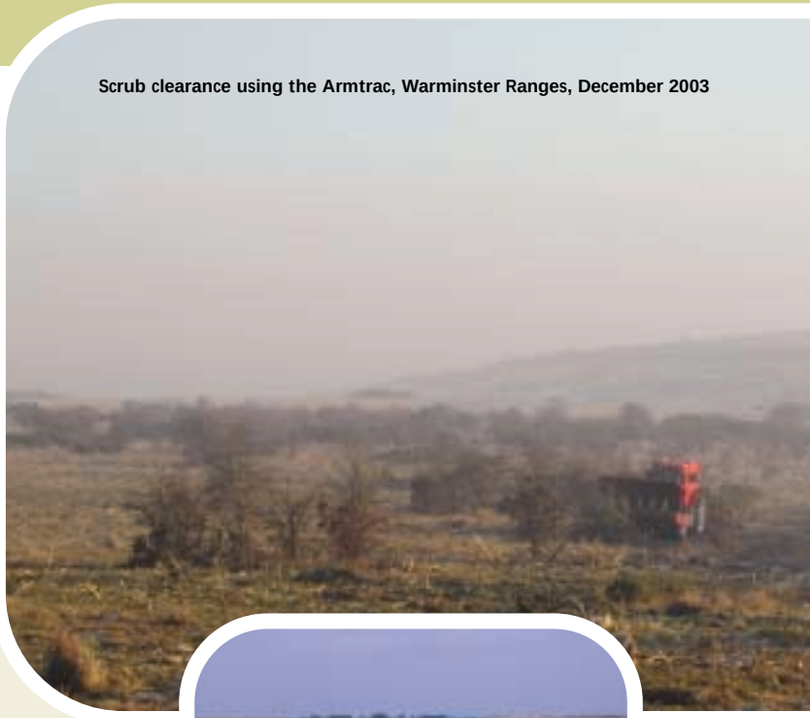
The other major activity within the project has been the restoration of 200 ha of grassland by the clearance of invasive scrub species, principally hawthorn and gorse. This again has presented some major challenges, most significantly in areas where explosive ordnance may present a hazard due to areas of scrub being present in current or past live firing danger areas.

To safeguard aginst the risk of explosive ordnance, an armoured tractor (Armtrac) with a large chain flail on the front has been used in the live firing areas to clear dense areas of gorse and hawthorn, which have invaded the chalk grassland. This machine has proved very effective at clearing the dense gorse, but does not appear to be quite so efficient in tackling the hawthorn. Nevertheless, it is the only option where explosive ordnance is a significant concern on health and safety grounds. The other reason to use the Armtrac is that the most significant areas of scrub growth occur in existing live firing areas, where no grazing has been undertaken and where there is a limited close-down period for firing. This effectively restricts operations to August and the Christmas close-down period in December. The Armtrac machine is able to cut 2-3 ha per day depending on the density of the scrub. As a follow up, cleared areas will be sprayed if re-growth is significant.

From a conservation perspective, hand cutting and burning is the best option, but this is the most expensive and time-consuming option. On a site of the scale and complexity of Salisbury Plain, we have had to consider the most time and cost efficient methods, even if the initial conservation benefit may not be as good as hand cutting.

Slopes of Sidbury Hill cleared of plantations, July 2003

In certain sensitive locations, hand cutting of scrub is the only option. In Battlesbury Bowl near Warminster extensive scrub cover occurs on a series of ancient strip lynchets. This is the former site of the Arms Firepower Display, which was moved to Imber Clump in 2000. Consequently, there is a significant health and safety risk due to the likely presence of unexploded ordnance. Restoration of the site will involve the clearance and disposal of unexploded ordnance, before scrub cutting can take place.



Scrub clearance using the Armtrac, Warminster Ranges, December 2003

Scrub encroachment, Warminster Ranges, August 2002

The Partnership

The wider benefits of the Life Project have included the establishment of a dedicated project team on site at Westdown Camp. The team provides a focal point for facilitating project actions and a single point of contact away from the general distraction of reactive work. This arrangement has fostered a very co-operative and supportive working relationship between the Army, Defence Estates and the other Life partners, who all work towards common goals for the conservation of this special habitat.

Sundew *Drosera intermedia* grows in wetter areas on bare patches of peat, surviving in this nutrient starved environment by trapping and digesting insects. Dante Munns, RSPB

Battle to Save Dorset's Disappearing Heathland

By Dante Munns, Manager of the Royal Society for the Protection of Birds (RSPB), Dorset Heathland Project

The Ministry of Defence is the largest owner of lowland heathland in Britain, but this unique and special habitat holds more than just military value. It has a fascinating and ancient history – and is consequently littered with archaeology. It is also unique as a wildlife habitat in this country, supporting a plethora of rare and exotic wildlife – including species that we do not always recognise as existing in the UK. The Army, together with Defence Estates holds an important position as guardians of what is now a diminished and fragmented habitat.

Once felled the trees need to be removed from the heath to reduce soil nutrients, Nigel Symes, RSPB

From about 3000 BC, as hunter gathering gave way to farming, the forests were cleared and the ground was cultivated or grazed

Heathland is lost to scrub invasion at a rate of 2% per year. Heathland restoration is a battle against succession, Dante Munns, RSPB

Many of the most important heathland sites in Dorset fall within Army training areas. The Army and Defence Estates are working in partnership with the RSPB, English Nature and other conservation organisations to ensure that this special habitat is brought into pristine condition and that mechanisms are in place to keep it that way.

From about 3000 BC, as hunter gathering gave way to farming, the forests were cleared and the ground was cultivated or grazed. On the infertile lighter sands and gravels, these soils were soon exhausted and the early fields were abandoned or reverted to grazing. Here, where the ground was free draining, acidic and poor in nutrients, heathers soon spread and huge areas of heathland became established.

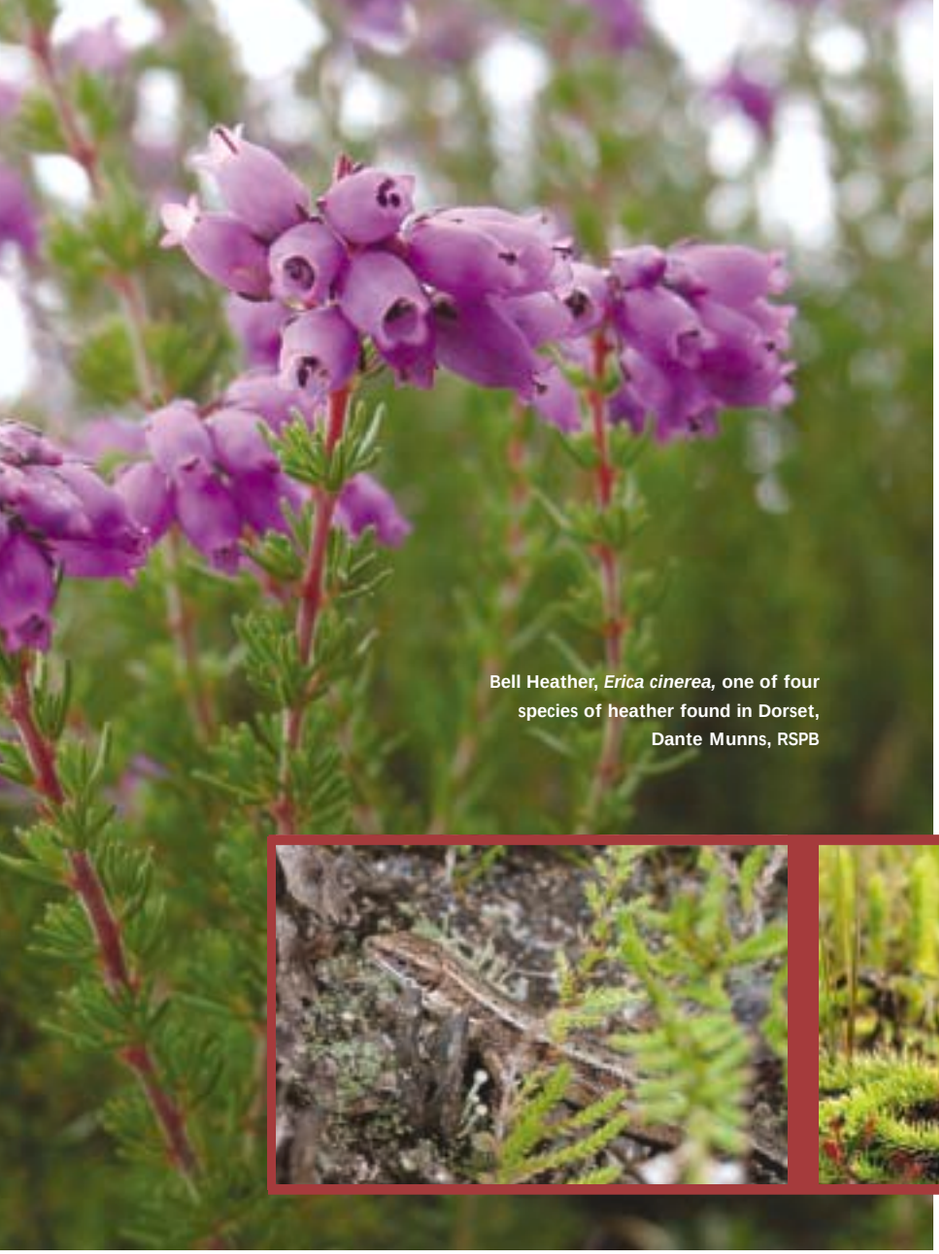
This created an expansive rolling landscape dominated by heather and gorse, with trees - where they occurred at all - being restricted to the wet valley bottoms which continued to be exploited by man for the meagre resources they had to offer. Grazing of cattle, ponies and sheep was accompanied by turfing for fuel, cutting of heather for thatch and harvesting of bracken to be burnt for fertiliser. All of these activities prevented the heathland soils from developing any fertility, so perpetuating the heathers' dominance. For the most part this was a peasant economy, with the poorest people farming the poorest land in a way that persisted for thousands of years.

Due to changes in farming methods in the UK, huge areas of heath were converted to arable land from the late 19th Century onwards, and vast areas of heathland were planted with alien conifers to provide timber for strategic reasons following the First World War.

Other land-uses have since taken their toll - mineral working, housing, golf courses, waste disposal sites and further conversion to arable land or forestry – continued to eat away the heathland. Between the early 19th Century and late 20th Century, three quarters of the UK's heathland was lost, which is a pattern echoed across Europe. For example, Thomas Hardy's vast "Egdon Heath" was reduced from a single area of some 40,000ha to 5600ha of scattered fragments.

In the 1970s and 1980s heathland was still being lost at an alarming rate, as the demand for housing increased. Legal protection at the time was inadequate to prevent the loss of heathland. Lobbying by conservationists including the RSPB led to the passing of the Wildlife and Countryside Act in 1981. Subsequent decisions following planning enquiries finally stopped the long history of large-scale conversion of heathland. However, a study in 1987 showed that despite this protection from direct destruction, the area of heathland was still declining due to scrub encroachment. The Dorset heaths, broken into over 150 fragments, were still at risk of being lost all together.

The RSPB manages in excess of 1200 hectares of heathland on its own nature reserves in Dorset, including Arne, where we have been restoring heathland since the late 1960s. As with all other areas of heathland that are no longer farmed there is a constant fight to prevent pine and birch tree scrub from invading the heath. People power exists on the nature reserves in that we and the other conservation organisations manage to preserve the scrub where it is wanted. However, most heathland is not in nature reserves, and in Dorset the scrub invasion problem had become critical. In order to save the remaining heathland from extinction, the RSPB set up the Dorset Heathland Project to restore other parcels of heathland that was suffering the worst of scrub and bracken invasion. Heathland restoration is expensive and we were only able to do this because of funding from British Petroleum Exploration, the EU LIFE Nature programme, and SITA (through the Landfill Tax Credit Scheme), and by being able to secure grant aid from English Nature and the Countryside Stewardship scheme.



Bell Heather, *Erica cinerea,* one of four species of heather found in Dorset, Dante Munns, RSPB

We are now starting to recognise the value of our heathland, not only as a unique survivor of a culture of a bygone age, but as a fascinating and colourful landscape, rich in wildlife and in association with the past history of our countryside.

The Heathland Project has been focussing on getting the habitat right, in order to provide the right environment for the very special heathland species that depend on it. The Dartford Warbler was reduced to just a handful of pairs in the 1960s and was in real danger of extinction in this country. Its status has improved markedly since then and in 2003 it was moved from the Red List to Amber List of Birds of Conservation Concern. It is thought that there are now in excess of 2000 breeding pairs in the UK. Although Dartford Warblers tend to occur at highest densities on managed heaths, heathland managers cannot claim total responsibility for this recovery. A recent run of mild winters has increased survival rates - but a severe winter could lead to an equally dramatic population crash. Nevertheless, improving the condition of more heaths should aid winter survival.

Common Lizard, Dante Munns, RSPB

Marsh Clubmoss, Dante Munns, RSPB

The Project began in 1989 and has grown to include two fully equipped field teams of five, undertaking scrub and bracken removal, heather management and a range of species-specific management. The Project originally aimed to increase the area of heathland in Dorset by 10% (560ha) by 1999. This target was passed in 1996 – three years ahead of schedule. To date the Project has managed in excess of 1000 ha of heathland. This considerable milestone was celebrated at the Bovington Tank Training Area in August last year. The event was attended by the Minister for Nature Conservation, Ben Bradshaw MP, the Chief Executive of Defence Estates and the RSPB as well as many of our partner organisations and sponsors.

The Heathland Project has a long history of working with the Army and Defence Estates in Dorset. Work began on Bovington in 1989; in total 20% of the 1000ha recovered has been on MOD sites at Bovington, Lulworth, West Moors, Hurn and Barnsfield. However, the Heathland Project's work has not just been with the MOD. Over the last 15 years, the Project has restored heathland on more than 50 sites across Dorset, working with numerous different landowners and tenants and with other conservation organisations.

The Nightjar is an extraordinary bird that migrates from sub-Saharan Africa to breed on the Dorset heaths each May. Superb camouflage helps this ground nesting bird to escape detection by predators, and its extremely large eye gives it away as being nocturnal, taking insects on the wing. Analysis of data from sites managed by the Heathland Project shows that Nightjars are able to nest at higher densities in areas that have been managed, as opposed to those left unmanaged.

Woodlark are a pioneer species that chooses to nest in patchy vegetation, so newly cleared areas should be very appealing for them. More specialised management work has been carried out for this species at the Bovington Tank Training Area, creating habitat to replace that lost during the construction of the new tank park. This also replaced habitat for a bird not usually associated with heaths – the Little Ringed Plover.

The heathland habitats on the Dorset ranges are home to all sorts of wildlife. There is a long list of insects that are so specialised that they cannot occur anywhere else. All six British reptiles are found there, and there are many scarce plants that survive in good populations thanks to the management work that has gone on over the last 15 years. The Butterfly Conservation volunteers are researching the effects of management on the Silver-studded Blue butterfly, a heathland specialist, and the Herpetological Conservation Trust manage areas for Sand Lizards

and Smooth Snakes. Meanwhile, the RSPB Project has carried out extensive restoration of the habitat of the Southern Damselfly on the Lulworth Ranges, as part of the Biodiversity Action Plan; overseen by the Environment Agency.

The RSPB Project has found two previously undiscovered sites for the Purbeck Mason Wasp – increasing its worldwide range by about 50%. Outside of Purbeck, the only other confirmed site for this species is in Southern Spain. We are starting to unravel some of the amazingly complex life histories of these species. The adult Mason Wasp burrows in clay seams, and supplies its nest with the caterpillars of a small moth. This host caterpillar occurs only on the new shoots of Bell Heather, and therefore only appears in relatively young heath.

The Project has also been working on the lesser known species - the Heath Tiger Beetle - as part of English Nature's Scarce Ground Beetle Project. This is an extremely rare and declining beetle that is dependent on bare ground among dry heath and is almost entirely restricted to heathland in Dorset. A ferocious predator, it can wait in ambush for its prey, or uses its massively powerful legs to chase down its victims across the bare sand.

Andy Schofield, RSPB, felling pine trees on Bovington Heath, Nigel Symes, RSPB

There is still much to do to get Dorset's heaths into favourable ecological condition and although the Heathland Project's current funding ends in the winter of 2005/06 – the work will not. It is a bit like painting the Forth Bridge as the cycle of heathland management is never ending. Whether we are enhancing mire systems for heathland plants such as sundews and Marsh Club-moss, or creating bare sandy areas for the Sand Lizard, or the scarce Heath Tiger Beetle, we are conserving a rich mosaic of inter-connecting habitats.

We all have a duty to conserve our history and wildlife heritage. It is a challenge to do this on land that has a nationally important purpose in the delivery of military training. In Dorset, a very strong partnership exists between the Army and Defence Estates and the conservation bodies, led by RSPB and English Nature. This has brought about very significant gains in restoring the heathland landscape in their care, supported by the Tomorrows Heathland Heritage – Hardy's Egdon Heath Project - funded by the Heritage Lottery Fund. By the end of this programme open heathland on the Army and QinetiQ land in Dorset should have been brought into pristine condition, and links should be established through plantations to reunite some of the fragments enabling the wildlife to move freely between them. This will be a very significant achievement, of which we should all be proud, as it will secure some of the largest areas of heathland in the county for sometime to come. However, we must not rest on these laurels; if these heaths are to survive and flourish for another thousand years or more, the means to maintain them anually without excessive expense will need to be found, and the area of heathland in Dorset will need to grow. The County's surviving heathland amounts to just 15% of what it used to be, and much of what is lost sits beneath conifer plantations, whose economic value is at best marginal. We need to consider the best locations for further conservation, and develop these plans alongside the training needs of the Army.The RSPB looks forward to a long standing partnership with the Army and Defence Estates that will continue to enhance what is the core of Egdon Heath, the most renowned heathland landscape on earth.

Working for the Royal Society for the Protection of Birds (RSPB), Dante Munns manages the Dorset Heathland Project, which has recently celebrated the restoration of over 1000ha of Dorset's most vulnerable habitat. 'The Practical Guide to the Restoration and Management of Lowland Heathland' addresses the management problems that affect lowland heathland in Britain. The need for management of this Biodiversity Action Plan priority habitat is paramount as it has suffered decades of neglect and is constantly threatened by succession, nutrient enrichment and urban pressures. The book is a resource for site managers, advisors, planners and those in education. The book:

- **Provides a background to the conservation issues faced today**
- **Evaluates the ecological and cultural importance of lowland heathland**
- **Discusses the management techniques available to address its conservation**
- **Stresses the importance of planning and surveying and monitoring and offers methodologies for each**
- **Illustrates management experience with 11 case studies**

For further information contact Dante at: - Dante.Munns@RSPB.org.uk

Pirbright Ranges after the fire, Mary Adler

Beautiful Demoiselle, Mary Adler

After the fire, David Cary

After the fire *Hidden treasures on the Pirbright Ranges*

By Jonty Denton, David Cary & Mary Adler, Pirbright MOD Conservation Group

April 2003 saw one of the largest heath fires at Pirbright in recent history, with over 1000 hectares going up in smoke. Returning was a sad experience. The endless tract of heather had been replaced by a blackened, charred landscape. The wet heath and mire habitats faired much better. The fire removed the accumulated thatch of Purple Moor-Grass straw and encouraged Bog Asphodel, Marsh Orchids and sundews. Back in 2001 we were part of a survey team that was given access to Pirbright Range Danger Area. This was indeed a rare privilege as, in recent years, few people have walked across this huge tract of land. Scaling a heather-clad ridge we came upon an unforgettable vista.

Stretched out before us was a view more reminiscent of Kenyan savannah than deepest Surrey! The rolling heathland was dotted with large pine trees, but something was missing! Finally the penny dropped: there wasn't a single man made artefact in view, not even a track or path! Moving along the ridge, this most unexpected 'wilderness' experience was finally interrupted when the silhouette of Guildford Cathedral appeared on the distant hazy horizon.

The mire and bog systems at the heart of the Pirbright Ranges are the largest in Surrey, but have long remained off limits to naturalists. Names like Colony Bog, Strawberry Bottom and Hagthorn Bog, have long tantalised the devotees of Surrey wildlife, but 2003 saw the first concerted effort to record the invertebrate life on these extraordinary wetlands, and with the expert assistance of David Baldock, Graham Collins and John Pontin, the results were spectacular. The highlight was the discovery of the first Surrey colonies of the rare Black Bog Ant *Formica candida,* which is otherwise only known from the New Forest and Dorset bogs and a few sites in South Wales. It is a shiny black, rather long legged species adept at trotting across the wettest Sphagnum dominated areas. The best places to look for it are also the most treacherous for the unwary entomologist, who must tread carefully, as the ground is usually quaking beneath one's wellies.

Other new finds included the water beetle *Helophorus alternans*, which is primarily coastal, but does occur in bogs in the New Forest, and the caddis fly *Plectrocnemia geniculata*, which is widespread in Britain but new for South eastern England. Many other species which had not been recorded in Surrey for nearly a century were found alive and well in the mire areas. These included the beetles *Paracymus scutellaris* and *Myllaena kraatzi.* One of the most pleasing captures was a prime candidate for the most bizarre and perilous life history of any British moth. The plume moth *Buckleria paludum*, feeds on the insectivorous Sundew, and is perhaps unsurprisingly very rare! Quite how this flimsy looking little moth avoids capture by its host remains a mystery, but it was certainly thriving on Pirbright. Adults are most often encountered by day on sultry warm afternoons, and for once the weather obliged, and we saw several. Away from the mires, the damp heathland and in a few cases dry Ling dominated heath had locally avoided the ravages of the fire. These small remnants were acting like life rafts, and the concentration of invertebrates was extraordinary. The most pleasing find was caterpillars of the rare Shoulder-Striped Clover Moth *Heliothis maritima*, a day-flying noctuid moth that is restricted to a handful of sites in Britain.

Pirbright Ranges, Mary Adler

Other important residents included the Lynx Spider *Oxyopes heterophthalmus* which, as its name suggests, leaps around the heather in pursuit of prey, a real Surrey heathland speciality! Even on the burnt areas life was carrying on. Most conspicuous were the pink tangles of Dodder, which was so abundant in some areas as to carpet hundreds of square metres. This weird parasitic flower taps into the roots of other plants, especially Ling. It looks like someone has dumped loads of tangled pink thread across the heath, adding a welcome splash of colour.

The Mottled Grasshopper *Myrmeleotettix maculatusis* a familiar species on heathland varies greatly in coloration, but invariably displays some red or green. However, on the burnt ground only all black adults could be found, a case of colour adaptation or else survival of the blackest! The aptly named fungus King Alfred's Cakes *Daldinia concentrica* were flourishing on the charred gorse and birch, looking for the entire world, like over cooked buns! Colonies of ants had survived the fires, and the workers were forced to search far and wide for sustenance. These included several scarce species, including the slave making Slaver Ant *Formica sanguinea.*

The reptiles will have been the hardest hit, as even those that evaded the flames by sheltering in rabbit holes will have been very vulnerable when they re-emerged with the lack of cover ▶

Golden Ringed Dragonfly, Mary Adler

Caterpillar of the Shoulder-striped Clover Moth
© Graham A Collins

and death of prey. On the days immediately following the fire there was a fair amount of 'wildlife confusion' on the heath. Two young buzzards and many crows were constantly scouring the burned areas for carrion. The lack of cover gave the local Sparrowhawks some easy hunting. The summer migrants found they had returned to a very different and rather unfriendly habitat.

Some birds, including Dartford Warbler, Stonechat and Woodlark, were well into their first broods at the time of the fire. For Dartford Warbler, the total count of 25 pairs for 2003 compares most unfavourably with 114 pairs in 2001. Stonechat were reduced to ten pairs from 34 pairs during the same period. The six woodlark territories, located prior to the fire, were retained and it is possible that some nests were in spots missed by the fire. A further territory was identified after the fire, making a total of seven. This compares favourably with a count of eight pairs in 2001. A transient gain from the fire was the establishment of four lapwing territories in the burned areas of damp heath. However, by the end of the summer most of these areas were overwhelmed by tall Bracken rendering them unsuitable habitat for Lapwing in following years.

Before the formal Nightjar count there was considerable concern over the effect the fire might have had on this summer visitor. The 16 recorders who assembled on a fine evening in June awaited the results of our annual count with some apprehension. After critical analysis of the data it was evident that 29 churring males had been recorded within the perimeter of the range danger area and a further two just outside the wire. This number again compared very favourably with the previous year's count of 31. Woodlark, Nightjar and Redstart appeared to be not unduly disturbed by the fire. The group that suffered most was the warblers. It will take some years of heather growth before Dartford Warbler numbers return to previous levels. Numbers of Willow Warbler, Whitethroat and Tree Pipit were also down on recent years. However, we expect their numbers to bounce back within a year or two.

By late summer the sooty ground was being greened by the new heather seedlings and the cycle of renewal was well underway. Less welcome is the relentless spread of bracken over the drier ground that is increasingly shading out the heather and exacerbating the future fire hazard as the flammable bracken litter builds up. Sometimes it is hard to come to terms with the devastation of fire on heathland, especially on this scale, but it is important to remember that fire is an essential creative force for these wonderful habitats.

Large Red Damselflies, Mary Adler

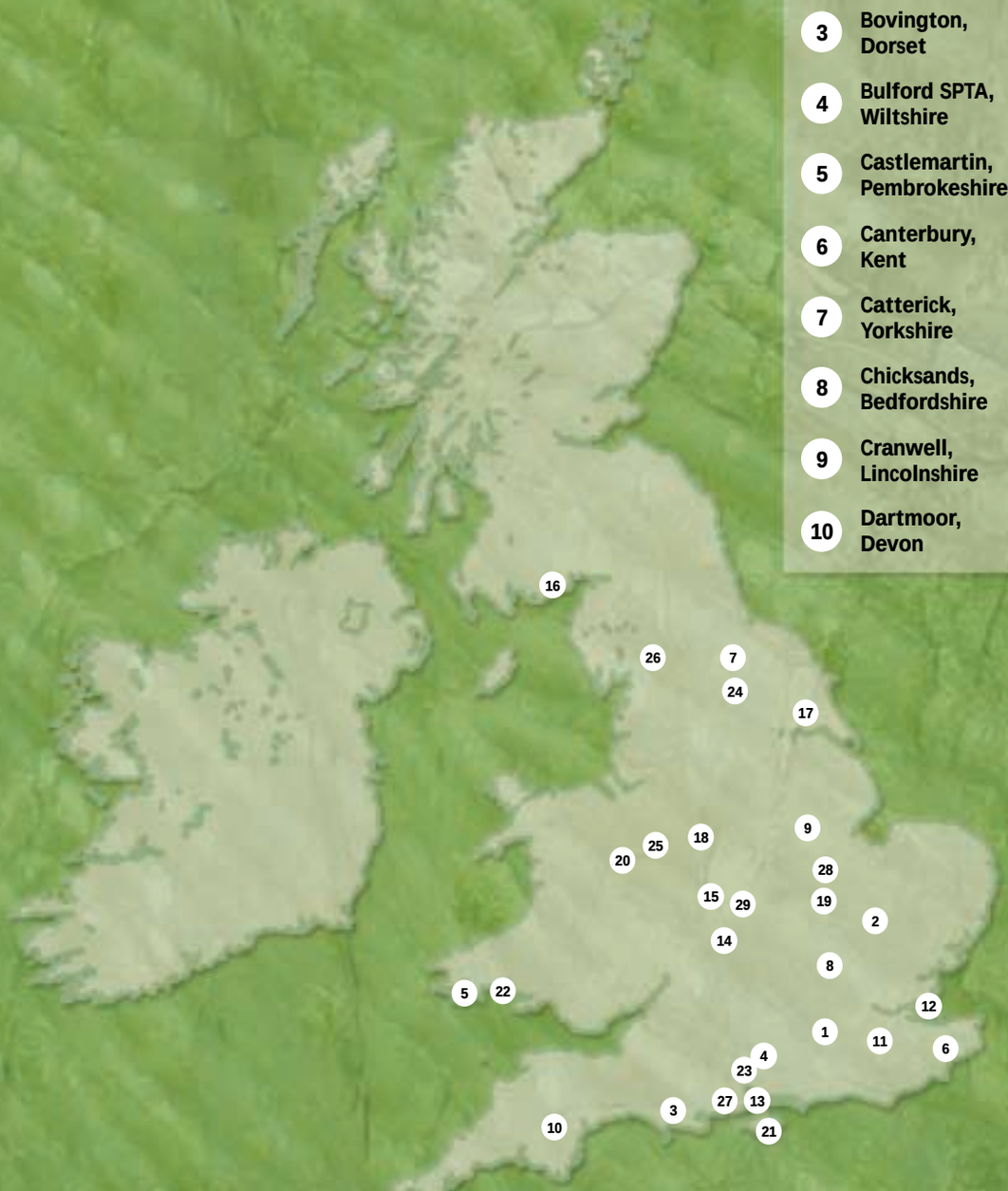
Redstart, David Cary

Lapwing, David Cary

Silver-studded Blue Butterfly, Mary Adler

AROUND THE REGIONS
with the Conservation Groups

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



1. Aldermaston, Berkshire
2. Bassingbourn, Cambridgeshire
3. Bovington, Dorset
4. Bulford SPTA, Wiltshire
5. Castlemartin, Pembrokeshire
6. Canterbury, Kent
7. Catterick, Yorkshire
8. Chicksands, Bedfordshire
9. Cranwell, Lincolnshire
10. Dartmoor, Devon
11. Fort Halstead, Kent
12. Foulness Shoeburyness, Essex
13. Gosport, Hampshire
14. Kineton, Warwickshire
15. Kingsbury Wood, Warwickshire
16. Kirkcudbright, Dumfries & Galloway
17. Leconfield, Yorkshire
18. Leek Staffordshire
19. Molesworth, Cambridgeshire
20. Nesscliffe, Shropshire
21. Newtown Ranges and Jersey Camp, Isle of Wight
22. Pembrey Sands, Carmarthenshire
23. Porton Down and Boscombe Down, Wiltshire
24. Ripon, Yorkshire
25. Swynnerton, Staffordshire
26. Warcop, Cumbria
27. West Moors, Dorset
28. Wittering, Cambridgeshire
29. Yardley Chase, Northamptonshire

AROUND THE REGIONS
Bedfordshire

CHICKSANDS – DEFENCE INTELLIGENCE SECURITY CENTRE

The DISC Chicksands, with its 12th Century Gilbertine Priory, is approximately 200 hectares in extent. The estate comprises a variety of different habitats which include parkland with magnificent ancient Oak and Sweet Chestnut and other specimen trees, remnant ancient semi-natural woodland, broadleaf and conifer plantations, wetland, set-aside grassland and ornamental lakes and ponds. The Chicksands Estate is an important haven for wildlife which is surrounded by extensive areas of intensively farmed arable land.

Spring 2003 heralded the return of migrant birds, including Chiffchaff, Whitethroat, Willow Warbler, Blackcap and Cuckoo. These visitors compliment resident species, including breeding populations of Mistle Thrush, Song Thrush, Coot, Moorhen, Little Grebe, Greater Spotted Woodpecker, Green Woodpecker, Rook, Kestrel, Little Owl, Tawny Owl and Barn Owl. Owls and Kestrel benefit from the hunting opportunities afforded by extensive areas of rough grass and 'set-aside' on the site. Some 65 species were identified during the 2003 MOD Bird Count, including 27 species of conservation concern. Amongst winter visitors were flocks of Fieldfare and Redwing, a pair of Bewick's Swans and 100-120 Canada Geese. Flocks of Goldfinch and Long-tailed Tit foraged on willow and alder alongside the lakes in January this year. Common Buzzard continue to hunt over the estate throughout the year.

Our ponds attract Common Toad, Common Frog and newts, as well as various waterfowl. Toads are mainly seen during migration, notably when crossing roads. In an attempt to reduce the incidents of road-kill, warning signs have been positioned at the approaches to known crossing-points. Unit Orders are a medium for alerting personnel of migration activity, and they ask that particular care is taken when driving about the site.

With the exception of Grey Squirrel and Rabbit, mammals are elusive on the estate during daylight hours. However, Pipistrelle Bat, Fox, Muntjac Deer, Stoat, Hedgehog, Mole, Brown Hare and Badger were all noted during the year.

The diverse habitats are home to a wide range of flora, including Primrose, Bluebell and Cowslip, the latter has been recorded on areas of set-aside. This flora-rich landscape provides a perfect environment for a multitude of insects, thereby providing food, not only for birds, but also for Common Lizard. Swarms of Painted Lady Butterfly visited Chicksands during the summer of 2003 and were present in reduced number during early October. A less welcome visitor was the mid-European Wood Wasp *Dolichovespula media*, which was observed foraging on ivy during October.

Chicksands Conservation Group is now planning future activities. The all-year round recording is essential for determining best practice for habitat management and conservation on site. This year, priority will be given to the identification and study of birds, newts, butterflies, moths, dragonflies, bats and grassland flora. If practical, we'll attempt to locate our bat roosts and survey the Brown Hare on site!

By Sqn Ldr Roger F Smith and Sgt Phil Chapman

Green Woodpecker
© Paul Ormerod, Natural Visions

AROUND THE REGIONS
Berkshire

ALDERMASTON – ATOMIC WEAPONS ESTABLISHMENT

A happy group setting off on the Environment Exhibition Flower Walk © Crown Copyright

Gazing out of the window at the grey, dismal January skies it is now difficult to envisage the glorious summer weather of 2003. At first sight it looked as though little had been achieved at Aldermaston in 2003, as only a couple of conservation group meetings were held. We've also lost quite a few of our members due to their retirement or through voluntary redundancies. However, on reflection quite a lot has been achieved. As part of the Site Development Plan the Conservation Group were approached for their advice on which species of shrubs and trees to plant along the outside perimeter to soften the visual impact of the site to the outside world. Native species were recommended to attract a variety of wildlife.

Small Mammal Survey

Dr Paula Cox, a member of the Mammal Society, kindly came on site in May to help us perform a small mammal survey. As none of the group had undertaken this type of survey before, Paula had her work cut out teaching us how to set and check 50 Longworth Traps! They were set twice a day over a period of three days, in two different locations. Despite the fact that we only recorded Bank Voles and Wood Mice, we all enjoyed taking part.

Botanical Survey

On the 2nd May 2003, two members of the Botanical Society of the British Isles (BSBI) surveyed a small area of the Aldermaston site as part of a wider national survey. AWE maintains a programme of restricted herbicide and pesticide use, and this policy allows an extensive range of plants to flourish. The BSBI surveyors were impressed with the selection of plants they were able to identify and record; they were also pleased that AWE does not indiscriminately "weed out" plants by using unfavourable grounds management methods.

Orchid Survey

Graham Saunders undertook an orchid survey in June last year, which covered a few specific areas of the site. Bee Orchids numbered 463, Pyramidal Orchids 7, Common Spotted Orchids 5, Common Helleborine 75 and Broomrape 5. The orchids were found amongst a variety of other wildflowers. Careful management and a restricted mowing regime have allowed these areas to develop and the plants to flower and set seed. As ever, our thanks go to our long suffering Grounds Management Team for their patience and understanding.

Environment Exhibition Walks

The AWE Environment Exhibition took place in early June 2003, and as in previous years the MOD, AWE Conservation and Local Wildlife Trust boards attracted a lot of interest. The flower, bird and heritage walks were again, a great success.

Ministry of Defence Police (MDP) Sightings

The MDP, especially the dog handlers, by the very nature of their shift patterns see more of the wildlife on site than the average day worker. Their sightings help to populate our Conservation Diary. There have been many sightings of Muntjac Deer, and one was sighted alongside a fox! Bird sightings have included Sparrowhawk, Kestrel, Buzzard, Cormorant, Heron, Canada Geese, Kingfisher, Green Woodpecker, Greater Spotted Woodpecker, Great Tit, Blue Tit, Coal Tit, Long Tailed Tit, Finches, Tree Creeper, Goldcrest and Garden Warbler. Other interesting records include Glow-worms, newts, Foxes and Hedgehogs.

Newt Saga Update

Experts were brought in to help us manage our Great Crested Newt population during essential work to one of the wetland areas. Exclusion zones have been erected using newt fences, to exclude them from areas where they were previously getting trapped whilst on their travels. Other work is being undertaken, aimed at supporting the populations in the long term. The newts will be re-located under licence to a safer area this year. The Palmate and Smooth Newts will also benefit from the general enhancement of this area.

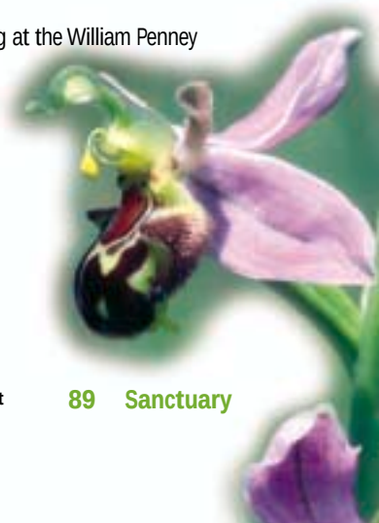
Grim's Bank

Work has now been completed to conserve our Scheduled Ancient Monument, Grim's Bank, a 5th Century defensive dyke for the Roman city of Calleva, now called Silchester. The sympathetic management programme has preserved the bank, which now also provides a local amenity. We are hoping that Reading University will undertake an archaeological survey of the site this year!

Conservation Evening

AWE Aldermaston is hosting a Conservation evening at the William Penney Theatre this November. There will be talks from the Defence Estates Environmental Support Team and our own Conservation Group. The evening will be opened up to local wildlife trusts, AWE personnel and the public. A similar evening held a few years ago proved to be very successful!

By Pauline Dennett and Derek Piears



Bee Orchid © Crown Copyright

AROUND THE REGIONS
Cambridgeshire

BASSINGBOURN – ARMY TRAINING REGIMENT

Since 1999 I have had the pleasure of being ATR Bassingbourn's Health & Safety Advisor, now entitled Safety, Health, Environmental & Fire Advisor. I'm now involved in the establishment of the Station's Environmental Management System. Oh boy, it never rains but it pours! Still it's a job I enjoy and I'm always learning about the differing environmental and conservation issues which come about daily.

A Control Tower on station has been converted into a museum. It houses many artefacts linked to the United States Air Force who were stationed here during the war. A few of the old aircrew have had their ashes scattered over the old runways and behind the Tower Museum. Bassingbourn is the site from which the famous Memphis Belle flew, the first aircraft to complete a full tour of 25 missions. The Tower has been recommended for Grade II listing by English Heritage. The Museum is funded by voluntary donations and is run by a group of civilians. The Royal Air Force resumed use of the station in 1945 and thirty years of continuous flying came to an end when the site was handed over to the Army. Since this time, the station has been the Headquarters depot for the Queen's Division, which has now become an Army Training Regiment.

The station covers approximately four and a half square miles and contains permanent staff married quarters and recruit single living accommodation. In 2002, the station was nominated as a County Wildlife Site. This is mainly due to the 16 different species of grasses that grow around the perimeter of the Training Area. We have two large lakes on site that were created in 1979. Today, they are well stocked with a wide range of fish and contain a variety of aquatic plants. Numerous birds can be seen around the lakes, including Canada Geese, Moorhen, Great Crested Grebe, Hedge Sparrow, Golden Plover and various raptors.
A range of mammals can be seen on site, and these include Fox, Field Mice, various shrew and Muntjac Deer. Nest boxes are established on the area, and one of the boxes has had a Kestrel nesting in it since its erection in the mid 1970s. For the third year running, another box has been occupied by Grey Squirrels. Little and Barn owls also nest on site within the Hangars.

By Terry Simpson, Unit Safety, Health, Environment & Fire Advisor

Moorhen © Heather Angel, Natural Visions

WITTERING – ROYAL AIR FORCE

I mentioned that English Nature had classified our Site of Special Scientific Interest (SSSI) as unfavourable in the last issue of Sanctuary. I'm pleased to be able to report that work has commenced to bring the area back into 'favourable condition'. We had hoped to start work on the bog area in the winter of 2002 and 2003, but unfortunately, the workforce were otherwise occupied in dry and arid areas of the world. Not to be defeated, and after a further review with English Nature, we applied for permission to work in the SSSI throughout the winter of 2003 and 2004.

Bog Bean struggling to survive, Babs King

We first surveyed the area and then planned our attack. Safe access to the site was essential and chainsaws were required. Once in the bog area, we decided that brush cutters, machetes and paintbrushes

Cambridgeshire

were more suitable tools for the job. With the full support of Gp Capt J M Jenkins the Station Commander, we were back in action, and the Ministry of Defence Hospital Unit were back on hand to supervise the application of herbicide.

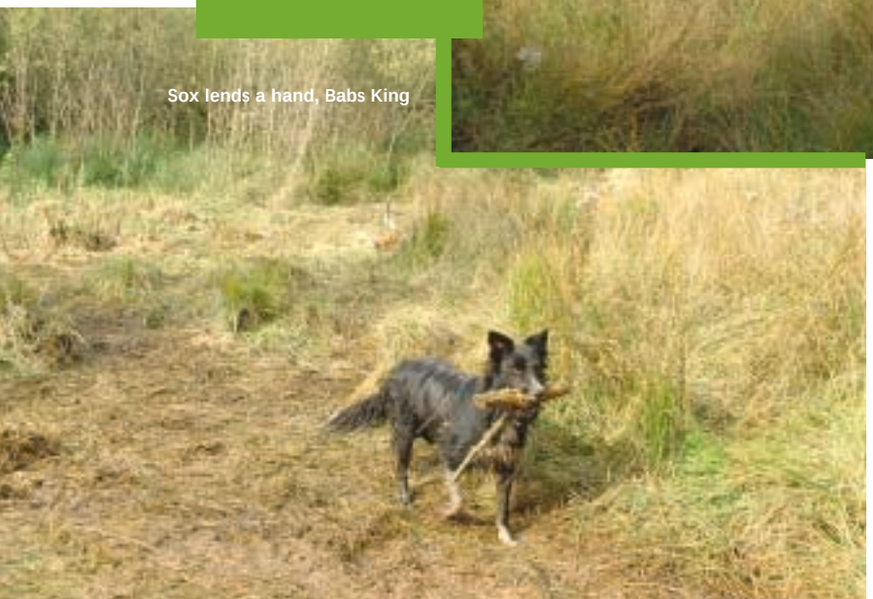
Cutting and clearing the brush was the easy part, when it came to cutting and removing the rush, our work really started. The rush had to be cut, then racked and then cut again from the opposite direction. Thankfully, the brush cutters made this easier than it would have been with scythes, but the mud was flying and the ground became even boggier. Hauling out the rubbish was also very heavy work. Despite this, we all enjoyed the challenge, although my dog seemed to be the only one that enjoyed the mud! The good news is that after all that hard work, English Nature are happy that the site is now in a recovering favorable condition. Well done to all for their hard work in restoring the site. Our next mission is to tackle the Russian Vine that is threatening to take over our woodland area.

Clearance under way, Babs King

Cutting and clearing the brush was the easy part, as when it came to cutting and removing the rush, our work really started

SSSI in need of restoration, Babs King

Sox lends a hand, Babs King



The Station is hoping to get the rest of the site surveyed this year, which will enable us to complete our site dossier. Unfortunately, we don't appear to have any experts on station, so we'll be relying solely on outside volunteers who are always keen to record our previously un-surveyed areas. A bat survey that started late in 2003, has identified a feeding station in Rouge Sale Woods. We hope to enhance the area for the bats in the near future. Like other similar sites, we encounter the usual problems linked to a lack of resources, particularly in time and funding, but progress is being made and we will prevail!

By Babs King, Station Energy and Environmental Protection Advisor

AROUND THE REGIONS
Cambridgeshire

MOLESWORTH – ROYAL AIR FORCE

We now have evidence that a pair of Barn Owls is using one of our new nest boxes, however, breeding has yet to be confirmed. Our Great Crested Newts continue to thrive and are apparently the 10th largest population in Europe. Our rare grasslands problem, related to the Creeping Thistle has not yet developed, and this is possibly due to recent weather patterns. We have now secured some aerial photographs, so that we are better placed to monitor any future growth. Our next review will be carried out in three years time. A large outdoor site map has also been funded and discussions are underway with a local company to construct it. This will be of benefit to the personnel who work at Molesworth, as access is restricted. Lastly, in addition to the bird survey undertaken early last year, Wally Caress and Barry Dickerson undertook a butterfly and moth survey and their report follows below.

By Sqn Ldr Rod Cunliffe, Station Commander

The butterflies and moths of Molesworth Airbase

Molesworth Airbase first appears an unsuitable site for butterflies and moths as much of the site is covered in concrete with areas of grass between buildings mown so short that only the bare minimum of wildlife could survive. However, on the perimeter of the base there are some areas of scrub and rough grassland. These areas provide suitable habitats for several interesting species of butterflies and moths. Occasional surveys have taken place to record the butterflies and moths that occur in some of these areas, and a total of 14 species of butterfly have been seen along with 192 species of moths. Most of the moth species have been recorded at night with the use of mercury vapour light. Once a moth has been attracted to the light, it will either circle the light gradually getting lower, or it will dive down to the base of the light. In both of these scenarios the moth enters a funnel, which takes it inside a trap where it rests until it is recorded and released.

The Orange-tip is one of the first butterflies to appear in the spring. The males have an orange tip to their forewing, giving the butterfly its name. The bright yellow Brimstone and multi-coloured Peacock can also be seen in the spring. The Common Blue is an attractive butterfly, which can be seen during the summer months flying over the rough grassland along with the Meadow Brown and Gatekeeper. The Brown Argus can be observed settling on and feeding from flowers, yellow ones being their favourite. During the later part of the summer, Red Admirals and Painted Ladies may be seen flying, sometimes in large numbers as the local populations are backed up by others migrating from as far away as Africa.

Most moth species will only be seen at night, so usually a special effort has to be made to see them. However, some will be attracted to the bright lights around the base and occasionally they'll fly inside buildings if windows are left open, especially on warm muggy nights.

Several of the moths recorded are of particular interest, as they're locally rare. The Ear Moth is very rarely seen, being recorded in Huntingdonshire only twice during the past 15 years. The Blackneck is also rare, with less than a dozen records since 1990. Another moth, the Scarce Silver-lines can still be found here on site at Molesworth.

By Wally Caress and Barry Dickerson

Painted Lady
© Heather Angel, Natural Visions

AROUND THE REGIONS
Carmarthenshire

PEMBREY SANDS – ROYAL AIR FORCE

Tucked away in the grass - a little purple gem, and another, and another - there must be hundreds!

Crawling on our hands and knees at RAF Pembrey Sands Air Weapons Range, we carefully looked for the Dune Gentian *Gentianella uliginosa,* one of Britain's rarest plants. We checked each plant for two pairs of leaves on the stem to make sure it wasn't the Common *Felwort G. amarella* which was growing with it and which has four or more pairs of leaves. We were so excited we were almost oblivious to the jets bombing and straffing the target 500 metres away. Squadron Leader Guy Jeffs' presence reassured us that we were safe!

The Dune Gentian had a very good year last year at RAF Pembrey Sands, with perhaps 500 or more individual plants being located. This is an important site for the plant, holding about one third of the total UK population. It has also been recorded in Devon (only seen recently in one of the two sites), Gower (at two sites), the QinetiQ Range at Pendine and at Tenby (now possibly gone). It is more widespread in Northern Europe, but it is not common anywhere.

The Dune Gentian is a UK Biodiversity Action Plan 'Priority' species, a Red Data Book species and is protected under the Wildlife & Countryside Act. Sqn Ldr Jeffs has plans to extend the area of grassland to further expand the plants habitat. It is reassuring to know that this important population of this very rare plant is being well looked after.

By Dr Tim Rich, Head of Vascular Plants, The Welsh National Herbarium, National Museums & Galleries of Wales

The rare Dune Gentian, Dr Tim Rich

AROUND THE REGIONS
Cumbria

WARCOP – ARMY TRAINING ESTATE

The Conservation Group spent much of last year compiling their final drafts of their Component Management Plans for the Integrated Land Management Plan (ILMP). September was the final launch marked by an inaugural lunch for all concerned, which was held in the Officer's Mess at Warcop. The group met in March and November last year, when some new members joined. We welcomed George Scott from the Knoxwood Wildlife Rescue Trust, Chris Bulloch from Warcop Primary School, John Martin of West Furness Bat Group, David Harpley and Ruth Dalton, of Cumbria Wildlife Trust, Jo Macintosh Archaeology Historic Records Officer for Cumbria County Council and Lucy Dugdale of the Eden Rivers Trust. Sadly, we have said farewell to Mrs Bette Hopkins of Cumbria County Council and Mrs Jenny Gate of Wildlife Rehabilitation, their contributions over the years have been invaluable.

The Charcoal Burners' Pitsteads at Helbeck Wood

Helbeck Wood is an internationally important semi-natural woodland on the limestone slopes of the Cumbrian Pennines. Fifty percent of the wood forms part of the range area within ATE Northwest Warcop. In 1987, the wood was designated as a Site of Special Scientific Interest, and a boundary fence was erected to exclude sheep that had devastated the wood for over 40 years. At that time, Mr Ron Baines, a member of the Warcop Conservation Group, noted many mature multiple stemmed trees in the wood. They included birch, ash and oak, and there were also ancient Hazel stools. Initially, two charcoal burners' hearths (pitsteads) were found; level circular platforms about five metres across cut into the slope of the wood. There was evidence that the wood had formerly been coppiced for making charcoal. During the winters of 1987 and 1988, a further 20 pitsteads were found. Pitsteads cut into the hillside were also easily discovered. On level ground the soils of molehills and rabbit burrows were searched, and pieces of charcoal thrown up by the animals revealed more pitsteads. A rough sketch map was drawn up showing their positions and the associated tracks, which were also found.

In 2002, finding and locating the pitsteads was difficult as in the intervening years the wood had regenerated and tall bracken was a problem. However, the majority were found and the sites marked for more accurate mapping by GPS. The ancient woodland craft of charcoal making has been in existence since the Roman times. Only charcoal could be used to produce the high temperatures of over 1000 degrees celsius which are required for the smelting of iron and other ores. The expansion of the Industrial Revolution in the 17th and 18th centuries led to many thousands of acres of woodland being regularly coppiced in a cycle of every 15 to 18 years, thereby allowing charcoal to be made for the iron industry. In 1709 Abraham Derby perfected the use of coke at Coalbrookdale and the spread of the coke-firing of iron furnaces spelled out the demise of the woodland charcoal industry. However, in the Southern Lake District the Backbarrow Iron Works continued using charcoal from local woods until 1926. The abandonment of the coppicing regime has resulted in the shady high forest woodlands we see today, of which Helbeck Wood is an example.

Small Skipper,
© Jeremy Thomas, Natural Visions

Butterflies

On 20 July 2003 several Small Skipper Butterflies *Thymelicus sylvestris* were seen in the tall grassy vegetation surrounding the area of Brough Hill. This new species brings our butterfly total to 19. The Small Skipper has only started colonising Cumbria in the last two years. On a brief evening visit to High Close Sike on 14 July 2003 a number of butterfly species were also seen on the newly fenced off site. There were numerous Meadow Brown, Small Heath and Common Blue. Of particular interest were three Dark Green Fritillaries, which may have spread from the existing colony on the upper slopes of Helbeck Wood.

Botany– Additional Flowering Plants

Mr G Halliday, a member of the Warcop Conservation Group, visited Little Fell (via the Musgrave Track) last year and found Whorl Grass *Catabrosa Aquatica* dominating a small pool on Burton Fell. This species had been previously reported from the north east side of Little Fell, and there are a few other records between here and Cross Fell. There are no other high level records of this species in the British Isles. Three colonies of Aline Foxtail *Alopecurus borealis* were also found, one of three plants by the earlier Catabrosa Site, another slightly further south, and the largest on Burton Fell (13 flowering stems). The only English records for this high-arctic species, which is absent from Iceland and Scandinavia, are in the Northern Pennines from Cross Fell southwards. The new finds extend the global southern limit some 11 km south east of the nearest sites on Knock Fell. Also present near the previous Catabrosa Site was a montane grass *Festuca rubra* subsp. *Arctica*. Alpine Forget Me Not *Myosotis alpestris* was flowering well in the shadow limestone grassland on the south side of Little Fell. Alpine Meadow Grass *Poa alpina* was also discovered two years ago on the southeastern edge of High Cup Nick. This is only the second record from the Northern Pennines.

By Major (Retd) T H Campbell, Range Officer

AROUND THE REGIONS

Devon

DARTMOOR– ARMY TRAINING ESTATE

With 13,000 hectares of Dartmoor National Park moorland used by para-troopers, marines and other light force training, the Dartmoor Training Area (DTA), staff and military users face daily challenges linked to caring for the environment, and being considerate to the many other users. The Environment Act 1995 makes it a statutory duty for MOD to have due regard for the National Park purposes, but our activities and work with other stakeholders goes far beyond simple compliance with the law.

Central to helping us gain an understanding of the potential impacts of military training and conservation work is the knowledge, expertise and assistance of the Willsworthy Conservation Group. The members of the group provide a great source of advice based not only on their detailed knowledge of Willsworthy, but informed by their broad experience across many areas of the West Country. We are indeed fortunate that such a group of enthusiastic experts should volunteer to assist us in looking after not only the MOD freehold land, but also those areas of Dartmoor that we use under licence for military training.

Willsworthy's Tavy Cleave; home to Ravens and Ring Ouzels

During the year we have continued with our formula of two meetings out on the ground and a gathering just before Christmas to review our work. This year Sue Goodfellow, Senior Ecologist for the National Park Authority and member of our Conservation Group, led us to Broadaford Farm, near Widecombe on the Moor on South Dartmoor, where we visited some Rhos Pastures. We saw the importance of light grazing in early summer, of preventing willow encroachment, keeping scrub cover for birds, maintaining water levels and ensuring fertiliser doesn't enter the system; all problems that we have been dealing with at Willsworthy. Learning from others' experience proved to be worthwhile and informative, giving us confidence in the measures that we are implementing.

At each of our meetings we try to pick themes for our breaks along the way, as this provides some interesting cross-fertilisation of ideas. For example, a presentation by Paul Fletcher, one of DTA's Supervisors, on sniping techniques and range construction led to a fascinating discussion on the benefits of repairing dry stone walls, planting trees and maintaining habitats; in short the military aims meshed well with the conservation work required for the Yellowmead Valley; Simon Probert of English Heritage, and Tom Greeves of the Dartmoor Society gave their thoughts on the origins of an old farmhouse that led to us amending our wall repairs project.

Finally, I pay tribute to Gordon Vaughan one of our longest serving members, who has been forced to retire from the Group due to ill health. His enthusiasm and knowledge have been invaluable, particularly with bird surveys. Although he has retired, we hope that he will continue to join our walks.

By Lt Col (Retd) Tony Clarke, Commandant

The Willsworthy Conservation Group assist with the management of farm and moorland

AROUND THE REGIONS

Dorset

BOVINGTON – ARMOUR CENTRE

We are most grateful for this year's article by the Royal Society for the Protection of Birds (RSPB) Dorset Heathland Restoration Team. Dante Munns took over last year from Durwyn Lilley who had been involved for several years on this exciting project. Our Defence Estates (DE) Forestry team lead by Rory Gogan and the RSPB work party have been responsible for our incredible pile of 'arisings'. For those unaware of the term, they are the chips that don't go with fish! We currently have about 1,000 tonnes piled around Bovington and Lulworth. When the official Tomorrow's Heathland Heritage (THH) programme ends in 2005, we will have about 6,000 tonnes in Dorset. We have tried to sell them, but with no luck so far. We are currently planning to install an eco-friendly boiler in one of our buildings in the barracks. This is a pilot scheme, and if it works successfully we hope to heat more of our barracks with this fuel. Truly a 'win win' situation.

In August last year, we hosted with RSPB and the Minister Mr Ben Bradshaw MP on the Bovington Training Area (BTA) to celebrate, the 'new' Dorset heathland. The MOD and QinetiQ are the occupiers of the largest areas that have been converted back to heathland. The Minister also officially launched RSPB's Lowland Heathland Management Handbook. The day was a great success and tours of the area showed the habitat before and after recreation work. Bovington was chosen for the visit location because we were also able to demonstrate very dramatically the co-operation between the interested parties that is necessary for a project of this size. The results were visible to all, but it was often difficult to explain to those not directly involved how much discussion was necessary before we started cutting trees down. The various parties have varying objectives, and the aim was to come to a compromise that was acceptable to all.

We are most appreciative of our own MOD Conservation Group who understand our primary purpose of military training. Because of the variety of training that can be provided at the Armour Centre, we can cater for cadets and the TA at the weekends and company exercises by the Royal Marines, with a bit of dismounted Army Fighting Vehicle crew training in the middle. Vehicle work varies, from teaching basic tracked drivers to trials by the resident Trials Unit. This can involve the full range of the Army and Royal Marines tracked vehicle fleet including swimming Combat Engineer Tractors and mine ploughing with Royal Engineers specialist vehicles. In order to cater for this variety of training we aim to offer our customers the full range of terrains that they can expect when they reach the Field Army. We would like a bit of arctic tundra (with igloos), through to a slice of Bosnia and a good sandy desert with the odd camel or oil well! We need trees and woods as features as well as open spaces. We have therefore adjusted our woods on the Tomorrows Heathland Heritage programme to leave a varied training core, and we've adjusted our heathland to provide corridors of habitat for our wildlife to migrate from one open area to another. This forestry work has not been restricted to tree felling alone; our DE teams have in the last five years planted over 60,000 assorted hardwood trees and hedge plants on our non-heathland areas, alongside the existing ancient semi-natural woodland. This will ensure that future soldiers will have a large and variable training area at the Armour Centre. By happy coincidence, this variety provides the food chain and living conditions for our native species, which we hope also enjoy it, and will continue to thrive for many years to come.

Toad Hill – From which 600 tons of trees were removed, Rory Gogan

Group photo courtesy of Maj (Retd) George Preston
DE (SW) Forestry Team responsible for the DE share of THH on MOD sites in Dorset.
LEFT- RIGHT Mick Percival, DE Woodman John Brown, Agency
Sgt Stuart Alexander, 2 RTR on Resettlement Course
Andrew Terry, HND Student Rory Rogan, DE Head Forester (SW)
Nick Dobbins, DE Woodman
FRONT ROW Flora Preston, Retriever, Andy Cheesman, DE Woodman

By Major (Retd) George Preston, Environment and Conservation Officer

Dorset

WEST MOORS – DEFENCE FUEL GROUP

This year's items of interest have mainly come from abroad. During the spring the winds were favourable for the migration of several species of Lepidoptera (butterflies and moths) and the conditions upon their arrival were suitable for their survival and proliferation.

The year started well, and the butterflies responded accordingly with good numbers appearing during the early weeks, including a Speckled Wood on the first week of counting. The cold spells afterwards stemmed this outburst and subsequent hatchings were very much delayed by as much as four weeks. The summer saw large numbers of Painted Ladies, Red Admirals, Clouded Yellows and Small Whites. The latter have been in decline recently, possibly due to pesticides used by farmers and gardeners on cabbage crops. The weather was favourable enough to encourage an upturn in Small Tortoiseshell numbers, another species that has been in decline over several years.

Despite the weather, our flagship species, the Silver-studded Blue and Grayling were down in numbers for yet another year. The decline in blues may be as a result of the heather on which they feed, being grown over by "leggy" Gorse, which also presents a fire hazard. With the long, dry summer the threat of fire was ever present. Grayling numbers may be down as a result of the several prolonged wet winters saturating and cooling the ground too much for the over-wintering caterpillars. Whilst carrying out these butterfly counts, we also conducted a check on day-flying moths. Imagine our surprise when looking up in the reference books to identify one of the more unusual ones, we discovered it to be a 'Scarce Merveille du Jour'. We reported this to the County Moth Recorder, who informed us that this species had not been seen in Dorset for 60 years – apart from several sightings along the South Coast last year. As the individual was flying during the day, far from any mature oak trees and in May, he surmised that it must be yet another migrant from the continent possibly arising from the last year's influx and not an offspring from a colony. Here they would hatch much earlier than abroad, in June.

Summer migrant birds arrived in good numbers with Chiffchaffs and Willow Warblers heard singing throughout the camp. The early spell of cold weather kept the Dartford Warblers quiet, but they were seen briefly as they dashed from one area of dense cover to the next. There were two interesting species seen on camp last year. The first was a large bird of prey seen taking a crow from the cricket pitch. The bird was later found dead with its neck broken, probably a result of a collision with a building whilst in pursuit of some other prey. As it had jesses around its legs, a local falconer was

Clouded Yellow ©Jeremy Thomas, Natural Visions

contacted who identified the bird as a Saker Falcon, a resident of Eastern Europe and Russia. He said he would consult the Falconer's Directory to find the owner of the bird to inform him of its unfortunate fate. The second interesting visitor was a White-winged Wood Duck, another obvious escapee, which caused some head scratching during the identification process.

During the Nightjar Survey, we were treated to a display flight of 'wing clapping' right before our eyes. The clearance of any of the encroaching pines and birch by the RSPB has allowed better views of these elusive creatures. Also, no fewer than three male Tawny Owls were heard calling from territories within the Depot. Sadly, no females were heard replying.

A pair of Red Kites have been observed hunting over the Depot. With the re-introduction of this species into Hampshire, hopefully it may not be long before this is a regular sight!

Dragonflies and damselflies have fared well, with Large Red Damselflies appearing on the wing as early as late April. Several Downy Emeralds were seen along with a Golden-ringed Dragonfly. It has also been a good year for Brown Hawkers with many more than usual being observed throughout the site.

The Dorset Fungus Group also came to survey the site, and they were delighted with the number of species they found. As the weather had been so dry for so long they were not expecting much at all. Had the weather been its normally damp self, triggering the sprouting of the mushrooms and toadstools, a greater variety would certainly have been found. Consequently, the Group expressed an interest in continuing their survey in future years.

By Keith Powrie, West Moors Conservation Group

AROUND THE REGIONS
Dumfries and Galloway

KIRKCUDBRIGHT – ARMY TRAINING ESTATE

In October 2003, Defence Estates distributed the report of an archaeological survey by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS). The brochure, detailing the work and extent of the data stored, is in the words of the author no more than a 'glossy' to introduce the survey. Notwithstanding, it is a thrilling document for everyone involved with the Range. It has some excellent photos of some of the most significant monuments. They include not only the 'ancient' sites, but also illustrations of modern uses of the area. Therefore, the range bunkers (1944), the Comet target hulks, the high speed 1000m moving target track (1970s) and the Figure 8 moving tank track (1980s) are all included.

The survey was carried out between August 2002 and April 2003. Special evening aerial flights were arranged, when the light was at its best to emphasise the ridge and furrow cultivation. There are also aerial photos of two discoveries, a hut circle used between 3,000 and 1,500 years ago and a homestead site dating from 500BC – 500AD. The survey has increased the number of recorded sites of pre-historic rock art (cup and ring marks) by 25% to 35%

The result of this excellent work in furtherance of the Integrated Land Management Plan (ILMP) gives us the confidence that our future training will take account of the significant archaeological sites. The survey has mapped and described some 193 monuments and identified 559 structures. It has recorded 203km of field boundaries. Furthermore, 145 condition surveys were created. It is encouraging to note that only 8% of the sites are judged to be in poor condition whereas 87% of sites appear to be stable and the remainder are in gradual decline. Damage by recent military activity appears to be negligible. With the information provided we should be able to improve this performance in years to come. An article on the archaeology of Kirkcudbright is featured on pages 34 to 37.

The year has seen the completion of Phase 1 of the project to convert the training area into a company field firing range. The result is an area revitalised with new and refurbished buildings and tracks. Wherever the contractor has been involved, sympathetic working has improved the area where at all possible. Only one redundant and unusable building was demolished completely. A troop shelter was built on the site of a house demolished in the late 1950s, the contractor took the opportunity to restore and improve the imposing entrance gate (see below).

By Lt Col R G Oliver, Outgoing Commandant

Balmae troop shelter gates - after project work for the new firing range, Lt Col (Retd) RG Oliver Commandant

Balmae troop shelter gates - before project work for the new firing range, Lt Col (Retd) RG Oliver Commandant

AROUND THE REGIONS

Essex

SHOEBURYNESS AND FOULNESS ISLAND – QinetiQ

The New Contract

QinetiQ is now in the second year of its 25 year Long Term Partnership Agreement (LTPA) with the MOD to manage the facilities at MOD Shoeburyness, which also includes Foulness Island. The change in the manner in which the site is managed has ensured that QinetiQ has become an even more active member in all conservation, leisure and voluntary activities on site.

Swallow – Roosting in reed bed, R Glover

Operation Pride and Joy "War on Rubbish"

During the last 15 months the site has been involved in "Operation Pride and Joy". The then new Area Manager Chris Commons started the initiative with the aim of cleaning up the site in order to return it to its former glory. Phase one is now nearing completion, having cleared the bottom end of the site. This has also included areas where land reclamation has been carried out, with the objective of recreating habitat for wildlife at the River Crouch end of the island. Phase two "War on Rubbish" will look at the range firing points in the surrounding three residential areas, which are rarely used by the site for operational activities. During the next 12 months these will be cleared of unsightly debris.

Public Rights of Way

The site has been working closely with Essex County Council to improve the Public Rights of Way, that run through the site and can be traversed during non-operational periods. This liaison has already paid dividends, with more public awareness about the Byelaws and improvements in the marking of rights of way.

The Badgers are Winning

One of the rights of way runs along a 14th Century sea wall defence and has had a badger sett running along it for many years. This year, the Badgers have caused a collapse in part of the road due to their tunnelling. This has resulted in the need for the Public Right of Way to be temporarily diverted. Lots of advice is available but the Badgers are in control at present. Their sett is still secure from interference, although we are looking at the possibility of licenced relocation as a longer-term solution that will benefit all parties!

The Foulness Heritage Centre

The members of the Foulness Conservation and Archaeological Society (FCAS) are to be congratulated in the opening of The Heritage Centre. During 2002 the FCAS converted the former Foulness Primary School, which had been empty for many years. The renovation work was carried out by volunteers, with the aid of grants from 'Awards for All' and QinetiQ. Donations also came from the 'Bishop of Bradwell's Fund' and from many well wishers. The Centre has benefited from a wide range of donated items from Foulness residents both past and present, which cover the industry, domestic life and rural pursuits of Foulness through the decades. The donations have gone a long way in helping FCAS achieving their objective of providing a picture of what rural life used to be like on Foulness. The Centre opened in February 2003 and there has been well over 1000 visitors and many people have shown interest both in the UK and abroad. The Foulness Heritage Centre was our submission for this year's Sanctuary Award (see page 4).

Ecological Assessment Foulness Island

One of the members of the site Conservation Committee is Chris Tyas, who is also the Essex Area Manager for the Royal Society for the Protection of Birds. Chris has recently carried out a sabbatical and produced a report entitled "An Ecological Assessment of Foulness Island". The aim of the report is to assess the current ecological value of Foulness Island and to identify the potential for improved management and freshwater and intertidal habitat creation. In the Summary it states "Foulness is already one of the best wildlife sites in Essex and has probably the largest conservation management potential of any site in Essex".

Bird Surveys

The new QinetiQ contract puts a great deal of emphasis on health and safety issues, and this has provided an opportunity for the site to review how recreational activities can be undertaken in a safe and secure manner. Permission for some activities had to be delayed while the correct controls were put in place. The Wetland Bird Scheme (WeBS) bird counting was one of the activities affected, but I am glad to say that this has now been resolved and the WeBS counts commenced in February this year, with new areas being made accessible. Additional dates have also been agreed for breeding and migration counts.

By Ron Shadworth, Conservation Committee Secretary

Kingfisher – Winter female perched on branch, R Glover

AROUND THE REGIONS
Hampshire

GOSPORT – DEFENCE MUNITIONS

It's been a very eventful year for wildlife, with new sightings being made along with the old favourites that visit the site each year. One new arrival was a young seal, which was seen swimming and playing off of our pier in Portsmouth Harbour for a couple of weeks. Ian Calderwood, our bird group leader has been a very busy man this year, and he can often be seen rushing off to carry out a bird count during his lunch hour. The next year looks to be a promising one for the Conservation Group as our membership grows.. .we have many events planned!

Butterflies and Moths

The depot's links with the Hampshire and Isle of Wight Butterfly Conservation Group are still flourishing,and more butterfly surveys are planned for later this year. The Disease Resistant Hybrid Elm Trial Project continues, with mixed results due to the often-waterlogged conditions of the area of the site where the trees are planted. Some of the species have perished, though some seem to be adapting to the conditions. An article on the project is featured on page 27. A Comma was the earliest butterfly noted this year, with Brimstone later the same day. All the usual common butterflies were found throughout the summer, Peacocks, Large Whites, Small Tortoiseshells, Clouded Yellows, Speckled Wood, Common Blue, Small Heath, Purple Hairstreak and Large Skipper. A Hummingbird Hawkmoth was seen around a Buddleia and Yellow Underwing, Dark Arches, Bloodvein and Large Thorn were found dead in light fittings.

Coppicing

Coppicing continues to improve the age structure of our woodland. This has taken place since 1999, and thanks should go to the Estates Management Team who manage to squeeze this job into their busy schedule of work.

Botany

In September, a botanical survey uncovered a huge population of Autumn Lady's-Tresses orchids *Spiranthes spiralis* on site, conservatively estimated at 4000. This orchid has become increasingly rare due to habitat loss. We were therefore delighted with the news that it was possibly the largest colony in Southern England due to a change in our grass cutting patterns. Due to the hot, dry weather that prevented the grass from growing, our Estates Management Team were not required to cut the grass fortnightly, as is usually the case. This orchid is a pretty, small plant that has a single tight spiral of tiny tube-shaped white flowers up its stem. It favours short calcareous grasslands.

Birds

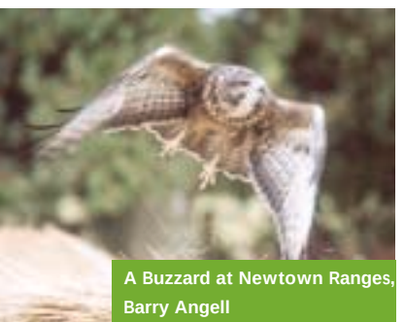
Brent Goose numbers were at the usual level in the early part of the year, numbering up to 402 until dropping off in March. The Brent Geese arrived back in mid-October with a larger number of juveniles than usual, and the Canada Geese flock built up to about 50 birds feeding mainly on the Old Golf Course field. A Black Swan was seen flying over Frater on its way north. Little Egrets increased during the spring as they set about recolonising the heronry; 17 nests were counted amongst the 87 heron nests. Egrets are now seen throughout the year and up to 50 is a common sight at high tide in the trees around Frater Creek, which leads to Portsmouth Harbour. The highest count was 63.

Following the increase of Buzzards seen in Hampshire, it was not unexpected that we should have regular visits from singles, one even stayed with us for a few weeks. A Peregrine was occasionally seen, and one of our staff was amazed when he found a Wood Pigeon minus a head after a large brown bird flashed past him. In December, a report came of a Buzzard found dead not far from our previous sighting. The corpse was sent away to the Institute of Terrestrial Ecology where a post mortem was carried out. It was thought that due to the lack of fat around its heart, the Buzzard had died of starvation. Skylarks started singing in late February after a few years of absence. We hope that they will breed this year. A male Pheasant was the first seen for a number of years, but didn't stay. A further sighting of two female Pheasants was thought to be a bit late to coincide with the sighting of the male. Around our creek, a Kingfisher was seen almost daily during the winter, then again from mid-August until the end of the year. A male Wheatear was the first of the spring migrants on the 20th March 2003. The next Wheatear was observed on the 10th September on its return journey. Other birds of note seen throughout the year were the resident Sparrowhawks and Kestrels. Little Owls have been hiding on the building roofs, Bullfinches and Jays have been displaying their white rumps, Whinchats and Stonechats utilising the long grass stems, Green Woodpecker have been spotted in the dead trees. Amongst the waders we have Curlew, Whimbrel, numerous Redshank accompanied by up to two Greenshank. Flocks of up to 100 Black Tailed Godwits, some of which have been colour ringed and reported to the local Ringing Group. These had been ringed in Farlington, Portsmouth and all had been seen on their breeding grounds in Iceland. Grey Plovers are returning to the mudflats along with groups of Oystercatchers. In the autumn, duck numbers increased, with flocks of 50 Mallard, 100 Wigeon and 30 Teal. Up to three Greenshank were in the same area feeding with Redshanks. Two pairs of Bullfinches were enjoying what seemed to be sloes; did the pickers miss some? A new addition to the Depot list was a pair of Nuthatches that called continuously as they searched up and down the branches of the trees.

By Spencer Lamb and Ian Calderwood

AROUND THE REGIONS
Isle of Wight

NEWTOWN RANGES & JERSEY CAMP – RESERVE FORCES AND CADETS ASSOCIATION



A Buzzard at Newtown Ranges, Barry Angell

The annual meeting of the Conservation Committee was held slightly later in 2003 than usual. The meeting represents the main opportunity for members to discuss future management of conservation matters. September was a superb month for sunny days. The day of the meeting was no exception, although the floral glories of the meadows had faded considerably from mid-summer, a hint of colour from the Devil's-bit Scabious still remained.

Three new people were invited to join the group. Susan Blackwell will assist Bill Sheperd, our resident botanist. An update of the status of the more important flora of the ranges will be undertaken over the next five years. Lee Glover is back 'on board', bringing with him his considerable experience of coppicing and management - a welcome skill for the group. Last but not least, Andy Butler, an ornithologist and entomologist will be a great asset to the Committee, primarily in helping me to identify the myriad of insects found at Newtown.

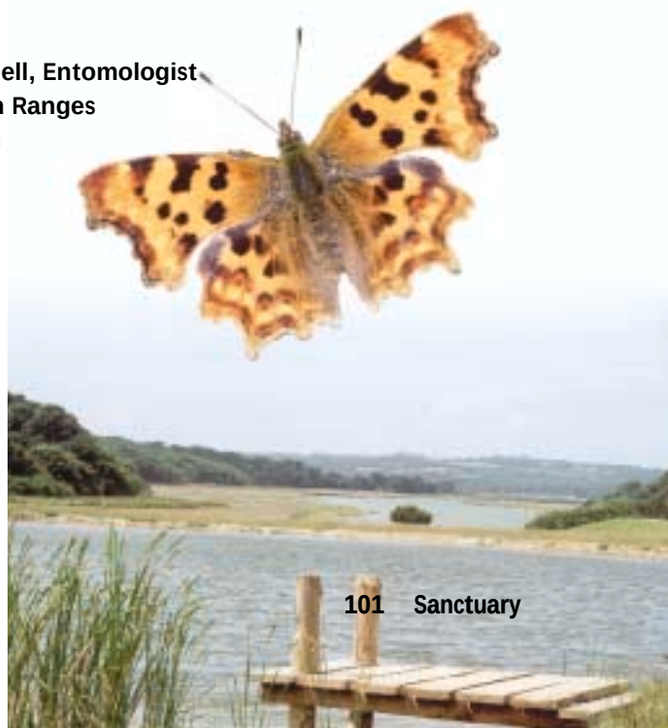
John Wilmott covers ornithology on the estate. John reported a moderate bird count for 2003. Although not a vintage year, 64 species were recorded and a total of 52 breeding birds. A Water Rail was recorded at Dark Pond early in the year. The Short-eared Owl, a fairly regular visitor during the winter months, was recorded at Lambslease Marsh. For a large part of August a pair of Ospreys were fishing in the area of Spur Lake. One of these birds was recorded carrying twigs across the marsh. Barn Owls, Little Owls, Kestrels and Buzzards were regularly recorded on the range, plus the occasional Peregrine Falcon.

Richard Grogan (mammals) reported a healthy population of Brown Hare. Hares are recorded much more frequently during the winter months on the estate. Permanent pastures inter-linked by hedgerows with some woodland provide the ideal habitat throughout the year. Red Squirrels and the Common Dormouse are reported in good numbers in Locks Copse. The predominantly oak and hazel coppice provide sufficient food for Dormice and good cover for winter hibernation. Locks Copse is a good link in a chain of woodlands and hedgerows between Parkhurst Forest to the east and the extensive Newtown woodlands to the west. Red Squirrels have relatively easy access to alternative food sources.

A range open day was held in late April last year, and it was billed as 'The Orchid Walk'. One hundred and twenty people descended on the range eager to see the Green-winged Orchids in all their glory. Unfortunately, the display this year was very disappointing, with an estimated reduction in numbers from the average of 200,000 orchids to a mere 20,000. Fortunately, there were many other interesting things to see and the day was considered a success. Stuart and Trevor, who are permanent range staff, have achieved a great deal of the ongoing conservation work on the estate. They are currently creating a new bat roosting site in the old "B" butts for Pipistrelle and Long-eared bats. The 30 or so bird boxes in Locks Copse were repaired and cleaned out in preparation for the spring.

2003 ranks as a very good year for butterflies as it has been the warmest year on record. The total number of species recorded was 30. The Small Tortoiseshell, after three years of great decline, has made a remarkable recovery. The Comma also had a successful season. I had the good fortune to record and photograph an aberration Comma in Locks Copse, *ab obscura*. A sudden drop in temperature often causes an aberration particularly during the pupal stage of the butterfly's lifecycle, sometimes completely changing the patterns on the wings. Clayden Pond was host to many hundreds of species of Odonata, eight species of dragonfly and five species of damselfly were recorded on and around the pond. This included a Downy Emerald in June and a Migrant Hawker Dragonfly very late in November.

By Barry Angell, Entomologist for Newtown Ranges Conservation Committee.



Comma Butterfly & Clayden Pond, Barry Angell

CANTERBURY – OLD PARK TRAINING AREA

Old Park is approximately 300 acres of military training ground, which is predominantly acid grassland designated as a Site of Special Scientific interest (SSSI). Over the past year, Canterbury Conservation Group (CCG) has worked hard to improve the balance between conservation matters and the training requirements of the military. Unfortunately though, on occasions, the area been subjected to vehicle dumping and fires caused by reckless vandals. Precautionary steps have been taken to minimise the risk of fire outbreaks. A fire break plan has recently been launched after being agreed with Canterbury Fire Brigade. The works are due for completion by mid-December and will provide better access if urgent situations arise.

Pygmy Shrew © Heather Angel, Natural Visions

Jan Pritchard, a long serving and knowledgeable member of the Group has reported that the Ornithological Group has ringed more than 8500 birds on the site over the last 20 years. Many of the birds have been re-caught, which are a good indication of the long-term trends, life expectancy and health of the habitat.

Arguably, the most important species inhabiting the area is the Nightingale, an African migrant. On a special note, Old Park has recorded the first Spanish-ringed Nightingale and only the second foreign-ringed variety in the United Kingdom. However, even though the site is home to a good number of Nightingales, their distribution across England is regrettably shrinking.

Habitat fragmentation is the primary factor influencing declining mammal populations. Brett Lewis, a conservationist with the Group, has been focusing on the abundance and diversity of small mammals that inhabit three disparate habitat types within the area. Surveys have been carried out in order to ascertain population levels and the implications for future management of the site, which takes into account conservation of the observed species. These include the Wood Mouse, Yellow-necked Mouse, Pygmy Shrew, Common Shrew, Water Shrew (found a good distance away from any surrounding water body), Field Vole and Bank Vole.

From a bat perspective the area is becoming an increasingly important one for foraging, particularly by the larger species, as more urban 'brown land' is developed. The site also continues to provide good reptile habitat, although no Adder sightings have been reported recently!

The cattle grazing programme at Old Park has been extended, and recently extensive fencing has been constructed for better livestock management. The Canterbury Golf Club continues to work on its Woodland Management Plan and has recently submitted a planning application for a golf driving range. This proposal, outside the SSSI, entails development on only a very small part of the training area.

English Nature is currently in the process of preparing an Integrated Land Management Plan for the next five years, which will concentrate mainly on the acid grassland area. It will aim to meet with the needs of the incoming regiment, the 1st Battalion, the Argyll and Sutherland Highlanders, as well as hopefully leading to an enhanced SSSI.

I would like to take this opportunity to thank Miss J Baker, of the Kent Stour Countryside Project who is moving to work on a conservation project in the Salisbury Plain area. She has provided an invaluable service and is wished well for the future.

By John Port, Estate Advisor, Defence Estates

AROUND THE REGIONS

Kent

FORT HALSTEAD – DEFENCE SCIENCE & TECHNOLOGY LABOROTORY (Dstl)

Fort Halstead is a Ministry of Defence research establishment, now shared between Dstl and QinetiQ. It lies about three miles north of Sevenoaks at approximately 210 metres (690') above sea level on the top of the North Downs. This rich wildlife site is within a designated Area of Outstanding Natural Beauty. Within the 86 hectares are the remains of the Old Fort, which was constructed between 1895 and 1897 as one of 13 Volunteer Mobilisation Centres in a ring around London. In 1937, the site was chosen as being one suitable for military research, and the organisation that was to become the Royal Armament Research and Development Establishment (RARDE) occupied the fort and the surrounding area.

The southern part of the site is chalk downland and supports a rich variety of typical chalk grassland flora including Milkwort, Yellow-wort, Pyramidal, Bee and Fragrant orchids, Autumn Gentians, scabious and woods dominated by ash also exist.

On much of the site the chalk is overlaid with clay and flints, which are thought to be of glacial origin. Here the vegetation is made up of oak and birch woodland. Many of the oak trees are more than 100 years old. The acidic nature of some parts of the soil is indicated by the presence of heather and other acid loving plant species on the northern edge of the site. The site owes its rich flora and fauna to the fact that for more than 100 years defence use has protected the habitats from the ravages of 20th century agriculture, forestry and development.

Jane Didham is a scientist and founder member of The Fort Halstead Conservation Group (FHCG), which was reformed in 2000. One of the Group's aims is to compile data on the current flora and fauna that can be found on the site.
There had also been some concerns about the practical management of the grounds, such as the effects of the timing and extent of grass mowing on flowers and insect populations.

"In 2001 we decided to begin a major survey of the flora of the site to be better placed to advise on conservation for site management and in the event of future site development. We now have a preliminary survey of the site, which shows over 430 species of flowers, trees and ferns. However, there is still more to do on the more primitive plants such as mosses, lichens and fungi. We also have some records for birds, mammals, butterflies and other insects," explains Jane.

Twenty-seven species of butterflies have been recorded at Fort Halstead, including the Orange-tip, Common Blue, Small Copper, Ringlet and Small Heath, together with the Brown Argus, Green Hairstreak, Purple Hairstreak, Essex and Grizzled skippers – the latter five are designated as 'target species' in the Biological Records Centre 1983 survey. In addition, there are other notable grassland insects, such as Roesel's Bush Cricket and the Rufous Grasshopper.

The Group's Annual Bird Count in January charted 49 species of birds including Red-poll, Redwing and Meadow Pipit. Breeding species include the common tits, warblers, Goldfinches, Green and Great-spotted woodpeckers, Nuthatches, Robins, Song Thrushes, Blackbirds and Pied Wagtails amongst others. House Sparrows have become very scarce in recent times.

As for mammals, in the past year a Hedgehog has finally been recorded, as well as Badger and Bank Vole. The group has also mapped a number of unusual herbs. More work is planned for the future including a fungus survey.

By Dr Jane Didham and Dr Paul Syms

Robin singing
© Jason Venus, Natural Visions

The site owes its rich flora and fauna to the fact that for more than 100 years defence use has protected the habitats from the ravages of 20th Century agriculture, forestry and development.

AROUND THE REGIONS
Lincolnshire

CRANWELL – ROYAL AIR FORCE

Members of the RAF Cranwell Nature Conservation Group have been busy over the last year. RAF Cranwell has four designated conservation areas and for those familiar with the area, they are Bristol House Woods, Peace Keeper Site at Barkstone Heath, an area on the North Airfield and a large designated Nature Reserve just west of Cranwell Primary School. Throughout the past year, members of the Conservation Group have carried out routine care and maintenance activities on the areas, including monitoring and replacing bird boxes, cutting shrubs, removing dead grass and weeding to name a few. In addition, two local sixth form students conducted a six-month biodiversity survey on behalf of the MOD and supplied the Conservation Group with data to update the Stations' site dossier. This survey qualified as part of their Duke of Edinburgh Gold Award. Undoubtedly, the major project this year was carried out in the Station Nature Reserve.

The Nature Reserve before the addition of the Nature Trail Path

Laying part of the path

Part of the Nature Trail Path after completion

On 19th and 20th July last year, the Station Nature Conservation Group and members of the 216 Non Commissioned Aircrew Initial Training Course constructed a 215-metre nature trail path through the Station's nature reserve. The path runs from the main road to the left of the new College View Housing Estate, through the woods and terminates at the entrance to Cranwell Primary School. Not only has the venture reduced the growing pedestrian and traffic congestion along the school road caused by the new housing estate, but it has also provided the local populace, including local school children, with a facility that will increase and improve their awareness and understanding of nature. The path completes phase one of the project and phase two is due to start this year. Phase two is the proposed construction of a 240-metre woodchip path around the remaining areas of the Nature Reserve.

Coinciding with the event, Mr Warren Carroll, a 55 (R) Sqn C Flt Civilian Instructor was visiting the Cranwell area. Mr Carroll is president of the Canadian Society of Military Medals and Insignia, a member of the Organisation of Military Museums of Canada and the Royal Canadian Military Institute. He is also a relative of the late Flt Lt Dickie Waghorne who won the Sword of Honour in 1928 and also won the Schneider Trophy in a Supermarine S6 in1929. There are numerous paintings dedicated to Flt Lt Waghorne in the College Hall Officers Mess (CHOM). On the afternoon of Saturday 19th July, Fg Off Steve Davies arranged a tour of CHOM, for Mr Carroll and his three colleagues. With this in mind, the Station Nature Conservation Group thought it would be appropriate to name the path the 'Waghorne Memorial Nature Trail' in memory of Dickie Waghorne.

By Sqn Ldr D Holmes,
OC C FLT 55(R) SQN RAF Cranwell.

Some of the volunteers pictured with the Station Commander and relatives of Dickie Waghorn

AROUND THE REGIONS
Northamptonshire

YARDLEY CHASE – ARMY TRAINING ESTATE

It was a mild winter again last year, with very little snow, just five light falls between late January and mid April. The heaviest snowfall was of 1cm in January, which gave very few problems in the countryside but did manage to cause considerable traffic problems nationally. January was recorded as the wettest for several years with an average of 76mm of rain.

The spring months were generally dry and mild. Frogs spawned on February 27th, with the toads following by March 11th. The latest sighting of an active frog in 2003 was November 18th in a grass ride. June was the hottest month since 1976, the average temperature for the month being 24ºC and the hottest day was 27ºC.

August and September were very dry and sunny months, which gave us a good show of butterflies. These increasingly warm conditions over Europe have caused an influx of invertebrates into Britain and several unusual sightings have been recorded nationally; some of these have landed in our area. The northern range of some flora and fauna does seem to be increasing over these past years. The generally dry conditions kept the mollusc numbers well down, which will have pleased the gardeners amongst us, although it will have robbed our thrushes and blackbirds of their escargot breakfast!

The prevailing weather conditions also prevented our usual crop of fungi and despite the 46 mm of rain in October, the crop has been almost nil. Due to the continuing mildness, fungi started to appear in the wooded areas during December, but soon succumbed to the first few frosts, thus only lasted a short time.

The pond levels did not start to drop until May, after which there was a rapid drop to 40cm which is slowly recovering towards normal levels. However, we started 2004 with levels below full. Total rainfall for last year was 566mm, the lowest since 1966.

Mammals

Foxes have been very scarce this year, even their scent was rarely detected. Their scarcity extends over the whole of the surrounding Chase area. Badgers, on the other hand, have been very active, both in the Chase and the training areas, especially around the perimeter fence. Here they have managed to make several holes in the rabbit wire, some from outside and some from inside the fence, which is allowing the movement of other animals between the different areas. Fallow and Muntjac numbers are under control, and there have been no sightings of Roe or Chinese Water deer. Grey Squirrels continue to be a nuisance and there is a lot more evidence of bark stripping.

Chimney Sweeper
© J A Richardson

Entomology

The much warmer and brighter year has given us a good showing of butterflies and brought in many migrant insects. The most noteworthy of these being the Hummingbird Hawkmoth *Macroglossum stellatarum*, a rarely seen moth, it was observed hovering over some Willowherb. It has also been seen in the gardens of surrounding villages with one being reported as late as November. Painted Lady Butterflies were present in much larger numbers although Clouded Yellows have not been seen this year.

Common butterfly sightings have been very good and on sunny days we were able to record 15-18 species by the end of the day. Marbled Whites were recorded in the meadow area, a welcome return after a four-year absence. White Admiral and Wood White butterflies were frequently seen although the numbers of the latter were down. Day-flying moths were also down in numbers recorded in previous years, the exception being the Chimney Sweeper and Silver Y.

AROUND THE REGIONS

Northamptonshire

Hummingbird Hawkmoth
© J A Richardson

Marbled White
© J A Richardson

The micromoth section of our group has been very busy this year. A large number of these moth larvae are to be found in leaf mines. David, our micromoth specialist, joined us ten years ago, and since then we have been encouraged to look for specific mines during the appropriate season. This year our efforts have been more focussed, as David is attempting to make images of these creatures available to all via a new website – Http://www.leafmines.co.uk. About 300 species of leaf miners are included to date and the site is being regularly updated.

Over 600 insects on the British list have larvae in the mined leaves, leaf stalks or seeds of their food plants. In some species the larvae are sap feeders just below the epidermis, other species eat the contents of the leaf either to full or part depth. Full depth mines usually look like transparent windows or tracks when the leaf is held up to the light. Some species are leaf miners only in early instars, and then later feed externally. Generally, the egg is laid directly on the leaf-blade or stalk, the larva burrows into the leaf and spends the whole of its larval life feeding within the leaf thickness. In most species the larva is unable to change leaves. The whole larval life history can therefore be observed in a single leaf.

A mine may be formed as a blotch, a linear gallery, a gall within the leafstalk or midrib, or a succession of two or more of these forms. The larval frass (droppings) within the mine is usually in a particular form for each species. The colour of the lava in the mine is often diagnostic in the identification of species. Most insect species feed only on single plant species or a closely related species. Identification of the food plant and a careful note of the form and contents of the mine are often sufficient for the species to be identified.

Many mines are formed in summer and early autumn in green leaves. In late autumn at or after leaf fall, mines of other species can be found in green patches or "islands" in the otherwise yellow or brown leaves. The means by which the insect species makes the leaf retain its green colouring is not fully understood. In one family of moths (Coleophoridae) the larvae mine the leaves or seeds from portable cases made of silk or plant material.

The majority of leaf-mining insects are moths (Lepidoptera) or flies (Diptera). There are a smaller number, which are sawflies (Hymenoptera) or beetles (Coleoptera). The study of the life histories of the moths is more advanced than the other orders. Over the past years we have recorded over 150 species within the training area, of which three were new to the county.

Hornets have again been plentiful and due to the mild weather were still flying as late as November 16th. The larger shield bugs were also more abundant, the Green Shield Bug in its autumn colours was still active during the first week of December. Other insects that also remained active late into the year included Speckled Wood and Red Admiral butterflies, which were still flying in October as were Migrant Hawker Dragonflies.

Birds

Unfortunately, due to changes of personnel within the MOD and the Conservation Group, the annual bird count in May did not take place last year. However, our regular monitoring days continued throughout the year and we recorded 52 species. Amongst these was a pair of Whinchats seen during the spring migration period, the first record for the past ten years. The Ravens, which arrived in 2002 are still being seen and heard. Barn Owls are also being seen. Woodcock were very scarce last year on our site and they have also been scarce in neighbouring woodland: only two have been recorded. The woods have been very dry which makes it difficult for the birds to find sufficient food (usually worms) hence they may have decided to find new wetter areas for better foraging.

By J A Richardson, Yardley Chase Conservation Committee

AROUND THE REGIONS
Pembrokeshire

CASTLEMARTIN – ARMY TRAINING ESTATE

For those who have visited Castlemartin, the ruggedness of the area and the spectacular coastline of limestone cliffs reveal a most vivid impression and for those who have not, it is truly worth a visit. With such names as Huntsman's Leap, Bullslaugher Bay (some say Bulls laughter) Moody Nose, Elegug Stacks (Elegug is an old Norse word for Guillemot), Cabin Door, Hobby Horse Bay and The Green Bridge of Wales, how could one not feel inquisitive?

ATE Pembrokeshire had a busy year with a fuller than normal firing programme. Pre OP Telic (Iraq) deployment included 12 Air Defence Regiment who came over from Germany to train at Manorbier and D Sqn the Household Cavalry Regiment even conducted live firing on a Saturday, thought to be the first weekend firing since the Korean War. The extension to Range 5 was eventually completed having had the investigative trauma of a full Environmental Impact Assessment. With all this going on it never ceases to astonish and gratify those who are interested in all aspects of wildlife conservation how nature continues to thrive.

The Integrated Land Management Plan has come into its own as a management tool, and we produced our first Annual Report in May 2003, which has given heart to all involved. It has provided a framework from which we will work this year and thanks to funding from REES (the Rural Elements of the Estate Strategy), a large percentage of projects have been achieved in the year.

One project has been a condition assessment of archaeological sites, of which there are in fact 400 sites of interest to record! Nearly all the farmhouses on the range were destroyed during WWII and last year the range held a '1938 Day', where families that had lived there were invited to visit the sites to reminisce. Some consolidation work has been done to remaining buildings of historic interest including Brownslade Farm, which was considered to be at the forefront of farm management in the early 19th Century.

In the middle of the Range, there is a small chapel of medieval origin, restored by the Lampton family in 1903, which is still used for services today. A few months after Lt Col Rogers first took over as Commandant here, he received a letter from Cardiff University stating that the mosaics were 'ready'. It was known that there had been mosaics, but there was no record of where they had gone. It turned out they had been removed for repair work twenty years ago! The incredible coincidence was that not only were the mosaics being returned in 2003, but also it was the centenary year of its restoration and a most moving service was held in November.

Monitoring of species continues. The Choughs are flourishing and had a very good breeding season. Studies of the 'invertebrates on the coast' by Liverpool Museum have highlighted the importance of the Range coastline for nationally scarce insects. Grey Seals continue to prosper and 19 pups were recorded. The study of caves along the coastline determined a proportion used by bats including Greater and Lesser Horseshoe bats. The Shrill Carder Bees had an excellent year helped by the large range of nectar sources and good late summer weather. The Silver-studded Blue Butterfly also did exceptionally well and the Green-winged Orchid flowered spectacularly in May. A record number of over 10,000 nesting Guillemots have been noted on the cliffs.

The most unexpected event, which caused particular excitement, was the recording of the Marsh Fritillary Butterfly for the first time, and a subsequent survey of its foodplant, *Sucisa pratensis* revealed that there were larval webs in the autumn proving that there is at least a small population here at the Castlemartin Range.

Castlemartin now has a full time Ranger, Lynne Ferrand, who helps with monitoring the wildlife, as well as giving guidance to climbers, walkers and visiting units with regard to cliff nesting birds, rare plants and access in general.

Retirements

Brian Goodman, who worked as the Defence Estates foreman for 34 years, retired this year. He was much respected and has been invited to become a member of the Conservation Group. Jane Hodges MBE has retired as secretary of our Conservation Group after 17 years. Jane will continue as a member of the group so we will continue to benefit from her vast depth of knowledge! I have bravely taken on the role of Secretary, and await the writer's cramp!

By Nicky Rogers, Landmarc

Guillemot
© Soames Summerhays, Natural Visions

AROUND THE REGIONS
Shropshire

NESCLIFF – ARMY TRAINING ESTATE

During the last five or six years we have struck up an excellent rapport with the Walford & North Shropshire Conservation Department, to the extent that the majority of our conservation work on the training area is now carried out by them as part of the college curriculum. This arrangement is beneficial to both parties in as much as the students working on the area (under strict supervision) gain hands on experience in real conservation matters and we receive professional advice from the experts. Graham Ludgate carries out the organisation and supervision of all working parties from the college, after consulting me to ensure that activities do not conflict with training etc.

Students removing self-generated Alder from the conservation pond. Note the spindle tree on the far bank.

Graham Ludgate (lower right) and 'mature students' collect seeds.

The annual MOD bird count was carried out during May 2003. Throughout June and July, groups of students carried out maintenance work in copses, removing redundant tree guards, cutting back overhanging branches and removing dead wood. In the autumn, they collected seeds from old established hedgerows of Hawthorn, Spindle, Dog Rose and Blackthorn, and these are being used in the development of a nursery at the college campus. These seedlings will enable new plantations and hedgerows to be formed using material of known origin.

Spindle plants grown by the college from seeds, collected at Nesscliff, have been donated to the Local Borough Council Community Woodland Project. They are to be planted into new areas of hedgerows and woodland, currently sited as 'wildlife corridors', across an open expanse of the training area.

Another important project undertaken by the students, and one that will last them until next spring is the management of our conservation pond. So far they have removed Alder from the banks and treated the stumps to prevent re-growth. They intend to dredge a vast amount of Bulrushes, which are encroaching across to the wildlife island. They also plan on removing undergrowth especially spirals from the young plantation bordering the pond.

By Major (Ret'd) M D White

AROUND THE REGIONS
Staffordshire

LEEK – ARMY TRAINING ESTATE

The Leek Training Area lies 1600 feet (500m) above sea level and consists of 1093 hectares (2702 acres) of rugged and challenging open moor as well as small areas of woodland, heather and gorse that line the valley sides and floors. In addition, there is a mosaic of grazed farmland and a number of streams. Past surveys have shown that the site seems to provide excellent breeding and feeding grounds for a wide range of bird species some of which are rare or endangered. Three years ago, a rare Black Grouse *Tetrao tetrix* was sighted in the area, but unfortunately this bird has not been seen since. We all hope that it will return to the area one day.

Over the past few years, volunteers from the University of Derby have taken part in an annual survey of the bird populations in the Leek and Upper Hulme Training Area in Leek. The annual survey covers the entire MOD Estate in the area. It is designed to produce a population index of the number of different species of birds, that are present. This year survey teams were split into small groups, and each group was designated their own areas to record.

Greater Spotted Woodpecker, Leek Training Area, B Clowes

Jay, Leek Training Area, B Clowes

We were lucky enough to see a Merlin *Falco columbaris* that gave us a great display as it tried to catch a small bird on the wing. The display amazed all of us and clearly showed how well these birds are adapted to hunting.

The survey has shown that the wide range of habitats and the low level of human disturbance, in combination with active conservation management can provide excellent sites for a wide diversity of birds to live and breed in. The University of Derby is looking forward to monitoring the area next year.

By Jenny Clark (University of Derby)

Coal Tit, Leek Training Area, B Clowes

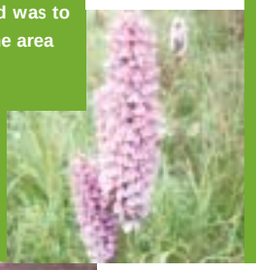
AROUND THE REGIONS
Staffordshire

SWYNNERTON – ARMY TRAINING ESTATE

It is hard to think that almost a year has passed since the last notes were written on the exploits of Swynnerton Training Area Conservation Group. I initially thought that there was not too much to write on the subject of conservation, but I was wrong! Nothing exciting or eventful appeared to have occurred and yet so much seems to have been done. Clearly, the most important event for the area and the staff who manage it was the arrival of 'Landmarc', the Army's new strategic partner responsible for the delivery of estate management. To take the past year in the order events, the following has occurred.

Large areas of brickwork and old buildings exposed by scrub clearance

The new and refurbished Chespale Fence protects the badger sett in the wooded area



Southern-marsh Orchid was to be seen throughout the area this summer

Defence Estates worker Basil Fielding fitting the grill to one of the bat roost sites

Land Clearance

With the implementation of the 'Intergrated Land Management Plan', directed by the Commander of the Army Training Estate (West Midlands), a substantial area was due to be cleared of scrub, small trees and bramble. This area was set-aside for urban training activities. Initial clearances exposed extensive areas of brickwork and concrete bases from the original ammunition factory. Unfortunately, the scrub clearance has affected the habitat of our resident Short-eared Owls and Song Thrushes; however the area, which is now cleared to ground level, has become the hunting ground for other birds of prey such as buzzards and Kestrel.
The next phase of implementation is the levelling of some of the earth bunds to "open up" the area for training; which is currently more akin to a giant maze and well suited to challenging the skills for military training.

Surveys

As part of the Land Management Plan a number of surveys were carried out last year. In particular, a survey of bats produced an interesting report. Several species were identified and a number of buildings and structures were identified as roost sites. Steel grills were positioned (as recommended by English Nature) to prevent entry by people whilst still allowing free access to the bats.

Conservation

Throughout the year constant monitoring of the Otters still takes place. Unfortunately, there have been no more live sightings but we live in hope that one day they will show themselves again! Signs indicate that they are still present in the area and this continues to encourage us. We undertook the annual MOD Bird Count, with the invaluable assistance of Graham Ludgate with Bill Edwards of Walford College, and Brian George and the members of the Club. About 60% of the nest boxes appear to have been occupied. Unfortunately, due to the land clearance, several areas that have previously seen nesting activity were not used last year. The fence surrounding our oldest badger sett was finally completed. My son Jeffrey and I erected this on what was probably some of the hottest days of the year. Handling Chespale fencing is a little like wrestling with an octopus - you think you have it under control, when you turn round, it has fallen down again. Not withstanding some stubborn bramble bushes and very thorny Field Rose, we completed the job. The Badgers have extensively burrowed under a number of old tall trees, on what is already a crumbling bank. Any closer incursions by HGVs or similar vehicles could result in several trees falling down, so I hope the badgers appreciate our efforts in preventing further incursions from the off road driving circuit.

Newts in the water filled holes in the Demolition Area

At the end of last year, the Commandant allowed us to select a building that is intended to provide facilities for a permanent display/briefing room for conservation related matters. It is hoped that in a future issue of Sanctuary we will be able to give further details and pictures of this valuable addition to the Training Area.

By Captain John Sibson

AROUND THE REGIONS

Warwickshire

KINETON– DEFENCE MUNITIONS CENTRE

The ammunition depot at Kineton dates from 1942. The first ammunition arrived on 8 October 1942 and storage eventually consisted of 252 rail-linked Explosive Storage Houses (ESH). Six of these remain and have been recorded by local industrial archaeologists. The site is famous for its association with the Battle of Edgehill that took place on 23rd October 1642 although almost no artefacts or burials have been discovered from the battle. The earliest artefact from the site is a Neolithic flint adze.

The site area totals around 2500 acres, formerly farmed land over mostly Jurassic lower lias clay up to 80 m thick with, frequently, a limestone/mudstone layer at about four metres depth. Large numbers of the small ammonites and *Gryphae spp*. fossils have been found. Three parcels of mature, secondary woodland are present although the site lacks any true ancient woodland. The secondary woodland areas are The Oaks (40 acres), Graveground Coppice (9 acres) and Marlborough Coppice (1 acre), all dating from about 1830 and the first two overlying ridge and furrow. The site is classified as an ECOSITE and as a Potential Site of Importance for Nature Conservation (PSINC).

At present, the group represents security, the shoot, the angling club, property management and provide the Chairman and Secretariat. Other members are from Defence Deer Management, Warwickshire Wildlife Trust (WWT), Banbury Ornithological Society (BOS), a tenant farmer, an ecologist at Warwick Museum field services, Defence Estates Shrewsbury, Warwickshire Farming and Wildlife Advisory Group and a Biological Recorder. Considerable assistance has been received from the BOS, staff at the Herbert Museum in Coventry, Warwick Museum, the mycologists of the Birmingham Natural History Society, WWT, the Warwickshire Moth Group and the Warwickshire Dragonfly Group. We also have a vermin controller and sewage farm superintendent, both good naturalists who contribute valuable records.

The current Species List for the site shows records for 1868 species of 41 different groups. Some groups are well represented whilst others await a visit from a group expert; consequently we have 260 records of fly species but only one for spiders! Beetles are well covered with 199 different species, and 289 species of moths. There are interesting plant colonies including Blue Fleabane and Yellow Rattle and specifically in Graveground Coppice, several thousand Herb-Paris. The group has recorded 17 species of dragonfly and damselfly.

The total bird list for the site includes 145 species with approximately 63 breeding species. Recent breeding losses have been the Tree Pipit and Whinchat, probably due to the maturing of the plantations in which they were nesting. Buzzard nested for the first time in 1999. Regular sightings of Buzzard and Raven, up to three of the latter, indicate the current eastward trend of these species. Breeding raptors include Barn, Little and Tawny owl, Sparrowhawk, Buzzard and Kestrel, both Short-eared Owl and Hobby are seen in summer, but breeding has not been confirmed. Red Kite, harriers, Merlin, and Long-eared Owl (including a roost of seven) are regularly seen. The total bird list for 2002 was 109 species and by October this figure had reached the same for 2003.

Boundary Pond, M E Woodhams

A recent mammal arrival from the West is the Polecat. Pure bred specimens have been identified by skull measurements, and family parties have been seen. Badgers and Rabbits are present and troublesome, causing damage to roads and traverses. Mink are a constant menace to breeding Dabchick, Coot and Moorhen. Roe and Muntjac deer are present and Fallow are occasional visitors.

With regard to Biodiversity Action Plan Priority (BAP) species, the Water Vole has not been seen since 1988 and the Brown Hare and Grey Partridge require changes to tenancy agreement, before positive conservation action can occur. Hares are common here as they are throughout most of the county. The site also has a number of Warwickshire BAP species and habitats, including particularly important colonies of Grizzled Skipper. Other butterfly colonies reported by Mike Slater of Butterfly Conservation, include Dingy Skipper, White-letter Hairstreak, Green Hairstreak, Wall Brown, Small Heath and Marbled White.

Habitat improvement is always a key feature at the site. The group initiates and undertakes various active conservation measures in place including; a programme of coppicing in Graveground Coppice; improvements to Boundary Pond and the rehabilitation of two ponds on the demolition ground. At the Sewage Farm, the installation of a 460 square metre subsurface flow reed bed filter, gravity fed by the River Dene will soon be completed. The winter of 2004 will see further hedge laying and some valuable scrub clearance by Defence Estates staff.

By MG Woodhams, Kineton MOD Conservation Group

KINGSBURY WOOD – ARMY TRAINING ESTATE

It was generally a dry year at Kingsbury Wood with very wet stretches of rides and footpaths drying out in late summer with the ground becoming very parched. There were 37 species of birds noted in the 62 hectares of deciduous woodland during the annual MOD Bird Count undertaken on 15th May. The top three species were: Robin (29), Wren (28) and Blackbird (26). Others species recorded were Chaffinch (22), Woodpigeon (14), Willow Warbler (14), Blackcap (8) and Chiffchaff (6). In addition, three of each Cuckoo, Garden Warbler, Great Spotted Woodpecker, Song Thrush and Whitethroat were also noted. There were one or two Buzzard, Sparrowhawk, Kestrel, Green Woodpecker, Stock Dove and Marsh Tit.

A new wildflower was found in the wood, the Nettle-leaved Bellflower *Campanula trachelium.*

Ranges

Frog tadpoles and common newts were quite numerous in the shallow water of the ditches. On 4th July 2003, two pairs of Skylarks and a pair of Lapwing were present on the ranges and farmland. There were two pairs of Buzzards in the wooded areas and one or two Hobbys were apparent – a pair of these nested nearby in the late 1990s. Tawny Owls and Reed Buntings were occasional visitors, and Whitethroats, Blackcaps and Willow Warblers nested in the plentiful scrub. Roe Deer were seen on the ranges as well as in the woodland. Two pairs of Hares were noted and Badgers were present at all times.

Further insects were collected for identification. Butterflies included the Dingy Skipper for the first time in a few years, captured on 30th May 2003. Ringlets showed up on the 4th July and there were up to six Common Blues feeding on the Bird's-foot Trefoil and the abundant Restharrow. Green-veined White, Small Heath, Speckled Wood and Gatekeeper butterflies were also conspicuous. Day-flying moths included Latticed Heath, Mother Shipton, Mother of Pearl and Chinamark. Species of odonata included the Large Red Damselfly *Pyrrhosoma nymphula*.

Newly recorded wildflowers to the ranges were Slender Trefoil *Trifolium micranthum,* Purple *Saxifrage Silaum silaus,* Great Hedge Bedstraw *Galium mollugo* and Common Spike Rush *Eleocharis palustris.* Toad Rush and Quaking Grass were discovered and there were a few white flowered Common Spotted Orchids. Large extents of Greater Celandine flowered on the banks at the Coton Road entrance.

Edge Hill Wood

Bird counts on 24th April and 15th May 2003 revealed 23 species. The most numerous being Wren (8), Robin (7), Blackbird (6) and Wood Pigeon (5), Willow Warbler (5) and Chaffinch (5). There were two each of Song Thrush and Whitethroat and a single Sparrowhawk, Greater Spotted Woodpecker, Garden Warbler and Jay.

Restored Spoil Heaps

A meeting was held at Wood End in early March last year with Defence Estates and local interested parties. Those present included Lt Colonel Kevin Hodgson, Commanding Officer of Swynnerton Training Area, the Police and local residents. The aim was to curb the unauthorised motor cycle scrambling in the Wood and around the spoil heaps. Further burnt-out cars and vans were dumped in the wood and at the spoil heaps. In mid-September, a burnt out caravan and trailer and a smashed up estate car lay along the main track between the mounds.

A new breeding bird on the grassy mounds was the Meadow Pipit, two pairs were recorded there in the nesting season. Approximately five pairs of Skylark also nested. Other birds noted included the Red-legged Partridge, Cuckoo, Green Woodpecker and Willow Warbler.

Lady's Mantle *Alchemilla mollis* and Perforate St John's Wort *Hypericum perforatum* were new additions to the plant list. Heather and Southern Marsh Orchids continued to increase noticeably.

By Maurice A Arnold, Kingsbury Wood Conservation Group

Green-veined White
© Jeremy Thomas - Natural Visions

AROUND THE REGIONS

Wiltshire

BOSCOMBE DOWN – QinetiQ

Blue Gate Pond is our only area of permanently standing water, which was created a number of years ago. This year, just as the flora and fauna were beginning to flourish, with damselflies and dragonflies visiting and with frogs spawning in the spring, the pond was attacked by vandals and thieves.

Lapwing Chick, Mike Stone

A very large section of the butyl liner had been stolen and with it some plants were also removed. The amount of damage caused, brings into doubt the whole concept of allowing public access to the pond. It may mean that any new pond creation will have to be reconsidered and located "within the wire". This shocking event has been very demoralising for all those who have contributed so much personal time and energy to the Blue Gate Pond Project.

On a happier note, we've recorded a few notable bird species in 2003. First, we managed to record 82 species during the annual MOD Bird Count. A Little Egret *Egretta garzetta* was recorded just a few hundred yards from the perimeter fence on the River Bourne in the village of Idmiston.

Second, whilst on patrol off-station, two MOD Police officers recorded a White Stork *Ciconia ciconia* again not far from the airfield. Enquiries made by the officers revealed that this bird had been in the area (around Shipton Bellinger) for a couple of weeks and had aroused much local interest.

A Great Grey Shrike *Lanius excubitor* made an appearance just to the west of Air Traffic Control and stayed for about three weeks during the spring. This is the first time this bird has been recorded here since 1992. Lapwing *Vanellus vanellus* did badly this year with around 20 individuals recorded, from these only four chicks were raised to fledgling stage. Similarly, Grey Partridge *Perdix perdix* have not done too well either, with only eight adults recorded. Many paired off, but it appears that there were insufficient nesting sites for them.

Skeleton recovered from multiple grave, Bob Clarke

Pond damage by vandals and theives, Mike Stone

One success story from last year was the first ever record of a nesting pair of Common Buzzards *Buteo buteo* nesting. They went on to rear a single chick. The pair had nested in an old crow's nest in a clump of Scots Pine trees, which was adjacent to the fence line on the south side of the airfield. All five species of owl (Barn, Tawny, Little, Long-eared and Short-eared) are still being recorded, but sightings of Short-eared Owls have declined and currently they're only recorded during the migratory periods.

I was delighted to be offered, as group Secretary, the chance to attend the 8th British Association for Shooting and Conservation (BASC) Wildlife Law Enforcement Seminar on the 17th April 2003 at Chatsworth Estate, entitled "The Poaching of Game, Deer and Fish – a practical day". There were police officers from all over the country present; with most of the Home Office forces being represented, with me and one other officer from the Ministry of Defence Police. There were also representatives from Defra and BASC itself. The briefs covered fish poaching, game birds (a keeper's perspective), deer poaching and the use of pesticides and poisons.

By Mike Stone

Archaeology

QinetiQ archaeologists Colin Kirby and Bob Clarke identified an early Bronze Age multiple burial site, dating to 2300BC whilst working on the Boscombe Down Married Quarters Roads Adoption Project. Therefore, work involves the removal and replacement of all roads and services on the three housing estates. The remains of seven individuals, including three children were found during the laying of a water main. In addition, seven beakers, five arrowheads, tools of flint and a boar's tusk and what is thought to be an early pendant representing a stylised bow were also found. The burial site was later excavated jointly by QinetiQ Archaeology and Wessex Archaeology. This burial site is of national importance and it may represent links with Neolithic traditions. A further Bronze Age Beaker burial of a single individual dating to 2000-1500BC was also found nearby. During the first half of this project no fewer than 13 Roman features have been recorded and sampled by QinetiQ archaeologists working fulltime at the site.

By Colin Kirby

AROUND THE REGIONS
Wiltshire

PORTON DOWN – DEFENCE SCIENCE & TECHNOLOGY LABORATORY (Dstl)

Effective scrub clearance!

Innovative! A snowplough collects woodchipping, courtesy of Dstl Porton Down

Another busy and interesting year at Dstl Porton Down was nicely rounded off with the completion of the winter programme of scrub and Scots Pine clearance. This happened at the end of February; one month ahead of the deadline and a couple of days before the snow arrived. The third winter programme under the EU LIFE project has resulted in landscape scale changes with the range now nearer its downland appearance prior to Myxomatosis. A lot has been learnt in three years, with operations significantly more efficient than in the first winter. A good example of increased efficiency is the clearance of extremely dense scrub. In the first year, the use of a tractor mounted flail in such areas would not have been contemplated, the very labour-intensive work being undertaken by men and chainsaws. This year a flail quickly reduced two hectares of impenetrable scrub to woodchips. The carpet of woody debris required removal. The contractor ('Brian the Flail') tried harrows, but these rolled the debris and dropped it after about ten metres. His next suggestion was a masterpiece. A snowplough was transported to the site and collected 80-90% of the woody material into rows from where it was collected and burnt. The area was totally devoid of vegetation after clearance, having been covered by scrub for the past 50 years. Two months after flailing the first violet seedlings are beginning to emerge giving us hope that another piece of downland will develop in years to come.

Conservation work by a new British Trust for Conservation Volunteers group, based in Salisbury, has started midweek visits to Porton Down. So far they have been involved in hazel coppicing and improvements to the exterior of our Conservation Centre.

The Porton Down Conservation Group provides guides to weekend visitors during the summer. As usual, many letters of thanks expressing how impressed vistiors were at the guides' knowledge have been received. One such party happened across the most exciting and important find of the year, a Lady Orchid. This beautiful plant was at a woodland edge and had obviously flowered the previous year, the old flowering stem still being present. It had never been recorded in Hampshire or Wiltshire before, its stronghold being Kent. A survey is planned to ascertain whether other plants are present.

Over the winter a couple of Black Redstarts made an installation on site their headquarters. The pair must have been reading bird books, as the situation fits the description of where these birds should be found exactly. Another winter visitor is the Hen Harrier, a male of which spent a couple of weeks touring the site.

In 2003, the results of vigilant monitoring by the Wessex Stone Curlew Team located 19 breeding pairs, three less than in 2002. Eleven other pairs bred within 2 km of the Porton boundary, so that the combined total for Porton and the farmland fringe was one more than in 2002. Porton's Stone Curlew suffered the perennial problem of a high predation rate of eggs and young. In addition, an adult bird was killed by a Peregrine Falcon in August.

Invertebrates were also monitored during the summer with four moth trapping sessions being run by the Wiltshire Moth Group. A good array of species was recorded, including the Lunar Yellow Underwing. In 2004, we hope to expand coverage with the Hampshire Moth Group joining these sessions.

Monitoring of wildlife is likely to become crucial at Porton Down, as the effects of the changes brought about by the LIFE project and other conservation work begin to develop. The invaluable knowledge of our Conservation Group members will be required more than ever!

By Stuart Corbett, Conservation Officer, Dstl Porton Down

AROUND THE REGIONS

Wiltshire

BULFORD – SALISBURY PLAIN (EAST) ARMY TRAINING ESTATE

The Bulford Conservation Group has had a "roller coaster" year. Activity has been varied and extensive. Dr Allan Morton, the Defence Estates (DE) Environmental Support Team Archaeologist was particularly proactive, and we are sorry to see him go. The Annual General Meeting was held in October last year and was attended by approximately 50 members. Dr Stuart Corbett of Porton Down was our guest speaker, and he provided us with an interesting insight into conservation by Dstl Porton Down.
Finally, our Conservation Group members hope that following the ongoing DE review of MOD Conservation Groups, those who live on or near the Plain and have contributed so much over the years will continue to play a part in the Plain's stewardship well into the future.

By Major (Retd) T Lort-Phillips, Chairman of Bulford Conservation Group

Botany Sub-Group

A search for evidence in dormouse boxes in February last year failed to show any proof of occupation. It is now six years since a live dormouse has been found, but we are leaving the boxes in position and we live in hope. There was a good turn out for Juniper scrub clearance last year. Unfortunately, in spite of the fencing, the rabbits still managed to invade and there is no sign of regeneration! In March last year, two colonies of wild daffodils were found and these were new records for our flora list.
Our butterfly hunt in early June was the most successful count ever. We found a wide variety of butterflies and moths. Small Blues and Small Heaths were too numerous to count, and Duke of Burgundy, Brown Argus and Dingy and Grizzled skippers were added to our common species list. Caterpillars of Dark Green Fritillaries were seen, and Marsh Fritillary egg clusters were found on Devils-bit Scabious leaves.
In July last year, we visited the south side of Beacon Hill on Cholderton Farm. One new find for the area was a group of Blue Fleabane.
Finally, Audrey Summers has stepped down as Secretary of the Group, she still remains heavily involved, and I hope she will continue to do so as we all rely greatly on her expertise. The group would like to thank her for her dedicated hard work over the last 22 years and wish her well for the future.

By Jenny Amor, Botany Sub-group Secretary

Badger Sub-Group

The prolonged dry conditions of 2003 affected the Badgers to a greater degree than most other mammals. At the height of summer little foraging took place on downland, and the Badgers made for wooded areas where the leaf mould retained moisture to grub around in. This was still insufficient to fully sustain the population, and our Badgers suffered a great deal of weight loss. The few cubs that were produced during the year have probably been affected disproportionately in comparison to the adults, and their development will no doubt have been checked.

By Alan Tefler

Ornithological Sub-Group

A White Stork stayed for over two weeks in the Shipton Bellinger area last year. Most Barn Owl sites were used, including external boxes and 47 Barn Owls were ringed. House Sparrows are now on the Amber List, and 120 were also ringed in 2003. Buzzard increased in numbers last year, and Hobbies were seen in the Bulford and Weather Hill areas, although breeding was not confirmed. Recoveries included a Little Owl, which was found on eggs at Chisenbury. This bird was originally ringed during the filming of 'Wings' in 1976. A Blue Tit ringed in 1999 was also caught again last year.

By Major L C Bond

Archaeology Sub-Group

A programme of scrub clearance was undertaken on the Plain on over 150 archaeological sites last year, mostly in the East. Our Group cleared several barrows in 2003, before the professionals took over. It is highly satisfactory and extremely hard work! Thankfully, Landmarc has been tasked to undertake yearly ongoing maintenance of Scheduled Monuments within Bulford Ranges. Rabbit and badger damage continued to be a huge problem, and the bowl barrow north of Baden Down Farm has now been destroyed. A trial is in the pipeline to place protective netting over certain barrows once the Rabbits have been eliminated. This will hopefully allow grass to grow back and will deter further mammal digging. An excavation by English Heritage to examine the extent of badger damage on one sett, revealed seven Saxon burials in a ditch last year. One, a woman, was buried with several artefacts, including a horse bit, brooch, and a Kentish spoon. Another lay with a child in her arms. Who were these Saxons? Where was their village? Why were they buried in a burial mound raised 2000 years before their deaths? Hopefully, some of these questions will be answered if funding is allocated for further excavation. I would finally like to thank Allan Morton of DE and Roy Canham of Wessex Archaeology for their support and interest in our group.

By Nell Duffie, Archaeology Sub-Group Secretary.

Salisbury & District Natural History Society Fungal Foray

On 19th October 2003 24 members took part in the fungal foray. Due to a prolonged dry period, conditions were not ideal for finding fungi. However, we found a surprising total of 60 species, 21 of which had not been seen on Salisbury Plain (East) before. One of these finds was Lepiota Echinacea, which is classed as very uncommon. Three species were new finds for Wiltshire, and they were *Erysiphe fischeri, Erysiphe tortilis* and *Septoria euonymni.*

By Ted Gange

AROUND THE REGIONS
Yorkshire

CATTERICK – ARMY TRAINING ESTATE

In the absence of our regular contributor - currently confronting primary jungle dressed in bush hat, shorts and sandals, butterfly net in hand on the other side of the world - the responsibility for this year's article is conferred by default. Conservation activities continue to flourish with agencies in the Northeast working to a full and varied agenda. 2003 had the driest summer for many years, which produced several pleasing results with the Black Grouse raising around 20 juveniles, having been spared the unseasonable downpours of recent years. This is a huge improvement on previous breeding seasons. Perhaps this same weather pattern was responsible for the Holly Blue and Speckled Wood butterflies seen for the first time locally. It also enthused some of our range wardens who, during the breeding season, became increasingly adept at pinpointing young waders and skylark nests on the range bases. In many cases the young fledglings could be ringed prior to flying.

On Barden Moor the wetland, formed in part from waste of the Garrison Tesco site, produced an even noisier than usual Black-headed Gull colony, over 100 pairs nested. Various wader species breed in the vicinity, and Dunlin were seen in full breeding plumage during the summer months. Our Army Rural Elements of the Estate Strategy funding continues to produce superb results and this year has been no exception. A permissive pathway has been agreed with local landowners and fenced along a very special route above the Swale Valley. Nearby, a public car park with a spectacular viewing point along the river and into the Dales has been sited with full planning permission. In addition, an inspirational plan to re-construct a native woodland in Stainton Valley to replace one felled some 20 years ago finally began to take shape. This is a hugely exciting project so watch this space! At Foxglove Covert Field Centre, the fifth bird ringing course took place and was well over-subscribed. It was a huge success and the course for the current year is already booked out. Roy Crossley, our resident dipterist, ran an interesting course on bugs in parallel with other courses being delivered from this remarkable facility which continues to attract people of all ages and abilities. Through the skills and generosity of Richard Almond, Lawrence Barker and Eric Coop, a fine geological cabinet has been acquired displaying several examples of fossils and minerals found on the Training Area.

Finally David Oldham, our professional tour guide, conducted a much-heralded field trip for the local Yoredale Natural History Group, which was greatly appreciated. Our relationship with the local statutory and community authorities in the area continues to thrive, and together we share the mutual benefit and enjoyment of living in an area of outstanding natural beauty.

By the time this article is in print our present Commander, Lt Col Niall MacGregor-Smith, will have migrated north to Edinburgh. Colonel Niall has been immensely supportive of all conservation activities on the Army Training Estate (Northeast), and we thank him and wish him well for the future.

By Major (Retd) A J Crease, Deputy Commander (ATE NE)

LECONFIELD CARRS – DEFENCE SCHOOL OF TRANSPORT

This year at Leconfield we unfortunately lost the old Walnut tree at the edge of the Park Cottage Orchard. It was not strong enough to survive the winter gales in early 2003, so the question as to the size of its nuts will have to remain unanswered until the young Walnut comes of age!

The tree was also home to a nest of wild bees. Consequently, Allan Maskell, the Training Area Supervisor, removed the trunk either side of the nest, and firmly set the bees nest section into the hole left by the tree, taking care to ensure that it faced the same direction as before. He also added a small roof to stop water seeping into the nest. Once the timber had completely dried, a slice was also taken from the remainder of the tree for dating using tree growth ring analysis (dendro-chronology). In spring, the Committee was delighted to observe that the bees had survived, and that they were using their newly adapted low-rise accommodation between trips to the blossom on the orchard trees.

On the 14th April 2003, our resident Air Sea Rescue Squadron, 202 Sqn RAF came to our assistance by airlifting soil bags to the island on our largest lake, Wyndham Water, which over the years had been eroded by waves. In the past there had been two islands on this particular lake, the current static island, and a moveable floating island, which was to be

Air Sea Rescue 202 Squadron airlifting soil bags

AROUND THE REGIONS

Yorkshire

1767 Map of King Henry VIII' s Coursing Park

anchored in different locations to vary the training routes for our amphibious vehicles. The floating island was an ambitious project that utilised specially prepared flotation tanks designed to support a platform filled with soil and planted up with marginal plants. The launch had proven highly successful, and all was well, or so we thought. However, after heavy overnight rain the floating island was nowhere to be seen. The weight calculations had been based on relatively dry soil and as we discovered wet soil is considerably heavier!

The rebuild of our one remaining island would thankfully prove to be much more successful, with a team relayed by inflatable boat between air drops to manoeuvre the soil bags into place and to recover the nets used by the Sea King to carry the soil bags. Our efforts were rewarded earlier this year, with a brood of Greylag Geese, a pair of Oystercatchers with a single chick and Little Ringed Plover breeding for the first time on the island.

A Bakewell, A Maskell, P Osbourn, M Fairfoot

During the past year, committee members Sarah Jupp of Defence Estates, and Jon Traill from the Yorkshire Wildlife Trust surveyed the site determine the size of the Water Vole population. Sarah was really looking forward to seeing, and if possible, photograping one, as she had never actually seen one alive before. After several hours, she was most disappointed when all that they discovered was evidence around the lake and a recently deceased Water Vole. However, Sarah took the opportunity and decided the vole would still make a good photograph if she posed it carefully!

Lt Col Peter Osbourn retired from the Army and from our Conservation Committee this year. The outstanding support that he gave to the group was a major factor in our runner-up award for the 2002 Sanctuary Award. He spent many of his weekends bird watching on the Training Area and whilst he had many good sightings of species, he failed to spot our resident Little Owl. As a parting gesture, he was given two bird hides. These have been positioned so that one overlooks Wyndham Water and the other is sited on the banks of Swan Myre. The former was the larger of the two and the Committee decided to name it 'Osbourn Hide' in honour of his support, and to have a brass plaque unveiled at a naming ceremony. He was both delighted and surprised, but even more surprised when we presented him with an official photograph, showing the whole committee stood behind him pointing to a carefully placed Little Owl, and the caption "despite every effort from the Conservation Team Lt Col Osbourn fails to spot the Little Owl again!"

In 2003 the Committee took up the kind offer by Dr David Chesmore to survey the moths and butterflies on site. After a short inital daytime visit to the site to familiarise themselves and to pick the best locations, three moth surveys were conducted. The first took place on the 13th June, which yielded over 50 species including the Cream-bordered Green Pea *Earias clorana*. Further surveys were arranged in July and September with David, assisted by both Mick Bassett, mysel, and several flasks of coffee into the early hours of the morning. The result of the surveys so far is a count of over 100 species and David plans to start early in 2004 to boost this figure further. David was delighted during the September visit, when a Slender Groundhopper joined the moths under the light. This species had not been recorded in Yorkshire for over 150 years until he discovered it recently at a location near the Humber Estuary, and also at Pocklington.

After a visit from the Defence Estates Archaeologist, we were pleased to receive copies of a 1616 map of the site showing the boundaries of the coursing park, which King Henry VIII had extended in 1542. We also received sections of a highly detailed 1767 map listing all the field names and tenants. This map was kindly pieced together and digitised by Mike Fairfoot in our Graphics Department and looked very impressive when printed in Sepia tones. Our plan is to overlay these early maps onto recent aerial photographs, to aid with dating some of the hedgerows on the site.

Mr Alan Mullinger, the fisheries manager from the Environment Agency kindly agreed to visit our site in November with his boat and team to electro-fish Little Carr. Little Carr is the most naturalised of the lakes on site and was created by the National Rivers Authority as a borrow pit for clay extraction in 1991. This lake is home to Great Crested Newts *Triturus cristatis*. A shoal of Rudd had been noted in the autumn and as they pose a threat to the newt population the decision was taken to keep the lake fish free. The Environment Agency team made several sweeps of

the lake from end to end using 250 volts four amps, which does no harm to the fish, but causes involuntary swimming action towards the electrodes. Embarrassingly, not a single fish was seen, and I was grateful that Alan Mullinger had also seen the Rudd himself earlier in the year. Everyone was puzzled by the lack of fish, until it came to light that a hungry young Cormorant had been seen about the lake the previous week - nature wins again!

By Alan Bakewell

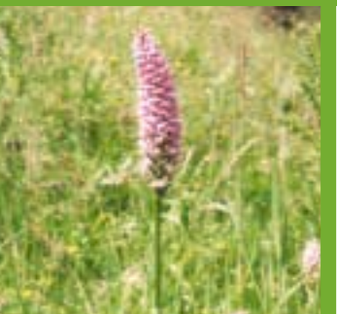
RIPON – ARMY TRAINING ESTATE

The Conservation Group approved a Geotechnical Survey to establish the existence of a Roman Villa on the site. Evidence that the site might contain a villa came to light following a Historic Landscape Assessment and survey of the Training Area. However, much to the disappointment of the group, the survey failed to confirm the villa's existence. We wonder what the features were that showed up so well on the aerial photographs? Various suggestions were put forward, and we may never fully answer the question (even though there is evidence of Roman occupancy on the site boundary). Those Romans must have been on MOD ground somewhere! The Historical Landscape Assessment did confirm the existence of a medieval Deer Park, ancient hedgerows and an ancient fishpond, sadly no ancient fish stocks were found!

Estate Advisor Helen Burdon and the Himalayan Balsalm (only another five hectares to go!), Graham Newcombe

Extensive site improvements have continued in the Ripon Parks Site of Special Scientific Interest. Scrub removal has continued, which has resulted in the creation of a network of rides in a site previously covered with Hawthorn. The new rides are now flourishing with a vast variety of plants, insect and birds. All we need now are willing volunteers to undertake surveys to establish site records for the area. The cattle-grazing programme continued to produce some excellent results, as they munched their way through the rough grasses to allow other species to flourish. It was particularly pleasing that they took a liking to the invasive Himalayan Balsam, as efforts by Helen Burdon (DE Estate Advisor) to halt its progress by hand pulling came to little avail!

Orchids appear after Conservation grazing



A new moth-trapping venture was established this year at Ripon, under the direction and guidance of Charlie Fletcher. To date 307 separate species have been recorded from only four sessions. Glow-worms were also found, and the site is the only known location in the area, so who knows what we may find as this continues. Watch this space for further updates.

Ripon Parks is the home to a rare snail *Succinea Oblonga*. Past records confirmed its existence, even though it had not been sighted for many years. The challenge was to find it again, a difficult task, as the snail is less than 2 mm in diameter. English Nature's Andrew Windrum rose to the challenge, and assisted by a local expert and probably hindered by Graham Newcombe (DE Rural Advisor) commenced the "great snail hunt". After a couple of hours of fruitless searching, the intrepid hunters discovered the snail in an area where its existence had not previously been recorded. Andrew found the first snail shell, which he proudly showed to the Conservation Group.

A problem that faced the group was the removal of trees from an area planted in the late 1980s in a Forestry Commission Scheme. A National Vegetation Classification Survey of a site in Ellington Banks found the planting had taken place on an area of species rich calcareous grassland, a UK BAP priority habitat. The scheme had been funded by grant aid from the Forestry Commission, which would have to be repaid if the trees were removed. I should add that these trees resemble bonsai specimens, as growth has been poor due the underlying ground conditions. The group supported the removal of the trees, to allow the site to revert back to its original condition. Discussions with the Forestry Commission initially did not yield much hope of this happening without the grant aid money being repaid; however, the Commander of ATE NE, Lt-Col Niall MacGregor-Smith put his influence behind the case and I can now report the Forestry Commission fully support the action and it is hoped tree removal will start this year.

A founder member of the Conservation Group, Beatrix Molesworth, retired after many years, we shall miss her input and local knowledge of the Ripon Area. Her enthusiasm and commitment to the group was legendary, and grateful thanks from all group members go out to her.

By Graham Newcombe, Defence Estates

Cyprus

SURVEY OF THE ELEONORA'S FALCON BREEDING SITES IN CYPRUS – 2003

The Eleonora's Falcon *Falco eleonorae* is a summer breeding visitor, nesting on the sea-cliffs along the southern coast of the Island of Cyprus (Kourtellarides, 1998). Following successful surveys from previous years, it was decided to maintain our efforts and continue the very important research into the distribution of this species.

Due to the location of nest sites on the cliff face, the survey can only be conducted from the sea. Therefore, it was necessary to utilise the resources of 417 Maritime Troop, based at RAF Akrotiri. Having obtained permission from the Commanding Officer, pending other commitments by the troop, the survey was conducted during mid-September 2003. Ideally, we would have preferred an earlier date in September when the chicks would have been on the cliffs. This year the team comprised Jeff Gordon (Birdlife Cyprus), Jason Wilson (WSBA Conservation Officer), Pantelis Charilaou (SBAA), Nicos Kassinis & Minas Papadopoulos (Cyprus Game Fund) and myself.

For continuity we used the same methodology as for previous surveys, the better seafarers carried out the count using binoculars, while the remainder recorded the results. We were very fortunate again to have Colin Jones as the skipper of the Sir William Roe. This made explaining the requirements of the survey for the morning very easy. In fact, he knew the exact locations where we needed to be, just ideal!
We arrived at the first location around 08:40 hrs, and commenced the survey. Binoculars pointed immediately skywards, as about 30 Honey Buzzards *Pernis apivorus* soared above. The survey was made more difficult by the lack of fledglings on the nest sites, so close examination and the experience of the experts among the team came to the fore. The falcons could be spotted in abundance in the air, but not so clearly on the cliffs themselves, but we soldiered on regardless (no pun intended!). As with last year, we could only make approximations from the designated locations previously recorded. However, numbers appeared to be good and the counting averaged out well.

The morning went exceptionally quickly and the weather thankfully held until our return to port. On behalf of the whole survey team, I would like to say another big thank you to 417 Maritime Troop and Sgt Colin Jones and his crew for their co-operation throughout the trip and also for plotting the sites with GPS co-ordinates for future surveys.

In order to get the best population and nesting site count we feel that it would be better to conduct two surveys per year. The first being early July when the falcons are beginning their courtship (to get a population count), and the second in early September, when the birds have nested and chicks are still on the nest. This would give us a more accurate count of nest sites and enable us to record any increase in the population.

In conclusion, further useful data has been recorded and it was also an opportunity to spend time with some experienced birdwatchers. We hope this survey continues long into the future to help the preservation of Eleonora's Falcon in Cyprus.

By A.M. Pickard & J. Wilson

2003 Survey Results

Location	2002 (Birds)	2002 (Nests)	2003 (Birds)	2003 (Nests)
Cliffs west of cape Aspro (east of Petra tou Romiou)	28	23	32	16
Cape Aspro	48	37	52	13
East of Cape Aspro	11	8	12	2
Bloodhound Camp (Evdhimou Bay Cliffs)	17 (2 young)	12	23	9
Tunnel Beach	6	3	1	1
Zapallo Fishing Station	18	14	30	11
Quarry Cliffs	23	18	0	0
Akrotiri east of TPMH to Radar Station	27	22	5	0
Akrotiri east of main radar station	17	14	41	13
Akrotiri Lighthouse	22	18	30	10
Totals	215	169	226	75

AROUND THE REGIONS

Cyprus

Annual Turtle Watch Update 2003 Season

The membership of Turtle Watch Akrotiri now stands at 47, with many additional volunteers. Students from Glasgow University are still invited to Cyprus to assist with beach patrols and nest excavations.

The volunteers that built the fence to prevent beach erosion, Sgt Matt Cascarina

Spectators wait in anticipation, Sgt Matt Cascarina

Onlookers watch the start of a nest excavation, Sgt Matt Cascarina

Episkopi Turtle Watch membership currently stands at 75. Episkopi held an open air "Indian Supper" on the full moon to start the season and to welcome all students and volunteers. This year, 70 families with children attended.

A volunteer helps build the fence to prevent beach erosion, Sgt Matt Cascarina

The Journey begins for two Loggerhead Hatchlings, Mrs Marie Allen

Talks were given on turtle biology and the field craft involved to spot turtle tracks. This often encourages new recruits to join the fold and these evenings are a good way for all the volunteers to meet and discuss their common interest.

Not everyone has the time to patrol beaches regularly, but members usually plan ahead so they can be involved in the beach clean ups. These extensive beach clean ups removed the rubbish swept in by winter storms. The removal of this debris is most important, as a misplaced piece of rubbish in a nest can have disastrous consequences.
The nest excavations this season attracted between 30 and 50 families and are becoming increasingly popular. Many volunteers comment that seeing the hatchlings makes it all worthwhile. Seeing the looks on the children's faces is equally rewarding.

We mentioned the Akrotiri Sand Dune Project in last year's edition of Sanctuary, which started in the year 2000. The project aims to combat beach erosion on turtle breeding beaches, and to replace an existing old fence system. Clark MacTavish, a firm of environmental consultants based in the UK, combined with help from the Cyprus Forestry Department and Turtle Watch volunteers, constructed a new fence system to help keep the sand on the beach, which, I'm happy to say, is still in place today.

Together with funds gained from selling merchandise, and a donation from Cyprus Shipping, a minibus has been purchased so that students and volunteers can now use to get to the various beaches. In the future, as the group continues to expand, we will also be contacting other universities to see if they have environmental students interested in helping with our project.

Two students remove the protective cage before nest excavation, Sgt Matt Cascarina

Over the years Turtle Watch has become a stronger and more efficiently run organisation. This year, the separate Turtle Watch groups will be combining forces to form the "Western Sovereign Base Area Turtle Watch Project". This stability will be their strength for many years to come.

By L/Cpl Jason Wilson, Western Sovereign Base Area Conservation Officer

Obituary

Lieutenant Colonel Christopher Norman Clayden MBE

Christopher Norman Clayden was born on July 10th 1921 in Egypt where his father, Bill Clayden, was serving with the 2nd Battalion the Middlesex Regiment. He was educated at Brighton College.

He enlisted in 1940 as a recruit at the Middlesex Regimental Depot at Mill Hill and was commissioned in 1941. He was soon posted (to his consternation) as an instructor at the Army Gas School. In 1942, he managed to get back to the 2nd Battalion the Middlesex Regiment, where he took some 'stick' from senior Warrant Officers who had served under his father 20 years before.

In June 1944, he landed with the Battalion on Sword Beach on the day after D-Day and fought with them through France, Belgium and Germany right through to the end of the war, when they were in Bremen. He remained with the Battalion, moving with them to Palestine in 1945 and then to Egypt in 1946, where, at 26 he found himself in command for a short time.

In 1948 the 1st and 2nd Battalions amalgamated and the new Battalion, the 1st, was posted to Chelsea Barracks to undertake Public Duties. Norman was commanding the Palace Guard the night Prince Charles was born.

Thereafter, the Battalion moved to Hong Kong where Norman was made Intelligence Officer for 28 Brigade, but managed to re-join the Battalion when they moved to the war in Korea. When they returned to Hong Kong he was made Adjutant.

In 1953, Norman commanded the Colour Party at the Coronation, and the next year he attended the Staff College at Camberley. Then followed two years as Chief Instructor of Victory College at Sandhurst, then a year at Eastern Command at Hounslow, before finally returning in 1959 to the Middlesex Regiment, which was then stationed in Hameln in BAOR. Immediately before that he married Jean Worton, daughter of Lt. Colonel Worton also of the Middlesex Regiment.

In 1961, after two and half years in Germany, when the Berlin Wall was being built, tension was at its highest, and the Battalion were on readiness most of the time, Norman had risen to Second in Command. He was posted home to Canterbury, first as a staff officer in the HQ Home Counties Bde Depot and then as Commanding Officer, having been promoted to Lieutenant Colonel in May 1963.

He was the first Commanding Officer of the new amalgamated Bde Depot, the Middlesex, the Sussex and the West Kent Regiments all having lost their individual depots, and being sent to share a Depot at Canterbury. It was being re-built to twice the original size, and there were a great deal of ruffled Army feelings over the situation. It took Norman an incredible amount of organisation, tact, diplomacy and hard work to get it going, but he did it with great success. So much so, that it became the exemplar for Bde Depots in the Army. Never a week went by without a visit from some VIP.

In 1966, he went to Guyana as Staff Officer Grade 1 for six months, and then in 1968, he was posted to Singapore in a similar post for two years, a posting he particularly enjoyed.

After that, he held a succession of appointments at the Ministry of Defence, then as the Deputy Commander of the Ulster Defence Regiment and finally a post in the Headquarters United Kingdom Land Forces at Wilton. He retired from the Army on 30th June 1973, as he had been appointed as the first new MOD Conservation Officer, a job that had to be filled by a Retired Officer.

Clayden Pond.
Newtown Ranges,
Barry Angell

On Monday 3rd July 1973, he took up his duties as MOD Conservation Officer in an office in the Tolworth Tower in Surbiton. His job was to work out a way to try and conserve the myriad of wildlife that was to be found on all MOD properties across Britain – and for this he was supremely suited. He had been an amateur naturalist all his life, belonging to the RSPB, the British Trust for Ornithology, and had run the Army Bird Watching Society for 20 years, so he spoke 'the language'. In order to organise this new job, that encompassed the whole of Britain, the MOD gave him one civilian assistant (who had to be changed every 18 months), a chief clerk, half a typist and no money! Nothing daunted, he worked out a system based on a local group of amateur enthusiasts forming a working party at each location, of which there were several hundreds of potential ones on the map – under the chairmanship of the local Service Commandant (some of them took quite a bit of persuading). Before establishing a group, experts had to find out what in the area required protection. Luckily, at every place there were people who had lived in the area for years and had as a hobby either bird-watching, fishing, butterflies, grasses, insects or flowers etc. It was a stroke of genius on Norman's part to ask them to be the amateur experts and they all enthusiastically agreed. The first, official MOD conservation group was formed on the Longmoor/Bordon Training Area in 1974, with eight more groups following shortly after. By 1975, there were 40 groups ranging all over Britain, and the system was up and running. Norman made a point of visiting each group and attending at least one meeting, sometimes two a year. This meant a lot of travelling, and while he was given his petrol, board and lodging, he wasn't given a car or driver, so it involved using his own vehicle. At this point his wife Jean volunteered as his driver. She was a good driver, as she had been taught to drive by the Military Police in her youth. From then on, she drove them around Britain while Norman either wrote up the minutes of the last meeting, or dictated letters into his machine for his assistant. For the next 12 years, they averaged 35,000 miles a year. In between, he worked in his office, trained new assistants and formed more conservation groups, and through it all never lost his boundless enthusiasm for the job.

In his 'spare time' he gave illustrated talks with splendid photographic slides to almost any group that asked - the Women's Institute, nature groups, or students. His personality, his splendid sense of humour, and a complete mastery of his subject made these talks a real pleasure to listen to. He was also imparting good news to his audience that something was thriving – instead of the usual gloomy inference that rarities were receding.

In 1978, various groups had asked to be told how other groups were doing – so "Sanctuary" was born. It is now a professionally edited and gloriously illustrated conservation magazine, but in those days (with no extra money) it was put together in the office by Norman and Jean, typed by his typist, and sent off to be printed by his assistant. The name was Norman's idea, the (then) cover an idea of Jean's of the Sanctuary Knocker on Durham Cathedral. Jean used to illustrate it with black and white drawings, and the first "Sanctuary" went to 500 copies.

For the next eight years the job grew immensely as conservation gradually became more fashionable, and a few difficult Commandants around Britain became more lenient to having 'long-haired civilians' walking around their ranges at certain times! Norman was consulted at high levels by field marshals, cabinet ministers, and industry. He had to take trips for meetings to Gibraltar, Norway, Holland, Munich and the Falklands, though not (to his chagrin) until after the conflict had finished. From 1980 onwards, MOD Conservation had a display at the Army Show at Aldershot. They also went to the Marwell Show, three times to the Bath and West Show, and also appeared at Bovington and other Army Shows – all organised and manned by Norman, Jean and whichever assistant was in office.

In 1984, Norman Clayden was awarded the MBE for services to conservation, and in 1985 he won the first ever Royal Society for the Protection of Birds Award for his services to the countryside. He retired in 1986 and handed over to Colonel James Baker. At that time there were 201 MOD conservation groups in operation. Norman then took over the job of coordinating the annual MOD Bird Count for the Army, a job which gave him great interest and which he was still able to do even during the last five years of his life, despite acute arthritis and a bad heart which gradually made life difficult for getting about. He died on the 28th December 2003, aged 82. He was happily married to Jean for 44 years. They have one son, Howard.

MINISTRY OF DEFENCE

Designed & Produced by CDS Media Bath. DLO02112