

A stretching six months

By Natalie Buttriss, CEO

If I was to describe the last six months for the Trust, I would summarise it as a period that has reached out and extended our work. Sounds like a Pilates move! And like Pilates moves, stretching can strengthen.

Staff have been busy identifying ways to build on existing areas of work whilst developing new contacts through awareness-raising activities. As a result, the Mammals in a Sustainable Environment project, in which we are a key partner, has secured funding for a further six months until the end of June 2015; our pine marten feasibility study has moved forward our species recovery activities in Wales and our long-term Bechstein's ringing project has provided data for a new PhD partnership with Exeter University.

Although two of our projects have finished this year, the Our Beacons for Bats project and the People and Pine Martens in Wales project, they have provided excellent springboards from which to continue our work with the lesser horseshoe bat and pine marten.

Our work in Europe

We have also been reaching out beyond the UK. In Ireland, we led an important pine marten workshop in County Galway which gained support from new sectors; we also ran a bat detection and call analysis workshop in Croatia for bat workers from the Balkan States (see article by Henry



Schofield). I was personally delighted to be able to attend fieldwork at Nietoperek in Poland and attend the European Bat Research Symposium in Croatia alongside some of my VWT colleagues. There are many other examples of staff interacting with European mammalogists at various forums this year. This has increased our knowledge exchange opportunities and further improved the information and experiences we have had as an organisation concerned with 'difficult to study' mammals.

2015 and beyond

Going forward, our key challenge will be funding for the various ambitions we have. As a charity we are extremely fortunate to have an investment fund which generates a proportion of income for our core work, provided for us by our founder the late Honourable Vincent Weir. However, whilst this enables us to support some of the costs of our projects, it is not sufficient to cover all costs. We have to look to others to work with us and partner us in our journey to improve mammal science and develop conservation solutions - our extended family continues to grow!

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Our Pine Marten Recovery Project gathers momentum

By Jenny Macpherson, Senior Pine Marten Officer

At the beginning of February, work began on our new Pine Marten Recovery Project. The long-term objectives of the project are to help restore pine martens throughout England and Wales where habitat and other conditions are suitable.

The first stage involved carrying out a detailed feasibility study to see if it is appropriate to use translocations as part of the conservation strategy for this species. Habitat modelling was used to identify regions with large amounts of potentially suitable habitat, based on environmental variables that are correlated with pine marten presence elsewhere in the UK and Ireland. The results from the modelling and analyses of GIS data on roads, traffic flow and landscape have enabled us to prioritise areas in England and Wales where released pine martens would have the highest probability of establishing and increasing in numbers. There will be more details of this and other results of the feasibility study in the next PMRP newsletter at the end of this year.

In addition to these analyses, we have also reviewed other translocations and reintroductions of pine martens and other closely related Martes species throughout Europe and North America. In July, we attended the 6th International Martes Symposium in Krakow, which brought together researchers working in the fields of biology, ecology and conservation of marten species.

Delegates at the 6th International Martes Symposium, Krakow, in July

This was a fantastic opportunity to present our work on pine martens and to exchange ideas and experiences with colleagues from all over the world. It was particularly useful to learn more about the successful programme of reintroductions of the fisher (*Martes pennanti*) in North America along with other related research, including new developments in GPS radio-tracking, which will be highly relevant to our project.



Over the summer with the help of Jonathan Eves, an undergraduate in Film and Television Studies at Aberystwyth University, we put together a short film explaining the project background and aims. Watch it now at www.vwt.org.uk/our-work/projects/pine-marten-recovery-project.

There will also be a dedicated website for the PMRP project which will be launched in January to be found at: <u>www.pine-marten-recovery-project.org.uk</u>, providing updates, information and ways to help with the project.









The People and Pine Martens in Wales project

By David Bavin, People and Pine Martens in Wales Project Officer

This November marked the close of the People & Pine Martens in Wales project (PPMW), of which I have been the proud Project officer over the last two years. The project, funded by the Co-operative Wales' Welsh carrier bag levy, has been a resounding success, achieving what it set out to do: raise awareness of pine martens, engage more people in conservation and take steps to implement a strategy for the recovery of the pine marten in Wales.

We are now at the stage where the latter goal is on the horizon and we are embarking on a project to reinforce the functionally extinct pine marten population in Wales. The output and achievements from the PPMW have directly fed into this new thrust of work, and have helped lay the solid foundations from which we now work.

What have we achieved?

PPMW delivered a number of goals across our four core objectives: habitat enhancement, monitoring, public engagement in conservation and raising awareness. It is the latter I would like to draw most attention to, as this was a critical objective for the project - people cannot care about, or become engaged with something they have never heard of!



Erecting a pine marten den box



David Bavin, PPMW Project Officer, conducting fieldwork with volunteers

The pine marten had slipped off the radar in Wales, despite its Welsh roots, due to its extreme rarity over the last fifty years. The project set about to rectify this and has made some significant inroads. We have had pieces on the pine marten published in local newspapers, but also in nationally distributed publications such as BBC Wildlife Magazine; Natur Cymru; National Gamekeepers Organisation magazine; a feature on BBC Radio Wales' Country Focus programme with Rachel Garside; and an episode in the S4C series 'Welsh Nature' with Iolo Wiliams.

Over the period of the project has finished I have given 22 talks and presentations at various events with local and national reach. We also took pine martens on the road in spring 2013 (the Roadshow!), visiting ten Co-operative stores throughout Wales to engage directly with their members. All of this has been invaluable in getting the message out that pine martens are a Welsh native, and precariously rare.

Public opinion

One of the motivations of the Roadshow was to gather responses for a public opinion survey that went live in the spring of 2013, designed to ascertain opinions toward a a potential restocking in Wales as a conservation measure. This survey was made available online, and surveys were mailed out throughout rural Wales. The findings showed majority support of 91% for a re-stocking of the pine marten, with its native status and risk of extinction cited as the two main motivations for support.



VWT's David Bavin and Lizzie Croose at a volunteer survey held in the Elan Valley

Have we increased the pine marten's profile in Wales?

It is difficult to quantify how many people now know more about pine martens as a result of our work, but the filtering out of information by social media and word of mouth has contributed enormously. For example, I have written monthly blogs on the project, not knowing who or how many people read them. I do know, however, that one of my contacts has re-tweeted (shared) a number of the blogs to his 1800 twitter followers. Another contact has shared my blogs on his Facebook page which has over 500 'likes' (people that follow the group updates). Obviously not everyone will read them, but some will. And they may then share the information themselves...

The more we engage, the more momentum we can build and the more people we can impassion towards our work and the pine marten. This is a concept every conservationist will recognise, but it is doubly important when working with carnivores, which often come with image problems, reinforced by hearsay and misinformation. It is our job to provide the facts, and foster acceptance, and hopefully appreciation, based on truth and understanding of the animals behaviour, ecology, and 'place' within the world it lives - what we call an ecosystem.

The survey also provided valuable demographic information on who was supporting this work, and where potential conflicts might lie. Concerns centred around the risk to other wildlife, birds and red squirrels in particular. The survey was a toe dipped in the water, but has given us direction and insight into where future community engagement needs to be targeted, and what information needs to be

communicated.

Pine marten © Colin Smith

The co-operative membership

Cymru/Wales

Thank you!

I would like to sincerely thank all who have been involved in the project over the last two years, particularly the Co-operative Wales for their bold approach to funding conservation work in a time of austerity, and their vision in supporting long term goals such as our pine marten recovery work.

For more comprehensive details on the outcomes of the PPMW project, please refer to the <u>project's webpage</u>, where some of the summary documents are available to download.





Kate McAney opening the Pine Marten Symposium

On May 1st we turned the spotlight on the pine marten with a special one-day symposium in the Ardilaun Hotel, Galway that was attended by seventy delegates. We organised this event with Dr Colin Lawton of the School of Natural Sciences, National University of Ireland Galway (NUIG).

Declan O'Mahony provided an introduction to the species in the first paper titled 'Pine marten in Ireland - a 21st century resurgence'. Declan outlined how the species is reoccupying much of its former range, after the drastic population decline it suffered during the early and middle decades of the 20th century. This recovery is a result of legal protection and afforestation and the marten is now believed to be common in approximately 50% of the land area in Ireland. Emma Sheehy discussed the role this recovering marten population is playing in Irish squirrel population dynamics, while three speakers described varying study methods used to determine its distribution and behaviour: David Tosh on using camera traps; Peter Turner on radio tracking and DNA analysis of hairs and Ewan McHenry on autocorrelation occupancy modelling.

Pine marten conservation issues

Huw Denman described the importance of managing forests for the pine marten; David Lyons shared his experiences as a conservation ranger dealing with pine martens entering houses and David Scallan addressed the perceptions, conflicts and solutions relating to this species experienced by members of the National Association of Regional Game Councils (NARGC).

Derek McLoughlin shared the success story of the two male orphaned martens that were released back into the wild in Mayo in 2012 by the Irish Wildlife Rehabilitation Trust. The VWT's experience of pine martens in Scotland was described by Lizzie Croose while Dave Bavin, our People and Pine Martens in Wales Project Officer, outlined our preparatory work for re-establishing this species in Wales. Ferdia Marnell described the improved conservation status of the species in Ireland and then chaired the open discussion that bought the day to a close. An artificial pine marten den box was on display for close inspection and Brian Hughes presented a poster of his recent study of pine martens in houses.



A new joint publication by the VWT and the National Parks and Wildlife Service was launched on the day. Download it here.

Progress update

Happily progress is being made on two issues that were discussed on the day: Huw has prepared guidelines for forestry management that will soon be available to download from our websites and we will be working with the NARGC next year to test methods for keeping martens out of game pens. We were assisted on the day by Laura O'Flynn and Margaret Flaherty of the Mammal Ecology Group NUIG.

On the path of the polecat

By Lizzie Croose, Projects Support Officer

"I have a dead polecat... would you like it?" This may not be the sort of thing that most people would like to hear when answering the phone, but it's a fairly common conversation in our office! Collecting the carcasses of polecats that have met an unfortunate end is a key part of our national polecat survey, which started at the beginning of the year. The aim of the survey is to collect up-to-date data on the polecat's current distribution in Britain and investigate the extent of hybridisation between polecats and ferrets.

We have so far received over 700 records and almost 100 carcasses. During the summer months we observed a peak in live sightings as polecats are more active and become more diurnal, and the kits, born in May and June, start to accompany their mothers on hunting trips.



Polecat under a shed in Powys © Richard Shipp



Why did the polecats cross the road? © Malcolm Stewart

We've received a few reports from people who have been lucky to observe a whole family of polecats (mother and several kits) crossing the road, which is quite an impressive sight! We've also had several reports of both individual polecats and females with kits visiting and sometimes denning in gardens, which often make entertaining viewing for the householders. Favourite garden denning spots seem to be under or in sheds, under decking and in log or compost piles. It has been a real pleasure to receive wonderful photos of live polecats, a refreshing and welcome change to myriad, often very grisly photos of road casualty polecats that we normally receive! Reports of road casualty polecats increased once again in September, as kits disperse from their mother's territories to set up their own home ranges, and sadly many are killed on roads during this time.

Geographical Spread

We have received records from many parts of Britain, including counties where true polecats (rather than polecat-ferret hybrids) have not been recorded for more than 100 years, such as North Yorkshire. There are currently some areas where we've received very few or no records at all, including the south Wales valleys, Cumbria, Northumberland, Durham and Yorkshire, and we are especially keen to hear of records from these areas.



Help with our National Polecat Survey

We need your help in reporting records of polecats, polecat-ferrets and feral ferrets, dead or alive, from all over Britain. If you see or have seen a polecat, polecat-ferret or feral ferret, please email <u>elizabethcroose@vwt.org.uk</u>, phone 01531 636441, or visit <u>www.vwt.org.uk</u>.

Records should ideally include the date and grid reference and if the animal is dead, a photo and/or carcass. Carcasses will be used for rodenticide analysis and genetic studies and a postage box can be supplied in which the carcass can be returned, free of charge.

We have received assistance with storage of carcasses from the Centre for Ecology & Hydrology (CEH).

Bechstein's research featured on The One Show

By Colin Morris, Nature Reserves Manager



In July this year, the Trust's long-term research project into Bechstein's bats was featured on the BBC's One Show. The work, ongoing since 1998, is the longest continuous study of Bechstein's bats in the UK, and has revealed important data on roost fidelity, breeding success, longevity and foraging behaviour.

The presenter Mike Dilger and his team met me early one morning and they spent the day together on a Dorset Wildlife Trust reserve.

Together with my team of volunteers we surveyed over 80 bat boxes to look for the cluster of recent mums and their offspring. Once found the bats were carefully removed from the boxes and placed into soft cotton bags to await processing.

All the adults were checked to record their breeding condition and whether or not they had had a baby this year. Meanwhile all the juvenile animals were given an individually numbered ring (a bit like a bangle) that enables their lives to be recorded when encountered in the future.

Sadly, one of my favourite animals (T7324) failed to turn up in July and may no longer be with us. She was first ringed in August 2000 and had been recaptured on no less than 43 occasions and had ten babies.



Colin Morris with Mike Dilger



Studying the condition of a bats wing prior to a ring being fitted © Steve Rowe

Congratulations to Colin Morris, VWT's Nature Reserves Manager, on receiving The Bat Conservation Trust's Pete Guest Award!



'The award is given in memory of Pete Guest who was an inspirational figure in the bat conservation movement for more than 20 years. Each year, the bat world is invited to nominate people who have made an outstanding practical contribution to bat conservation. The criteria for the award includes: dedication, innovation, enthusiasm and inspiration in making a difference, both to bats and to people, helping make BCT's vision become a reality' (BCT website).

Colin certainly fits this bill having devoted over 30 years to practical bat conservation. Well done and well deserved Colin.

The Impact of Street Lighting Project

By James Baker, Research Assistant



Data data data...Over the last two and a half years we have collected a huge number of sound files from the areas surrounding maternity and hibernation sites of lesser and greater horseshoe bats. We have deployed static detectors in large numbers within the foraging area for both species to record presence/absence at light and dark locations to find out if horseshoe bats avoid artificial lighting and to what extent.

In addition, Julie Day (PhD student) has undertaken two summer seasons of monitoring for bat activity at villages adopting part night lighting regimes and I have just finished a series of small scale experiments looking at bat activity around ultraviolet filtered light.

Nearly all the recorded sound files have been reviewed for our species of interest and we are now at the stage of lots of statistical analysis and modelling. We both presented some analysis of the results at the 13th European Bat Symposium in Croatia at the beginning of September before coming back to finish off this season's fieldwork. There were several presentations on the subject of artificial lighting and it was great to contribute to this and create more interest and concern.



Microphone attached to SM2 detector



The Impacts of Street Lighting on Biodiversity is a collaborative project with the University of Exeter.

Learn more: <u>www.vwt.org.uk/our-work/pro-</u> jects/impacts-of-street-lighting-on-biodiversity



A UV doctored LED lamp with improvised mounting to a tripod

It was also great to hear a whole episode of Radio 4's series Shared Planet devoted to Light Pollution with contributions from University of Bristol, University of Exeter and Wageningen University in the Netherlands(<u>www.bbc.co.uk/</u> <u>programmes/b04l0tg8</u>).

Over the winter period we will both be continuing with the data analysis and hope to publish the results as soon as possible.



SM2 bat detector hidden beneath light

Training European bat workers - Capacity building workshop in the Dinaric Arc

By Henry Schofield, Conservation Programme Manager

The Dinaric Arc stretches along the eastern Adriatic coast from Trieste in Italy to Tirana in Albania. It is one the most extensive area of limestone in Europe and is characterised by rugged mountains (the Dinaric Alps), extensive lakes and river systems. The mountains are covered by large tracts of pristine oak, beech and conifer forest and within this Karst landscape there are numerous caves. It is one of the most unspoilt natural areas in Europe and a real biodiversity hotspot. As well as lynx, wolf and brown bear, it has over 30 species of bats.

BatLife Europe

VWT is partnered with the Croatian Bio-speleological Society under an initiative established by BatLife Europe to develop cooperation and knowledge exchange between bat NGOs across Europe. Earlier this year we made a successful joint application to the Eurobats Project Initiative for funding to run a five day International workshop for bat workers in the region. The aim of the workshop was to draw together best practice in the latest invetory, monitoring and trend analysis techniques to build capacity in the region. The workshop was intended to contribute to future cooperation across the Dinaric Arc to promote long-term trans-boundary bat conservation and a sustainable future for the region's bats.

Croatian workshop

The workshop was based in the small Croatian town of Skradin on the edge of the Krka National Park and took place in early September. 17 enthusiastic participants drawn from Albania, Bosnia Herzegovina, Bulgaria, Croatia, The Former Yugoslav Republic of Macedonia, Montenegro, Serbia and Slovenia were joined by six course tutors. The National Park kindly allowed us to take over the upper floor of their offices during the day, so we could run more formal theory or computer-based sessions before we headed off in the evening for practical fieldwork.

Sharing expertise

We were fortunate to have two of the regions key bat experts with us in Daniela Hamidović from Croatia and Primož Presetnik from Slovenia. Their knowledge of the local bat fauna was invaluable and they gave us a real insight into the problems of monitoring bats that use caves as their maternity roosts. It was quite a different undertaking to counting bats out of buildings as we normally have to do in Britain and Ireland. Many of the caves have mixed colonies of many thousands of bats and the only way to gauge their numbers is to use infra-red video cameras and film the clusters. They also use a ruler on a very long pole, and by placing the ruler next to the cluster of bats and taking a photograph, they can estimate the area the cluster occupies. From previous work they know the number of bats that occupy a given area and so can determine the number of bats in the cluster. For me the highlight of the workshop was our day visiting caves to see this process in action for a mixed colony of Schreiber's and lesser mouse-eared bats.





The effective use of bat detectors was a major part of the workshop: Chris Corben of Anabat fame led sessions on using frequency division detectors and how to analyse calls from these machines. Kate Barlow from the Bat Conservation Trust led on the use of time-expansion detectors. The participants learned the theory of how the machines worked during the day and in the evening they headed out to make their own surveys of Skradin. The following morning was spent analysing the calls they had recorded the evening before. By the end of the workshop we had built up a pretty good picture of the bat fauna of the town.

Catching bats

Catching and identifying bats in the hand was another key objective of the workshop. Here we were helped by Daniela's team of experienced bat researchers, Dina Kovac, Marina Kipson and Norma Fressel. It was especially nice to be working with Norma again as she had spent time as an intern with VWT. We carried out some mist netting along the banks of the Krka River and the most numerous species we caught was the long-fingered bat. Like Daubenton's bat this species trawls the surface of water to catch its prey but unlike Daubenton's bat it requires very high water quality to survive and so it is a flag-ship species for this part of Europe. Identifying bats is always difficult but in an area of Europe with over 30 different species it was particularly tricky in Croatia. Fortunately, our participants were provided with identification keys by Primož and he took them through the whole identification process in a very logical and methodical way.







Using radio-telemetry is an important technique in the study of bats. We weren't able to do any real radio-tracking during the workshop as this would have disturbed bats without gaining any real data, and so we had a simulated tracking session with Anita Glover from the University of Leeds playing the part of the bat. The local inhabitants of Skradin and the daily influx of visitors to the Park were a bit perplexed to see nearly 20 people with antennae and receivers hunting for her through the vegetation at the edge of the town.

Although the fieldwork is often viewed as the more fun aspect of bat work, being able to analyse the data you collect is equally important. Tom van der Meij, who works for Statistics Netherlands, walked us through the statistical analysis of monitoring data and how to determine population trends. Statistics Netherlands have developed a software package called TRIM, which is being used in many countries to determine population trends. It is hoped that in time all of the monitoring data collected in the Dinaric Arc will be combined using this software to produce a biological indicator for the region.

A packed programme

As well as the fixed programme, we were able to fit in some impromptu talks during the workshop. Sébastien Puechmaille from Ernst-Moritz-Arndt University in Germany joined us for a few days and gave a talk on genetics and Anita Glover gave a presentation on swarming behaviour in bats. Clare Marie Mifsud from Malta was a huge help both in the field and in analysing bat calls. It was a very packed programme and an enjoyable five days, made all the better by the hospitality of our Croatian hosts.



David Jermvn. Reserves Officer – Wales & the Marches

The Trust manages three lesser horseshoe bat reserves in the Marches. One of these important roosts is located in a purpose built structure adjacent to the River Severn near Gloucester.

The Trust purchased the Over bat house for a nominal sum in 2000, from the developer of the Over 'Isolation' Hospital site. The bat house is a single storey 'L' shaped detached bungalow with no windows, a door, a bat exit point at the rear, cellar, ground floor plus roof void, and is located on the edge of a modern housing development.



Over hospital site in 1992 © G. Baldwin



Lesser horseshoe bat © Frank Greenaway



Over bat house in 2005 (shown in middle distance)

Background to the bats at Over

Historically, bats were seen around the Over Hospital site in the late 1950s. A member of staff can remember the hospital engineer chasing bats out of the wards at the time. Were these the great grand-parents of the lesser horseshoe bats that now reside in the bat house?

The lesser horseshoe bats were first found roosting in an abandoned boiler room in a cellar of the hospital in 1991 by the Gloucester Bat Group. The hospital closed in the autumn of 1992 after being in service for 90 years. At that time the hospital had a problem with rats entering the cellars and so had to find a way to keep them out, without preventing the bats from using their roost site. A solution was found which entailed building a structure known as a 'Chinese hat': this was a round metal chimney with a cowl on the top. The bats soon adopted this new route into the boiler room cellar.

A purpose-built bat roost

The site was then sold to Swan Hill Homes who planned to develop the old hospital and grounds into 'executive style' homes. The existing bat roost (old boiler room) had already become less suitable for the bats since the boiler had been turned off and the roost temperature had fallen, so retention of the original building was not the best option. The bats had also hibernated in the subterranean ducts that connected the various hospital buildings. Replacement of the boiler room, etc. presented an opportunity to design (The Robert Stebbings Consultancy Ltd) a purpose-built structure providing suitable internal conditions for the long-term retention of the colony. Hence mitigation for the bats was provided in the form of a 'bat house'.



Spring 2000, the 'bat house' nears completion. The 'Chinese hat' is seen in the foreground © N. Bailey¹

During the winter of 1999/2000 whilst the bats were hibernating in the boiler room cellars, a new cellar was constructed adjacent to the old cellars. Both cellars were connected by a 600mm diameter concrete pipe, which allowed the naturally curious bats to find their new roost.

By early summer of 2000, around 25 Rh bats had moved into the new roost. Once the bats had discovered their new home and were using the new exit point to gain access to the overgrown hedgerow at the rear of the 'bat house', the connecting chamber to the old boiler room cellars was blocked off.

The peak summer emergence and winter roost counts of lesser horseshoe bats show how important this successful mitigation project has become. The other bat species recorded on the site to date are brown long-eared, common pipistrelle and soprano pipistrelle.



Graph to show the Peak Summer Emergence and Winter Roost Counts of Lesser Horseshoe Bats in the new roost, 2000

Other species

Some of the other animal species recorded on and near the site include grass snake, slow worm, common newt, barn owl, green and greater spotted woodpecker plus numerous other bird and invertebrate species.

¹Bailey, N. 2000 Over & Over Again - 750 years of change at Over



VWT Reserves

The Trust manages over 40 reserves, the majority of which are bat roosts. Since the mid-1990s, VWT has concentrated much of its resources on bat conservation, including the protection and enhancement of roosts for rare bats.

We have installed a webcam at our most important lesser horseshoe bat maternity roosts in Wales; view footage here.

Mapping a future for the lesser horseshoe bat in Ireland

By Fionnuala Lyons, EcoHort Consultancy

The lesser horseshoe bat in Ireland is confined to a small area in six western counties, Mayo, Galway, Clare, Limerick, Kerry and west Cork. The analysis of the habitat and landscape associations of bats conducted by Bat Conservation Ireland in 2011 (<u>www.batconservationireland.org</u>) highlighted a gap in the distribution of this species in Limerick and north Kerry (Fig 1).

The VWT desktop study

Recent research carried out at University College Dublin detected that the Irish horseshoe population in the northern counties is more genetically diverse than that found in Kerry and west Cork. In fact, the lack of horseshoe roosts in Limerick had been highlighted as far back as 1997, when Dr. Niamh Roche surveyed the county on behalf of the Trust. Her study pointed to loss of summer sites due to deterioration or development. Taken collectively these findings are a cause of concern for the future conservation status of the species, so this summer the VWT undertook a desktop study to gain an overview of the area and to consider what conservation measures would be most appropriate. This project was supported by the Irish Environmental Network (www.ien.ie).



Figure 1 - Distribution of *Rhinolophus hipposideros* in Clare, Limerick, Kerry and west Cork

I undertook this study on behalf of the VWT using an open source geographic information system 'QGIS'. A copy of the lesser horseshoe records for Clare, Limerick, Kerry and west Cork was provided by Bat Conservation Ireland. Soil, water and Corine datasets were sourced from the Environmental Protection Agency (EPA) and weather data from Met Eireann, the national meteorological service. Information on bedrock geology was obtained from the Geological Survey of Ireland (GSI) and the Forest Service provided a copy of the 2012 Forest Inventory Planning System.

When I looked at the records of the lesser horseshoe bat in Limerick and north Kerry, there were very few to plot, in fact, more sites have been lost since 1997. Not surprisingly, when I queried the locations of significant colonies both within and outside the study areas, I found these to be in roosts that are being actively managed for the bats - including a number of VWT reserves. Unfortunately, there are no VWT reserves in Limerick or north Kerry. The study area spans forty seven 10km square grids, but horseshoe bats were only present in thirteen of these. When I looked at the distances separating some of these roosts, I found that a gap of over 45km had opened up. More worryingly, a gap of over 70km was found between roosts that were able to support 25 bats, therefore no significant maternity roost is known. So, is it just the loss of summer roosts and habitat that is limiting the bats in this area or do we need to consider other factors before proposing conservation measures?



We now believe there are a number of other factors to consider. Firstly, the geology (Fig 2, roosts are shown as white dots). In Clare, the roosts are clustered along the bedded limestone vein that continues north into Galway. This reflects the availability of natural underground hibernation sites, which are needed by the bats in winter. In south Kerry and Cork the bats are associated with old red sandstone and, although natural cave sites are not associated with this rock type, we know that the winter climate in here is mild enough for many of the colonies to hibernate in the ground floor of their maternity roosts or in ice houses and un-heated cellars. We believe the lack of hibernation sites is a significant limiting factor in the study area. In Limerick and north Kerry, there are practically no caves, because the underlying geology is shale and Namurian sandstone, yet winter temperatures are not as mild as further south. We know that lesser horseshoe bats use souterrains (underground archaeological structures), but there are only a few of these recorded in Limerick and all in the east of the county where the species is already present. Although there are many souterrains recorded from north-west Kerry, we have no idea if bats can gain access to them or if they are indeed suitable as hibernation sites. However, many of these are located in a landscape dominated by arable and peatland habitats, with a reduced hedgerow matrix, habitat avoided by lesser horseshoes (Fig 3). Successful artificial hibernacula for this species have been constructed by the National Parks and Wildlife Service in west Cork, so this impediment can be overcome, provided these are located in suitable habitat.



Figure 3 - The landscape of north Kerry

Next, there is the possible effect of altitude. Limerick and north Kerry are traversed by an upland area with four peaks over 300m. Here, the terrain is associated with exposed shallow wet soils, definitely not lesser horseshoe habitat. However, on the positive side, the forestry data show an expansion in coniferous forest cover in some of these upland areas, with a broad range of age class and maturity. This woodland could provide cover for the bats to move within the area. This is important because information extracted from the 'National Survey of Native Woodlands' and the 'Ancient and Long-established Woods Survey' show there is very little old-growth broadleaf woodland present.



Figure 4 - The landscape immediately south of the 'gap'

I also looked to see if there were any linear features with vegetation that we could use to link up roosts and was delighted to discover the existence of a project called The Great Southern Trail. Historically, there was a railway line running between Limerick city and Tralee, in north Kerry. The portion that passed through Limerick is now open as a green walkway and Kerry County Council is currently in consultation with landowners to continue the trail as far as Tralee. Potentially, this could provide a continuous vegetated corridor throughout the area where the horseshoe population has become fragmented. A quick drive along the extent of the trail has given us hope that the surrounding habitat can support the bats, as there is riparian, scrub, hedgerow and conifer cover at present, mirroring that available in south Kerry (Fig 4).

Consultation - positive steps

Once I had a clearer picture of the factors that appear to be limiting the bats, I approached officials from the two relevant local authorities (Limerick and Kerry Councils) for their input and ideas. We have been really impressed with the level of interest and the very positive responses we have had at our meetings, for example, council ecologists, archaeologists, architects and heritage officers have offered help in locating suitable maternity and hibernation sites. Both councils are also willing to facilitate conservation projects in co-operation with community groups and 3rd level colleges in Limerick and Tralee. We also met with staff from the National Parks and Wildlife Service working in the Limerick area who highlighted their concern about the removal of hedgerow and the impact this has had and will have on the lesser horseshoe bat. Mature hedgerows, scrub and riparian corridors are being cleared for agricultural development on an ongoing basis and while both Limerick and Kerry county development plans include objectives aimed at protecting ecological corridors, these currently provide very little actual protection.

Although this desktop study has come to an end, we view it as the beginning of a process to determine the steps that need to be put in place to link up the lessers. We have simply come to the end of the initial information gathering phase. Now we look forward to rolling out ground-proofing studies of caves, souterrains, buildings and vegetation. The findings of such studies can then be used for targeted conservation efforts to enable the bats to move within and through the region. However, developing strategies to retain the existing vegetation cover is crucial to the future of the lesser horseshoe in Ireland.

Hunting for harvest mice with the 'Mammals in a Sustainable Environment' project

By Aline Denton, MISE Project Officer

Volunteers across Wales are being asked to get out and about to help track down the nests of the elusive harvest mouse. The 'Mammals in a Sustainable Environment' (MISE) project has published a leaflet and booklet to provide information for volunteers, and is organising training events around Wales.

The harvest mouse (*Micromys minutus*) is our smallest British mouse at only 5-7cm long and weighing about the same as a 20p coin. It has reddish-orange fur, white belly, a round nose and small ears. Its most outstanding feature is its long tail, which it uses to grasp stems to help it climb. Harvest mice were traditionally associated with cereal crops, which is where the common name came from. Now we know they can be found in a range of habitats including rush pasture, reed beds and field margins.

Surveys suggest that harvest mouse numbers have been declining significantly since the 1970s and there are very few records in Wales. In 2007, the harvest mouse was added to the UK Biodiversity Action Plan priority species list, which includes those that are the most threatened and requiring conservation action. Harvest mice may be under-recorded as they are difficult to detect, and there is a general lack of public awareness of the species.



Harvest Mouse © Terry Longley



Harvest mouse nest

Harvest mouse bait pots

To gather more information, the MISE project has devised a novel bait pot method. The pot containing mealworms and millet sits within a cage with a small mesh which has been shown to exclude any mammal larger than harvest mouse or pygmy shrew. Any droppings collected are sent to the Waterford Institute of Technology - the MISE lead partner- for DNA analysis.

Volunteers have been carrying out surveys across north and west Wales during the summers of 2013 and 2014 using this new bait pot method. Recently, the presence of harvest mice has been confirmed by us at one new site - Ffrwd Farm Mire in Carmarthenshire, managed by the Wildlife Trust of South and West Wales.



You can help!

Volunteers are now being recruited to hunt for harvest mice nests in Wales through autumn and winter. The nests are easier to see at this time of year, as the surrounding vegetation has begun to die down. Also, breeding nests are no longer in use, so there is no risk of disturbing the mice.

To ensure the continued survival of this declining species, we need to know where harvest mice are. Searching for nests can be done by anyone (with the landowners permission) once they know what to look for. For details of training events, or to obtain a copy of the new harvest mouse booklet, please contact <u>alinedenton@vwt.org.uk</u>





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