Vincent Wildlife Trust

Newsletter #12

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VWT's Bat team finds out more about Kolombatović's bat

A bat with a recent history p24

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Welcome

from Vincent Wildlife Trust's CEO, Lucy Rogers

Welcome to the 12th issue of our newsletter, which looks back over another busy year full of conservation highlights and opportunities to share our work and practices.

I have loved spending more time with staff in the field during 2019, getting up close to the species we are working to conserve and have been truly inspired by the skill and dedication shown by our staff and volunteers in bringing our plans to fruition. As part of this, I was lucky enough to spend a few days in the field with our Bat team in Croatia learning about the roosting and foraging ecology of Mediterranean long-eared bats. This was followed later in the year with a trip to Scotland to join the team trapping pine martens for translocation to the Forest of Dean for Gloucestershire Wildlife Trust.

These are just two examples of our varied work, but there are many other achievements, including the following highlights.

- Our Carnivore team has been working in Spain, trialling novel monitoring methods to develop a robust methodology so that accurate population assessment of European mink can be made. European mink (a close relative of the European polecat) are critically endangered with only a handful of populations now surviving in Europe.
- Our Pine Marten Recovery Project is supported by a small team of dedicated volunteers who have been trained to monitor pine marten presence and distribution using camera traps. This year, we also worked with volunteers to carry out a large-scale scat survey to try to determine whether the pine martens have expanded their range.
- The team in Ireland conducted a field study to survey for Irish stoats using Mostelas and cameras.
- Our new Bat team got to grips with several exciting projects, including looking at the impact of greater horseshoe bat presence on lesser horseshoe bat roosts.
- We were delighted to form a new partnership with Durrell Wildlife Conservation Trust, working together to look at the feasibility of reintroducing the wildcat to southern Britain.
- We co-hosted the 33rd Mustelid Colloquium in Lisbon this October, which was a great success, with 90 delegates and a fascinating series of presentations on the conservation of European mustelids, including the European mink.
- We have had a high profile in the media this year with a full-page spread in the *Observer* on the recovery of carnivores in the UK, based on Katie Sainsbury's PhD research, an article in BBC Wildlife Magazine by Hilary Macmillan, and filming for a BBC 4 programme to be aired in the new year, featuring our own reserve at Bryanston.
- We are delighted to welcome a new staff member, Tim Bennett, who started as a new member of our Finance team in July. We also welcomed two new PhD students: Kieran O'Malley, who started a PhD

at Sussex University on woodland management and barbastelles, and Tom Dando, who started a PhD at Exeter University on the feasibility of re-introducing European wildcats into England and Wales.

- We also welcomed two new Trustees: Georgina Holmes-Skelton, Head of Government Affairs at the National Trust, and Clementine Dymond, Equity Analyst at Rowan Dartington. We sadly said goodbye to Rob Lucas, who has been a dedicated Trustee with us for ten years.
- Two of our recent PhD students, Katy Sainsbury and Cat McNicol, both celebrated the successful completion of their PhDs.
- Congratulations to Patrick Wright, a previous VWT PhD student, for being awarded the Vincent Weir Scientific Award. Patrick's PhD focused on the conservation of Bechstein's bats and the development of a new method for estimating the age of bats.
- Back from the Brink, of which VWT is part, picked up the Best Heritage Project Award in the 25th Birthday National Lottery Awards. Our project is paving the way for the recovery of the pine marten in northern England as the population naturally spreads south from Scotland.

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A warm welcome to new VWT

Tim Bennett
Acting Finance Manager

I joined Vincent Wildlife Trust's Finance team in 2019 with a background in the charity sector, having previously worked for Mind Aberystwyth as its Business and Finance Officer, and in the private sector more recently with Balfour Beatty. Through both roles, I have had a number of years of people management experience.

I have a degree in Zoology and so it is good to be working for an organisation that focuses on threatened mammals and to be able to contribute to their conservation. I have also qualified with an advanced diploma in accounting through the Association of Accounting Technicians (AAT) and am just about to embark on the next level qualification to gain a Professional diploma in Accounting. I'm looking forward to this next stage, though it will mean evenings of study and homework once again.

Tom Dando
PhD student

I discovered a passion for the natural world initially as a place of peace and mental well-being, before being captivated by the complexity of the ecosystems that exist around us and the need to reverse their declines. From this passion, I completed a BSc in Ecology and Wildlife Conservation at Bournemouth University, with my major project focusing on the behaviour and conflict surrounding re-introduced African wild dogs in fenced game reserves. Following a year working on Red List assessments at the IUCN Small Mammal Specialist Group (SMSG), I completed an MRes in Conservation Biology at University of Sussex. Based at the Knepp estate, my research looked at the herbivore-driven landscape development in the context of rewilding. After a year leading on key species fundraising for the IUCN Small Mammal Specialist Group, in 2019 I was fortunate to be offered a PhD at the University of Exeter, co-funded by Vincent Wildlife Trust and Durrell Wildlife Conservation Trust. The PhD seeks to understand the social and ecological feasibility and practicalities of re-introducing European wildcats (*Felis silvestris*) into England and Wales, and I hope that it will be an integral part of the work of these two respected conservation organisations.

Kieran O'Malley
PhD student

I've always loved the outdoors and nature, which led me to complete a BSc in Zoology at Cardiff University. After attending numerous lectures and spending multiple years caving in the UK and abroad, I developed a great appreciation for caves and their associated fauna, in particular the many bats that inhabited these spaces. I went on to study for an MRes in Biodiversity and Conservation at the University of Leeds, through which I investigated the urban roost selection of Mauritian tomb bats in Malawi. This research gave me a better understanding of the high selectivity of bats to roost sites and their vulnerability in the face of an increasingly urbanised landscape. I feel very fortunate to now have the chance to do a PhD on barbastelles at the University of Sussex, which is co-funded by Vincent Wildlife Trust. The PhD aims to identify local woodland

staff, students and Trustees

features that are important for the persistence of barbastelles, with the goal of developing landscape-scale approaches to their conservation. I look forward to being able to contribute to the work of VWT through my research.

Clementine Dymond
Trustee

Life at Vincent Wildlife Trust is a breath of fresh air. Having spent far too long in the cyclical world of finance, it's of great comfort to find an organisation that brings faith that we can overcome the damage to the world, in a fashion inclusive of all.

I joined as a Trustee in May, having had a long career in the City, predominately as an equity analyst. In the short space of time that I have been part of VWT, I can clearly see the immense wealth of expertise, passion and dedication within the team.

Reflecting back on my first six months as a Trustee, I have learnt so much from an area that I knew very little about. I have spent time on a pine marten field survey, learning the nuances of pine martens and, to my surprise, their scats. Lucy Rogers and Lizzie Croose were very generous with their time and patience given the volume of my questions. I attended the Pine Marten Strategy Day in Malvern, where it was excellent to see the collaboration between so many passionate organisations and individuals coming together under a common goal.

Lastly, I had an informative two days with the Bat team at our quarterly board meeting, where I found the level of expertise impressive and the solutions coming through inspiring. I look forward to using my background in finance to support the exceptional work of Vincent Wildlife Trust.

Georgie Holmes-Skelton
Trustee

I was absolutely delighted to be asked to become a Trustee, and formally started in May this year. In my day job, my background in public policy, Parliament and politics is put to use in my work as Head of Government Affairs for the National Trust. I'm passionate about the environment and the need to enhance and restore biodiversity, so the opportunity to contribute to the work of VWT and the conservation of threatened mammal species is really exciting.

This is my first Trustee role and it's definitely a learning curve. I'm getting to know the organisation and its priorities and potential challenges. I'm also developing my own capability as a new Trustee and, as with any new role, I'm learning how to perform it well and contribute most effectively to discussions and decisions.

At the Trustee meeting in September, we heard about the work being carried out by the Bat team, and had the opportunity to go out and see some sites and meet some of the people involved. This was a brilliant way to get to grips with what people are doing on the ground and will help me offer the right advice and support in my role as Trustee to Lucy Rogers and the team. I'm looking forward to getting more hands-on experience with the Bat team by helping with some fieldwork this winter — and hope at some point soon that I'll be able to do similar with the Carnivore team too (I don't think anyone could resist the lure of the pine marten!).

One thing that has struck me so far is how knowledgeable and committed everyone is — and how welcoming everyone has been. In my experience, having the right people is the most important starting point for any organisation, and I've been really impressed with everyone I've met.

Overall, I'm looking forward to continuing to grow my knowledge and contribution to VWT's work. I hope to learn from and build on the work of the existing Trustees, but also that I can bring some unique insight that helps VWT maximise its impact for threatened mammals in Britain, Ireland and continental Europe.

The Ten-Year Strategy

Lucy Rogers, CEO

Photo: ©Robert Cruickshanks

As well as looking back over 2019, we have been looking forward to the next ten years and planning the future direction and work of Vincent Wildlife Trust.

This forward thinking has resulted in our new Ten-Year Strategy document and sets out our ambitions for the next decade, starting in 2020.

Our **Vision** is that VWT is a catalyst for mammal conservation.

Our **Mission** is to conserve threatened mammals by leading the way with scientifically-sound conservation work.

By 2030, VWT will have:

- developed, tested and implemented a number of cutting-edge techniques and effective conservation interventions that integrate social science and ecology for VWT priority mammal populations
- improved methods of bat conservation at a landscape scale, including techniques for enhancing landscape permeability, roosting opportunities and habitat for VWT priority bats
- strengthened the resilience of VWT priority bat populations at the local, regional and national level with a comprehensive network of bat reserves
- managed the recovery of VWT Priority Species so that they are self-sustaining, with minimal conflict, where habitat and other conditions are suitable
- addressed evidence gaps and data deficiency for VWT Priority Species so that conservation effort is better informed

Almost 45 years ago, a visionary young man decided to use his resources to fund wildlife conservation in Britain and Ireland. As part of his mission, Vincent Weir established VWT to safeguard threatened mammals. The Trust continues to work tirelessly to maintain the vision of its founder.

Over the next ten years, the Trust will build on its success, driving forward a diverse programme of conservation initiatives to deliver the most effective strategies for mammal conservation.

These are challenging times for wildlife and it is vital that we focus our resources wisely. In this strategy, we believe that we have a strong foundation for continuing to make a difference to the fortunes of native mammals in Britain, Ireland and continental Europe.

Mustelids and Montado in sunny Lisbon

Lizzie Croose, Senior Science and Research Officer

In October, 90 mustelid enthusiasts from 19 countries congregated in Lisbon for the 33rd European Mustelid Colloquium.

This year's Colloquium was the culmination of a year of planning and collaboration between VWT and the Faculty of Sciences at the University of Lisbon. It is the second time that VWT has been an organiser of the Mustelid Colloquium, having begun our involvement as part of the secretariat at the previous Colloquium in Lyon in 2017.

During the Colloquium, we had two full days of scientific presentations covering a range of topics within mustelid research and conservation. It was great to see such a diversity of both presentations and additional posters from across the mustelid family, including polecats in Spain and Sweden, weasels and stoats in the Netherlands and Denmark, pine martens in Britain and Ireland, otters in Switzerland, Poland and Britain, Irish and French badgers, and even mustelids in Mongolia and Brazil! There was also a focal session on European mink, which is now one of the most threatened mammal species in Europe.

A particular highlight was welcoming Professor Carolyn King, who had travelled from New Zealand as a keynote speaker. Carolyn is a global expert on small mustelids and gave a fascinating talk on stoats, weasels and ferrets in New Zealand where, having been introduced from Britain to control rabbits, they are now invasive and a major threat to New Zealand's native bird populations.

Another highlight was the field trip to a research station in a montado (cork oak forest), which is home to otters, badgers, stone martens and genets, as well as a variety of birds. We enjoyed a whistle-stop tour to see how the land is managed for cork production and agriculture, and heard about the carnivore research conducted there. To finish, we were

treated to a delicious five-course buffet lunch with copious amounts of local wine and liqueurs!
It was a wonderful chance to foster new collaborations and friendships, as well as to catch up with existing colleagues and friends. For the next European Mustelid Colloquium in 2021, we're hoping to head east to Georgia. Watch out for details nearer the time.

Wildcats: problems, prospects and partnerships

Jenny MacPherson, Science and Research Manager

Photo: ©Pat Morris

While the future of the wildcat in the UK is perilous, there are good news stories elsewhere in Europe. VWT hopes to add to these with a new partnership to investigate the feasibility of restoring the wildcat.

Earlier this year, we were delighted to announce a new partnership between VWT and Durrell Wildlife Conservation Trust to work together on UK species of conservation concern. Both organisations carry out practical, community-focused conservation, based on sound scientific research, and we are looking forward to collaborating on European wildcat as a first focus.

The wildcat (*Felis silvestris*), known as the wood cat in England, cath gwyllt (wild cat) or cath y coed (wood cat) in Welsh and cat-fiadhaich (wild cat) in Scottish Gaelic, is one of our most elusive carnivores and the only native member of the cat family still present in Britain. Wildcats used to be widespread here but, as with many of our native carnivores such as the pine marten, the population underwent a dramatic decline due to loss of woodland habitat and historical predator control. Today, the last few remaining wildcats in Britain are found only in Scotland, where the main threat is genetic extinction due to hybridisation with feral domestic cats.

With support from the relevant statutory agencies and other experts, we have just completed a preliminary scientific feasibility study looking at the potential to re-establish the native wildcat to suitable parts of its former range in Wales and England. This is part of a UK-wide strategy for the species and will complement the work already being carried out in Scotland by Scottish Wildcat Action. The next crucial stage is to conduct in-depth ecological and social feasibility studies to find out which areas are most appropriate. Some of this detailed work will be carried out in collaboration with the University of Exeter and PhD student, Tom Dando.

As part of a consideration of the wider context for wildcat conservation in the UK, I attended a European wildcat conference in Neuwied, Germany, where it was heartening to hear some positive news about the species. Wildcat populations are recovering in many countries in a variety of habitats, some of which are sometimes

unexpected. Large, dense forests with standing dead wood is perceived as classic habitat for wildcats but other habitats are also used across their range. As with other predators, wildcats choose habitat based on the availability of prey, particularly rabbits and small mammals, which can be abundant in agricultural landscapes. However, structurally diverse forests remain key habitats.

Despite having very different forest systems, the pressures on forestry elsewhere in Europe are similar to those in the UK. Development, such as wind turbines in forests, can cause fragmentation as well as disturbance while, at the same time, resources and numbers of forestry staff are undergoing reductions. These all add to the challenges and problems of implementing practical conservation and mitigation measures.

The situation in Germany, where wildcat numbers are increasing, is particularly interesting. Germany is shaped by more than 11 million hectares (29%) of forests, compared with just over 3 million hectares (13%) in the UK. But the spruce forests have been badly affected in recent years by droughts and by pests such as spruce bark beetle. There are also concerns about increased logging and clearing of formerly closed forests, although some clearing can be beneficial for wildcats. This was highlighted in a radio tracking study in Thüringen when, following a huge storm, the majority of wildcat locations were in forest areas where a lot of windthrow had occurred.

Hybridisation is another major threat, but varies widely across Europe from about 3% in Germany to 100% in Scotland. One suggestion is that other predators, such as lynx and eagle owls where they are present, may deter domestic cats from venturing into forests and so help maintain reproductive isolation of wildcats in these areas.

Wildcats also disappeared from Austria, Netherlands and the Czech Republic, but recently there has been evidence of wildcat presence in some parts of Austria and the Czech Republic. They are also now reported frequently crossing from Germany into the Netherlands. This recolonisation is possible on mainland Europe but unfortunately not so in Britain, which is one of the disadvantages of being an island and a reason for the necessity of potential reintroductions in the future. It is, therefore, particularly important that we continue to strengthen our collaborative working with partners both here and elsewhere in Europe. One such initiative is Euro Wildcat, a newly established network for data sharing and collaborative working with conservation research partners across the continent.

We are looking forward to working with Durrell Wildlife Conservation Trust and others to further the conservation of this elusive and enigmatic carnivore.

Photo: ©Mark Williams

Sharing pine marten expertise

Jenny MacPherson, Science and Research Manager

The knowledge and practical experience that we gained through the Pine Marten Recovery Project has been invaluable in advising and helping with Gloucestershire Wildlife Trust's translocation project this autumn.

For any reintroduction project to be truly successful, there needs to be years of detailed background work, including feasibility studies and community engagement, along with all the planning and practicalities involved in translocating the animals. Having gained extensive and varied experience through our Pine Marten Recovery Project where we translocated 51 pine martens to Wales over three years, Vincent Wildlife Trust was in a good position to share that knowledge when a similar project began in the Forest of Dean.

In summer 2016, Gloucestershire Wildlife Trust and Forestry England, with the help of VWT, started to investigate the feasibility of reintroducing pine martens to the Forest of Dean and Wye Valley. This area was one of several that were identified as being potentially suitable for martens in VWT's original feasibility study for England and Wales. There were, however, some caveats, particularly around roads and traffic in the region, as well as other protected species present. These were looked at in more detail, with recommendations for appropriate mitigation and then, earlier this year, the decision was taken to proceed with pilot releases in autumn. VWT was asked to provide the expertise to survey and select source sites and to carry out trapping and radio collaring, using the same methods that we had used for the Welsh releases in previous years.

So, in late summer, having carried out initial scat surveys and with help from both Scottish Natural Heritage (which granted permits and licences) and Forestry and Land Scotland, a team of us set up base in north Aberdeenshire and began trapping. In addition to the animals' welfare, a high priority was to minimise any impact on the Scottish population of martens. This meant using forests where we hadn't trapped before and only taking a small number of animals from each site.

Based on our experience of the releases in Wales, we also wanted to get the number of martens in the Forest of Dean to the maximum as quickly as possible. We had observed from radio-tracking martens after previous

releases, that early on in the first translocations, when numbers were very low, martens were more likely to make exploratory movements over a relatively long distance before returning.

In mid-Wales, this was more of a problem for those of us radio-tracking the martens than it was for the animals themselves! However, in an area with more roads and traffic like the Forest of Dean, roaming widely would put the martens at a higher risk of road mortality. So we decided that we would trap and translocate in a much shorter space of time. This was hard work but it meant that, within three weeks of trapping, we were able to get 18 pine martens radio-collared, transported down to Gloucestershire and released in their new home. They are now being radio-tracked by the GWT project team, which includes Josie Bridges and Catherine McNicol, both formerly of VWT and both with a wealth of experience of radio-tracking on our pine marten project in Wales. We wish them (and the martens) the very best of luck and look forward to hearing more about how they get on in the coming months.

Photo: ©Cristian Esculier

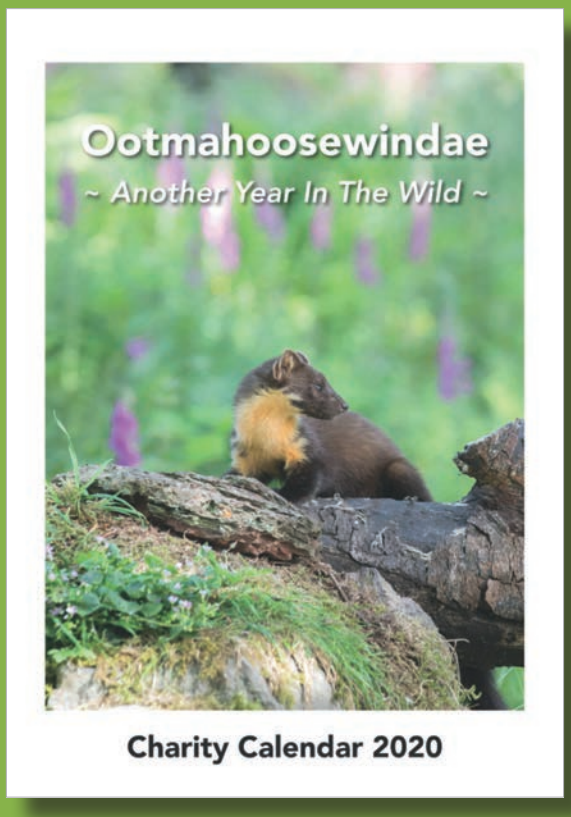
Choosing the site, setting and preparing each trap takes time, patience and a creative way with twigs and moss.

Another Year in the Wild charity calendar

Many of the fantastic photos of pine martens that accompany our articles and that are used in our display materials are by Robert Cruickshanks.
Jenny MacPherson visited Robert recently and was lucky enough to see one of the wild martens that he photographs.

Robert has joined with four other local wildlife photographers to create Another Year in the Wild, a charity calendar of stunning wildlife photographs. The money raised from the sales of the calendar will help to support local groups raise suicide awareness and prevention, mental health and well being, and challenge the stigma of mental health.

Visit ootmahoosewindae.com for further details.



Mostelas in Mayo

Kate McAney, Head of Conservation Development — Ireland

Photo: ©Dermot Breen

> One dark night – it was a very dark night, and blowing hard too... a company of skirmishing stoats, who stuck at nothing, occupied the conservatory and the billiard room, and held the French windows opening on to the lawn.
>
> Kenneth Graham *The Wind in the Willows*

I suspect many of us who try to record the distribution of stoats wish they were as forthcoming in making their presence known as 'described' by Graham. In reality, these elusive stoats are difficult to monitor and little is known about them.

VWT's Senior Science and Research Officer, Lizzie Croose, undertook a study in 2018 to detect stoats and weasels in the UK. She used a Mostela that was developed by the Dutch Small Mustelid Foundation and is a wooden box with a plastic tube running through it and a trail camera inside to record footage of any animal that enters. Using this device, Lizzie detected stoats at just one site during her research, yet weasels were detected at all three sites[1].

Weasels do not occur in Ireland but we do have stoats. Although the Irish stoat is a distinct subspecies, *Mustela erminea hibernica*, confined to Ireland and the Isle of Man, it presents the same challenges as its British counterpart when it comes to monitoring its presence. A chance to repeat Lizzie's study in Ireland in 2019 came about in March when I received a phone call from Brian Hughes, who has volunteered with the Trust in the past on our bat and pine marten work in Mayo and Galway. Brian was seeking a 12-week placement with a wildlife organisation as part of the Master's in Ecological Management and Conservation Biology he was undertaking at Queen's University Belfast. By the end of the phone conversation, we had Brian on board for our stoat study.

In April, Lizzie sailed to Ireland with twelve Mostelas and all the associated materials needed for the study. Prior to her arrival, Brian and Ruth Hanniffy (Species Conservation Officer – Ireland) had checked the National Biodiversity Data Centre (www.biodiversityireland.ie) for stoat records and studied maps and

Making the Mostela invisible with moss.

satellite imagery to select areas with suitable habitat. John Higgins, Conservation Ranger with National Parks and Wildlife Service, then came on board to direct us to landowners in these areas who would be willing to allow access for the duration of the study.

By May, all the Mostelas were in place. In addition to the twelve internal cameras, we positioned twelve cameras outside to record footage of any stoats that approached but didn't enter a Mostela. Twenty-four cameras running night and day for 12 weeks gave us a lot of footage (9,615 clips), so I am full of admiration for Brian's perseverance in looking through them all.

In his own words: *Going through the footage was quite time consuming and a lot of patience was required while looking at clip after clip of leaves and grass, but the sight of a pine marten, badger or some other mammal every so often kept me going.*

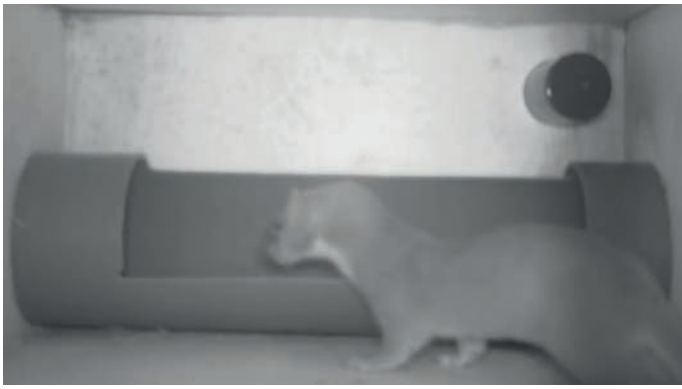
On the third week, Ruth and I were checking one of the Mostelas at the second to last site of the day. After downloading the internal footage, I decided to check a random clip and there it was, our first stoat. We were thrilled to get our first stoat footage because now we knew for sure that the Irish stoat would use the Mostela. The stoat came back to this site most weeks and gave us great entertainment over the summer. It seemed that it only visited the Mostela for a roll around and a scratch. Footage of this stoat's antics is still available to view on our Facebook page and is well worth watching.

A total of 40 unique stoat clips were recorded during the study, of which 23 were from the external cameras and 17 inside the units. Stoats were detected at four of the twelve sites and entered the Mostelas at two sites. It's not possible, with just a twelve-week study, to explain why stoats chose to enter the Mostelas at some locations but not others, but it's possible that the habitat in the immediate vicinity of the units may influence their behaviour and so this warrants further research.

Overall, 13 different mammal species were recorded during this study, which indicates that this method could also be used to non-invasively monitor Ireland's small mammals, in particular the native pygmy shrew (*Sorex minutus*) and the non-native greater white-toothed shrew (*Crocidura russula*).

We are very grateful to all the landowners who allowed us to place the Mostelas on their land, to John Higgins for his assistance and, above all, to Brian, whose enthusiasm, good humour and excellent choice of cafés for lunch made the study all the more enjoyable.

[1]Croose, E. and Carter, S. P. (2019) A pilot study of a novel method to monitor weasels (Mustela nivalis) and stoats (M. erminea) in Britain. Mammal Communications. 5. 6-12.



pinemarten.ie — one year on

Kate McAney, Head of Conservation Development — Ireland

Photo: ©Robert Cruickshanks

One year after the launch of the website, pinemarten.ie last November, it is time to look at the statistics to find out how it is being used.

November may not be a popular month in the calendar year for those of us living on the western edge of Europe with diminishing day length, average daytime temperatures of just 9-12°C and rain forecast for at least 23 out of 30 days. If, however, you celebrate your birthday in November, you hopefully have happier associations with this month. In a strange way, this is how I feel about www.pinemarten.ie, the website we launched in November 2018 and that is now one year old!

Following a workshop on the pine marten, organised by National Parks and Wildlife Service (NPWS) in October 2017, the lack of reliable and accessible information about the species was one of the key points raised. Vincent Wildlife Trust was identified as a suitable partner to provide this and so the website was developed as a joint initiative with NPWS. We chose to present facts and information under the following four headings: Householders, Gun Clubs and Poultry Keepers, Journalists, and Foresters and Farmers, because these groups best reflected the sources of queries that we and NPWS had dealt with over the years. We decided to add interest by including material associated with pine martens across a range of topics, including myth and folklore, literature, ecotourism, etc.

Having been 'live' for a year, we decided to review its use and determine whether it has fulfilled its tagline of 'A national resource about pine martens in Ireland'. Andy, website designer from Madeintrebania, supplied us with answers to a number of questions we posed. We wanted to see when the website was being used, which pages were visited most and how regularly.

The results show there was indeed variation over the year, with the first peak in November, clearly linked to the publicity surrounding the launch. A second peak occurred in January that corresponds to an interview I gave about the website to Sean Moncrieff on Newstalk radio. The site was then accessed consistently but visits increased substantially from May onwards, reflecting that information was sought about martens in the months when they were most active raising and feeding their kits, often within attics of houses and thus coming to the attention of the public.

By providing information under the four categories, we have been able to detect that the most visited section was that for Householders, which accounted for a third of all visits. This comes as no surprise because female martens are using attics in which to rear their kits, due to the historical lack of mature deciduous woodland in Ireland and therefore a lack of natural denning sites. Over the years, we had noticed that telephone calls about martens entering attics or appearing in gardens at bird feeders began around April and continued into the autumn. We still receive emails and phone calls from householders, but invariably the conversation now begins with, 'I've just been on the pine marten website, so I know I can't have the animals removed, but I'd like to know when they might be leaving and what I can do when they go to prevent them returning.'

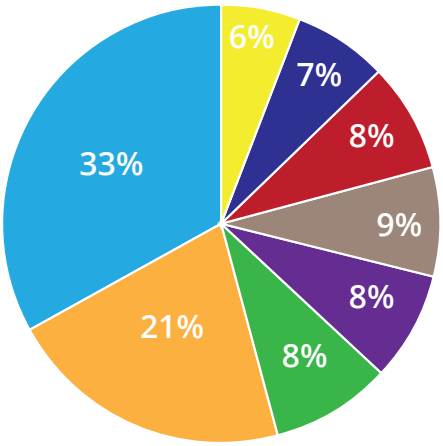
The accompanying pie chart shows the percentage of page views for the remaining areas of the website. We were a little surprised to see that the second most popular topic viewed was 'How to tell a pine marten from a

mink and feral ferret'. This probably reflects the fact that several human generations have lived and died since the pine marten was considered a common species in Ireland, so there is some confusion about what it looks like, how big it is, etc. We are relieved to see that, so far, only two of the topics on offer have not been considered worth viewing by the approximately 20,000 visitors in 2019. The two topics are the history of the trade in pine marten fur from Ireland and literary references to the animal. As author of these short sections, I can be accused of being a little biased but I do think both topics are worth at least a quick look. We believe that the website has lived up to its tagline but we are aware that much still needs to be done to ensure that the pine marten continues its natural recovery in Ireland. We will be working with our NPWS partners and others in 2020 to test solutions to the problems posed by martens denning in occupied houses. We will update the website with results as this work progresses.

I'm not sure if it's appropriate to wish a website 'Happy Birthday' but here goes. 'Happy Birthday pinemarten.ie, we hope pine martens (and humans) will benefit from your existence for many more years!'

Householders 33%
How to tell a pine marten from a mink 21%
Gun Clubs and Poultry Keepers 9%
Report a sighting 8%
About the pine marten 8%
FAQs 8%
Foresters and Farmers 7%
Journalists 6%

Page views per user



My time as a Trustee for Vincent Wildlife Trust

Rob Lucas reflects on his time as a Trustee with VWT.

I met Vincent Weir briefly around 1980 when he came down to Slapton Ley Field Centre in Devon where I worked. He had come to see Johnny Birks, who was doing his PhD on American mink, but I'm not sure I appreciated the importance of the type of work Vincent was funding at the time. My path crossed with Vincent Wildlife Trust's again in 2005 when I began helping out with bat counts at the Hendre reserve near where I was living at the time. I have never been entirely clear how I was invited to become a Trustee, but I remember well my first meeting with Vincent and the two other Trustees (Tom Tew and Malcolm Newdick) at the Farmers' Club overlooking the London Eye.

There have been many highlights during my time with VWT... Working alongside passionate and knowledgeable staff; visiting VWT reserves in Ireland, England and Wales; seeing some of the first pine martens being checked over in Scotland before being translocated to Wales... the list is long and varied. The real highlight, though, has been helping VWT move from an almost secret charity doing great evidence-led conservation work, to one playing a much more public role in the conservation of threatened mammals across the UK, Ireland and, increasingly, continental Europe.

Given the generosity of Vincent Weir in establishing the endowment for VWT, it perhaps seems odd to say 'sorting out the finances' has been a big challenge. The financial crash, which happened soon after I started as a Trustee, had a big impact on our investments. It became clear, as he stepped back from the management of the charity, that Vincent had been regularly putting in additional monies from his own funds. This was a luxury we no longer had. Staff were largely unaware of where the money came from, so changing the culture, attracting more external funding and finding a Trustee who knew more – a lot more – about the world of investments, were all part of the solution that we had to put in place.

We face unprecedented change in the coming months and years with political uncertainty and hardening borders being completely at odds with threatened mammal species attempting to adapt to climate change. VWT has grown beyond all recognition in the last decade through being creative, light on its feet and true to its vision. The original endowment has allowed us to take greater risks than many others in the sector, but we must use it wisely as we can only spend it once!

Keep up the great work – it is an inspiring charity to be involved with.

Photo: ©Frank Greenaway

Sound *bath*ing with horseshoe bats – any volunteers?

Marina Palacios, Bat Conservation Officer

Counting bats can be a magical experience, but with 36 roosts and many miles between them, VWT needs willing volunteers to help.

Last summer, I experienced a sound *bath*ing session for the first time. No, it didn't involve gongs, singing bowls or didgeridoos, but horseshoes, although not exactly the clip-clop of a walking horse either. The sound was created by the echolocation calls of horseshoe bats. Each year, in summer, VWT monitors the lesser and greater horseshoe bat populations at several bat roosts. When I say several, I mean 36 roosts dispersed across the south-west of England, Wales and Ireland that we manage for these species.

The surveys are part of the National Bat Monitoring Programme (NBMP) in Britain, led by Bat Conservation Trust, and a similar scheme in Ireland, managed by Bat Conservation Ireland. They collect information on bat numbers to produce national population trends, but also to alert of any population declines in our reserves so that we know where to focus our attention. The monitoring takes place between the end of May and July when the horseshoe bats are back in their summer roost, ready to give birth. It seemed to be a simple process: all that is required is to be able to count bats that emerge from the roost… or so I thought.

Last June, I joined colleagues and went to Wales do my first official bat count, armed with a pair of tally counters, chairs and, of course, bat detectors. I set up my watching post with a night vision camera to be able to see the bats more clearly, and to record the bat emergence as a back-up in case I failed miserably at counting. Then I sat and waited for the sun to go down and for the magic to happen.

A faint bubbly sound started to play on the bat detector: the first lesser horseshoe bats were getting ready to emerge. And so they did. The first ones came out, flew around, and went back in after realising it was still too light. Then, as it got darker, more started to emerge and I started to click along at a constant pace 1… 2… 3… 4… then frantically 5,6,7,8,9… up to 500! I was immersed in a cloud of bubbly sound produced by all the lesser horseshoe bats echolocating around me. It was magical. There wasn't much time for relaxing or meditating in this sound bath, but it clearly turned all my thoughts to centre on just one thing: don't miss a bat! I had to focus quite hard to see the bat silhouettes coming out, but I focused even more not to double count the bats that were trying to fool me by flying around and going back inside the roost. It was a great night followed by a long drive back, made more exciting by the views of other nocturnal wildlife, including foxes, hedgehogs, tawny owls and badgers.

This was just the first of many more lesser horseshoe counts. For the NBMP, each horseshoe roost needs to be counted twice in a space of five days. Although counts happen in different months for lesser horseshoes (June) and greater horseshoes (July), counting the bats from all our lesser horseshoe roosts (11 in Wales, 6 in England and 12 in Ireland) twice in 14 nights is no easy job for a small Bat team. Things get logistically trickier in miserable weather when bats don't emerge, and even more difficult considering we have roosts 230 miles apart. For these reasons, we need committed, local people who are willing to give up their time to help with these annual counts. We already have invaluable volunteers that monitor some of VWT bat reserves and contribute to the knowledge of national horseshoe bat trends, but we still have a good number of roosts that need volunteer surveyors. We will be recruiting for additional volunteers in summer 2020. Perhaps, next year, it'll be you telling us about your first horseshoe bathing experience!

Photo: ©Julia Bracewell

Improving landscapes for lesser horseshoe bats

Tom Kitching, Bat Conservation Officer

VWT's Bat team has been developing landscape suitability models to help inform and direct habitat restoration work.

In the Brecon Beacons National Park, the River Usk carves out a particularly important stretch of land for lesser horseshoe bats. The upper valley has a good mix of broadleaf woodland patches connected by wooded riparian corridors and a network of breeding sites and underground hibernacula that have been protected for many years by dedicated conservationists. Together, they make the perfect habitat for this species.

VWT manages five reserves for lesser horseshoe bats in one of the most densely populated areas of lesser horseshoes in Britain. Consequently, this is a focal area for much of our research on these animals, particularly around landscape connectivity. As a highly mobile species that uses vegetation structure for navigation and one that has temporal shifts in roosting requirements, lesser horseshoes can tell us a lot about the condition of the surrounding landscape and its ability to provide the year-round conditions needed. There are several other reasons why these bats make good research subjects: they are easily distinguishable by passive acoustic recorders, they are quite habitual in their roosting sites and, crucially, are sensitive to environmental changes. Behavioural changes in lesser horseshoes have been used to demonstrate the impact of artificial lighting, climate change and habitat fragmentation on general wildlife communities.

In 2018, VWT used spatial modelling techniques to contextualise features of the landscape in the national park by their importance to lesser horseshoe bats. Habitat suitability models were used to analyse the landscape characteristics at locations where bats are known to occur. This then produces an output that can be displayed on a map to reveal the suitability, or otherwise, of the habitat across a wider area. This type of analysis can be operated at different levels to show the importance of fine-scale features, such as individual hedgerows, in the context of the broader suitability of an entire area for a chosen species.

Additionally, there are landscape permeability models. These demonstrate how easily animals can navigate their surroundings away from a central point, such as a bat roost, and therefore display pathways that bats are likely to use. Features that promote or obstruct movement can be identified on the output maps. Through employing these spatial techniques, we can ensure any habitat enhancement planning is well-informed and the ground work is targeted to have the most impact.

Less than a mile from one of our lesser horseshoe bat reserves in the Usk Valley, is a small hillside farm holding. The spatial modelling work shows us that, despite this site being in a highly suitable region for lesser horseshoe bats, the fine-scale habitat features within the farm's boundaries are poor and clearly sub-optimal for lesser horseshoe navigation. There is woodland at the boundaries, but little in the way of hedgerows or vegetation across the farmland. The new owner of this farm has agreed to work in partnership with VWT to improve the site for these bats through a combination of natural woodland expansion and native tree planting. In order to be able to monitor the impact of the developing vegetation structure, we used static bat detectors over the summer months to gather baseline data on current bat activity. Although lesser horseshoes are the focus, we will monitor all the species we record and, by continually monitoring the ground work, we can develop an evidence base to demonstrate the effectiveness as a framework for appropriate habitat restoration in other areas.

Photo: ©Paul Harry

Pine Marten Recovery Project updates

Lizzie Croose, Senior Science and Research Officer

It's been two years since we completed the pine marten translocations from Scotland to mid-Wales, releasing a total of 51 martens between 2015-2017. What has been happening since then?

Since the end of the translocation phase, a core population of pine martens has become well established within the original release area around Devil's Bridge, but there is also evidence that the population has expanded its range north and south throughout the Cambrian mountains.

Over the last year, the focus of the project has shifted from the original post-release monitoring of the translocated animals to engaging the wider community across a larger area of Wales. This latter phase has been supported by funding from the Landfill Disposals Tax Communities Scheme, People's Postcode Trust, and Chester Zoo and has enabled us to offer training on using camera traps, hair tubes and scat surveys, as well as building, installing and checking den boxes for martens.

Our Camera Trap Loan Scheme has continued this year, with many people monitoring camera traps over a wide area of Wales. This has proved invaluable in recording pine martens as they expand into new areas, keeping track of known individuals identifiable by their 'bib' patterns and identifying unknown individuals, likely to be offspring of the original 51.

This summer, one of our volunteers recorded footage of a marten in Gwydir Forest: further evidence of their range expansion north into Snowdonia. Two pine martens have also been regularly visiting a B&B near Corris Uchaf, in the south of Snowdonia National Park, providing entertainment for guests! We also continue to have a pine marten visiting our bespoke hide in Carmarthenshire, built in collaboration with Chester Zoo.

As the marten population spreads, it's difficult to monitor the distribution and range expansion of the animals. To address this, we initiated a citizen-science 'Expansion Zone Survey' this summer, which focused on areas outside the core range of martens in Wales. This has involved a huge effort, with lots of people volunteering for the glamorous job of looking for pine marten scats (poo!). Scat surveys are a well-established method for wide-scale marten surveys and involve walking tracks in woodlands to look for droppings, which martens helpfully leave as a form of social communication. All the scats collected are destined for DNA analysis to verify their species origin, giving us an up-to-date picture of pine marten distribution in Wales.

Although it's challenging to keep track of breeding, we were able to confirm that three martens have bred this year, though this figure will almost certainly be much higher.

We are continuing to facilitate coexistence between pine martens and other human and conservation interests by working with shooting estates and groups with expertise in bird conservation. This will help us develop pre-emptive mitigation measures to prevent martens taking wild and game birds. We are also trialling a variety of deterrents.

In August, we sadly said farewell to Josie Bridges, who started with the project in 2015. She has joined Gloucestershire Wildlife Trust's pine marten reintroduction project, of which VWT is a partner, and is using her wealth of experience to keep track of the new marten population in the Forest of Dean. As we come to the latter stages of the project, the future for pine martens in Wales looks bright, and we're confident that the population will continue to recover and thrive.

VWT in BBC Wildlife Magazine

Julia Bracewell, Communications Manager

We were delighted to see the article on greater horseshoe bats written by VWT's Consultant Head of Communications, Hilary Macmillan, finally printed in November's edition of BBC Wildlife magazine. It is nearly a year since Hilary approached Ben Hoare, former commissioning editor, at the New Networks for Nature conference and persuaded him to commission an article about VWT and the greater horseshoe bat. The article also highlighted 'Inside the Bat Cave', a programme due to be shown on BBC4 in the new year, which features one of our bat reserves and our Bat Programme Manager, Anita Glover.

This edition of BBC Wildlife also included an article about the Forest of Dean Pine Marten translocation project, and VWT's Pine Marten Recovery Project and images of VWT staff featured heavily throughout the article.

Red in tooth and claw

Steve Carter, Carnivore Programme Manager

Photo: ©Frank Greenaway

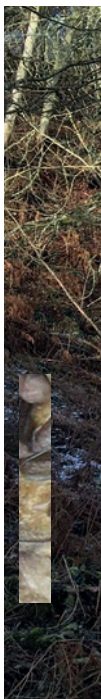
The title refers to a line from Tennyson's 1850 poem 'In Memoriam' and sums up the widespread attitude held towards carnivores at that time in history.

Britain had lost all its larger carnivores centuries before Tennyson penned his famous line and a long history of persecution, coupled with habitat loss, meant many of its smaller carnivores were facing a similar fate. The good news is that some of them, such as otter, pine marten and polecat, are bouncing back following significant social changes, including legal protection and bans on certain traps and toxicants, as well as a generally more enlightened attitude. This good news story was highlighted in the paper, 'Recent history, current status, conservation and management of native mammalian carnivores in Great Britain' by VWT's former PhD student, Katie Sainsbury. It's also good to know that some of this recovery has been directly aided by VWT supporters and volunteers, as with the return of pine martens to Wales through VWT's Pine Marten Recovery Project.

This year has been a particularly exciting and eventful year for our Carnivore Programme, with a new pine marten translocation taking place in the Forest of Dean, a new citizen science pine marten survey in Wales, the first trial of an innovative method to monitor Irish stoats, a new collaboration with the University of Lisbon resulting in a hugely successful European Mustelid Colloquium and the consolidation of other partnerships heralding the beginning of collaborative conservation efforts on two new additions to VWT's Priority Species list: European wildcat and European mink.

In the midst of all this, our ongoing conservation work carries on. Our former Community Engagement Officer, Josie Bridges (now with Gloucestershire Wildlife Trust) stepped up training and community engagement events in Wales with support from other staff, which will leave a legacy of trained and committed volunteers. Many of these will be relied on for future monitoring and conservation of the newly established marten population. The extent of this community engagement was made possible by funding from the Landfill Disposals Tax Communities Scheme, People's Postcode Trust and Chester Zoo.

Our Pine Marten Project Officer in the North of England, Kevin O'Hara, has also been industrious, working with volunteers and stakeholders across Northumberland and Cumbria to help facilitate the natural recovery of pine martens across the border from Scotland to England. This work forms part of Natural England's multi-species Back from the Brink Project, which was presented with the Best Heritage Project Award at the 25th Anniversary of the National Lottery Awards. Confirmed pine marten records for the area (mainly from camera traps) are now well into double figures as a result of the recently established volunteer network and close working with other conservation organisations.



Earlier this month, Back from the Brink organised a family-friendly creative workshop in Northumberland. This was attended by 64 people who made 21 brightly coloured pine marten feeder boxes that will be put up alongside camera traps to try and record the presence of pine martens as they colonise new areas. Events such as these are extremely effective at bringing the conservation message to a wider audience and reaching out to the next potential conservationists.

Our Pine Marten Project Officer in Wales, David Bavin, has also been busy reaching out to a slightly different audience, strengthening existing relations with local and national representatives of shooting, gamekeeping and farming interests. Although many of us rejoice at the prospect of returning native carnivores, such as pine martens and, perhaps one day, wildcats, carnivore reintroductions are not going to be popular with everyone. For this reason, we had extensive open and constructive dialogue with the farming and shooting community prior to the first pine marten translocation in Wales. This dialogue has continued throughout the project, which means that we are able to ensure landowners are well informed and, where there is any risk of conflict, we can suggest practical mitigation to avoid such conflict and promote coexistence with pine martens and other returning native carnivores.

Photo: ©Lizzie Croose

VWT's Back from the Brink Pine Marten Project has been working closely with volunteers and engaging families through practical activities such as making pine marten feeder boxes.

I am especially excited by the progress that has been made since my piece on European mink in the 2018 newsletter 'Mink on the Brink'. The recent field study in Spain is, hopefully, just the first step of our involvement in a multi-partner conservation effort to try and tip the balance in the favour of European mink. Adding wildcat to our portfolio is equally exciting and, earlier this year, our Science and Conservation Manager, Jenny MacPherson, produced a preliminary feasibility study. We also have a follow-up PhD study supported by ourselves and Durrell Wildlife Conservation Trust, through which Tom Dando from the University of Exeter will attempt to reconcile the challenges and opportunities of restoring Britain's rarest carnivore.

Other future plans and aspirations include closer working with European colleagues to determine the current population status of European mink and other small carnivores such as steppe and marbled polecat, which may also benefit from a concerted conservation effort. We won't be neglecting our own native carnivores and will continue to work in partnership with Gloucestershire Wildlife Trust on the second marten translocation to the Forest of Dean due next summer. We will also be working with shooting and game interests as we develop an exemplar shooting enterprise in Wales, along the lines of pioneering work that our Ireland team have supported at Kilcormac Sporting and Conservation Club.

As a result of our pioneering work on the translocation of pine martens to Wales, we will be sharing knowledge and experience through a Pine Marten Conservation Handbook, which will be produced in 2020. As the Pine Marten Recovery Project in Wales and the Back from the Brink Project in the North of England come to a scheduled end, we will be facilitating long-term, volunteer-led monitoring of pine martens in both places. In due course, we will also be carefully considering further translocations of pine martens to suitable areas that are unlikely to be colonised naturally, provided there is sufficient suitable habitat, that any perceived conflict can be managed, and we are confident it would not negatively impact the source population.

Although the next national polecat distribution survey is not due to take place until 2024, we will be working with the Dutch Small Mustelid Foundation and other European partners to develop a robust method for detecting population change in polecat numbers. We will also be building on initial success using cameras and Mostelas to detect stoats and weasels, so that we may one day have a reliable method for monitoring the conservation status of our smallest and, when it comes to studying them, trickiest members of this fascinating, if at times misunderstood, family.

A new vision for the critically endangered European mink

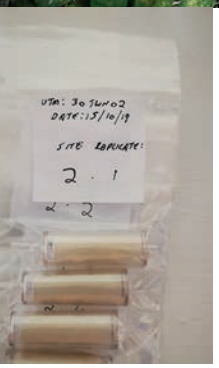
Ruth Hanniffy, Species Conservation Officer — Ireland

VWT has been working with partners in Spain to trial innovative methods of detecting the presence of European mink, a critically endangered mammal.

"I'm learning to think like a European mink!" I call out to Harry, who is close by on the river bank. We are on the banks of the Rio Ebro in northern Spain with the MITECO-Tragsatec[1] team, looking for the perfect vantage point to position two trail cameras. The cameras will be trained on a tasty spread of oily sardines in the hope of attracting a European mink (*Mustela lutreola*) as it travels along the river corridor. We are hoping to confirm the presence of this rare semi-aquatic and nocturnal mammal using camera traps. A fleeting image won't make the grade however. We need to photograph the white mark on the upper and lower lip, which will distinguish the European mink from the introduced American mink (*Neovison vison*), which only has a white mark on the lower lip.

European mink are solitary and territorial animals with a home range of 3 to 15km. They are normally active from dusk to dawn, and inhabit densely shaded rivers, streams and wetlands where they feed on fish, crustaceans, amphibians, small mammals, insects and birds. VWT teamed up with Lauren Harrington (WildCRU, University of Oxford), her partner Andrew Harrington, Madis Põdra and Asun Gómez (technicians with Tragsatec, who coordinated the recently finished LIFE Lutreola Spain project), their field team, and Allan McDevitt from the University of Salford. We are comparing methods for detecting and monitoring the European mink over a ten-day period in La Rioja and Basque Country in northern Spain, using two types of camera traps and environmental DNA (eDNA) metabarcoding, a technique to detect species present in samples taken from the environment. In this case, we are taking water samples. Madis, Asun and the field team are testing baited hair tubes to collect samples for DNA analysis and live trapping. The live-trapped animals are then microchipped for future monitoring.

Aside from setting and checking 50 cameras, and then analysing thousands of images for that all elusive mink facial photograph, the second part of our fieldwork entails collecting water from each of our 25 sites. So, while I position and secure the cameras, Harry fills 500ml bottles with river water. We then use a sterile syringe to filter the sample ready for eDNA metabarcoding at the University of Salford, where Allan McDevitt is interested in comparing this innovative, non-invasive eDNA technique with more conventional survey methods to detect and monitor both invasive and endangered mammalian species. As a conservation biologist with a love of travel, this is an exciting project! It becomes much more personal than that, however. The European mink is in a precarious position, and getting the chance to work with a team so dedicated to reversing the fate of one of Europe's most endangered mammals is inspiring.



above Madis sets baited hair-tubes in the hope of collecting hair samples for DNA analysis. *left* A set of water samples bagged and ready to send off for eDNA metabarcoding. *bottom left* Ruth sets a camera trap on the river banks.

European mink were widespread throughout most of the European continent, but their range has declined by more than 90%. Today, they are found only in western France, northern Spain, the Danube Delta in Romania and Ukraine, and a few isolated sites in Germany and Estonia where they have been reintroduced. Estimates suggest the overall population size is around 2,000 individuals.

The drastic decline has been caused by historical over-exploitation for the fur trade, loss and degradation of wetland habitats through pollution, wetland drainage and agriculture, and by the introduction of American mink. First imported to Europe by fur farmers in the 1920s, American mink escapees have since thrived in the wild. Bigger, more aggressive and more adaptable, they have driven out the already depleted and fragmented European mink populations. Even low numbers can outcompete the native species and so, to prevent the extinction of a highly fragmented and declining species, an EU-wide Species Action Plan for the European mink is recommended. LIFE Lutreola (2014-2019) came to the end of its four years in Spain, but the success of the project was remarkable against its ambitious objectives, which were to:

1) eradicate American mink from within the range of European mink and targeted risk zones;
2) increase the viability of the wild population of European mink through releasing captive-born individuals;
3) create a new monitoring network to assess the status of both species after the project has ended.

Intensive control of the American mink has been on-going in Spain since 2003, and the American mink population has been eradicated from a core area for the European mink on the Ebro river basin. Without this successful eradication, the native population is likely to have vanished already... but it requires continuous effort to prevent reinvasion. The overall population is still declining however, and reinforcement of the native population through captive breeding has been the second crucial part of the project. Following the eradication of American mink, 26 captive-born European mink were released into an area during the last two years of the project. Habitat restoration in the area was also part of the project and the released individuals have adapted well to their new habitats along the rivers and streams.
With the enormity of the situation in our minds, we checked the memory cards at the end of each day with anticipation, becoming strangely used to the array of wild mammals appearing on the screen: otters, genets, wild boar, stone marten and a wildcat. Our efforts were not in vain, and the first glimpse of our rare target species was motivating. By the end of the survey period, we had captured European mink on trail cameras at the majority of our survey squares. Many of these were photographed during daylight hours, which is an interesting development for this crepuscular species. As we patiently await the results of the eDNA analysis, we can only hope our samples contribute to the development of this technique in detecting rare mammals like the European mink, and contribute to the future conservation of the species across its limited range.

These few weeks of fieldwork in the beautiful mountains and river valleys of northern Spain, working with Harry, Madis, Asun, and colleagues, and witnessing the dedication and commitment of the LIFE Lutreola team has been a privilege. Their efforts are having a real effect on the fate of this critically endangered mammal in Spain and the European mink is taking back its native waterways against all the odds, largely thanks to the results obtained in the LIFE Lutreola project. With the same team now continuing the work on behalf of MITECO-Tragsatec, the Rio Ebro and its tributaries may once again become a safe haven for the European mink.

[1]**MITECO**: Ministry for the Ecological Transition
Tragsatec: state-owned holding company

below We were delighted to capture a number of European mink on our camera traps.

It is not a holiday!

Henry Schofield, Head of Conservation

Photo: ©Boris Kristinić

Researching the enigmatic Mediterranean long-eared bat, *Plecotus kolombatovici*, may seem like a good excuse for a holiday in Croatia...

Back in 2016, my friend and bat colleague Daniela Hamidović called from Croatia wanting to discuss a derelict monastery on the island of Lokrum that was home to both lesser horseshoe bats and Mediterranean long-eared bats. There was a proposal to renovate the monastery and the resident bat populations were in danger of being disturbed and made homeless. Daniela and her colleagues in the Croatian Bio-Speleological Society (CBSS) had located the lesser horseshoe roost and were monitoring it, but the precise roosting sites of the Mediterranean long-eared bats had eluded them. They could be caught in mist nets inside the monastery and over local water bodies, so I thought we could radio-tag a few animals, track them back to the monastery and locate the roosting site... but with bats, things are rarely so simple.

I travelled to Croatia with VWT's Bat Programme Manager, Anita Glover, during the summer of 2016. As the taxi approached Dubrovnik, we had our first sight of Lokrum, an island little more than 1.5km long and 400m wide. Nestling amongst heavily wooded slopes is a stunning medieval Benedictine monastery, a tower built by the Habsburg Emperor Maximillian in the 1860s and at the highest point on the island, a Napoleonic fort. Time, earthquakes and war have left them all semi-derelict, but the cultural significance of the buildings on Lokrum make it a UNESCO World Heritage Site and the island's woodland and coastal habitat have Natura 2000 (SAC) designation. In contrast, our accommodation on Lokrum was a conference room equipped with air mattresses... not many creature comforts!

That first night, we trapped and tagged six bats and gathered foraging data. The following day, we tried to locate the roost but none of the bats went anywhere near the monastery! In fact, four of them seemed to have disappeared. The other two were in the fort and in a tree in dense woodland. It was only when we chartered a boat that we discovered the missing bats in cracks in the cliffs and sea caves. Armed with one final tag, we trapped inside the monastery and managed to find one bat to tag.

As I delved more deeply into this species, it became apparent that it would fit well with VWT's conservation and research remit, particularly in light of the new Ten-Year Strategy that has ambitions to work more on the continent. The Balkan penninsula with its high bat biodiversity is a focal area for us, as is this long-eared species that has such a recent history.

In 1980, two Croatian bat scientists, Professor Beatrica Đulić and her research assistant, Nikola Tvrtković, had noticed variations in some of the long-eared bats in the country. Their research led them to propose that Croatia was home to

a small sub-species of grey long-eared bat (*Plecotus austriacus*) and they named it in honour of a 19th Century Croatian naturalist, Juraj Kolombatović. There have been huge developments in the use of genetics in the intervening 40 years, resulting in a series of revisions to the taxonomy of long-eared bats across the continent. In the last of these revisions in 2010, the Mediterranean long-eared bat was recognised as a full species. Also known as the Kolombatović's or Balkan long-eared bat (*Plecotus kolombatovici)* it has a very restricted distribution. It is found along the east Adriatic and east Mediterranean coasts as far south as Turkey, as well on the Dalmatian and Greek islands and in Cyprus. But beyond sporadic records of its distribution, very little is known of the ecology of this species or its population and conservation status. And so, together with our Croatian colleagues, we have been quietly gathering data on the species since 2016 and meeting occasionally to develop a research programme to address its conservation needs. Beyond understanding its basic foraging and roosting ecology, there are questions around the potential for inbreeding and gene flow within small island populations, whether migration happens and the best methods for monitoring population trends. Clearly there is a role for genetic analysis and so we went to Dr Emrah Çoraman from the Berlin Natural History Museum for advice. Many of the early records we found were from captures over small water bodies such as the one on Lokrum, but our Croatian colleagues were finding that many of these had dried up with the changing climate. Along with the renovation of old buildings, these are conservation challenges that we need to address.

This summer, the VWT Bat team with colleagues from CBSS, expertly guided by our fixer Damjan Kristinić, spent two weeks island hopping and tissue sampling the various bat populations for genetic analysis. We also finished the work on Lokrum started in 2016, accompanied by Chris Damant and Iain Hysom with their infra-red video equipment and a wealth of experience of surveying historic buildings. This time, we found the Mediterranean long-eared bats throughout the monastery, in the cellars, ground floor rooms and in roof voids, roosting singly or in small groups in cracks in masonry. This presented us with the challenge to produce and present a mitigation and compensation plan for the restoration of the buildings. Working with Public Institute Lokrum Reserve, architects and historians with the Institute for the Restoration of Dubrovnik and Vida Zrnčić (CBSS), we have negotiated a comprehensive plan for the conservation of the bats. The restoration of the monastery is a few years off, which gives us time to trial the proposed conservation interventions and to assess and refine them before the work begins.

Each bat is weighed before taking tissue samples for genetic analysis.

We visited Lokrum again in November to train the island's enthusiastic staff in the use of temperature and bat loggers so they can continue to gather the base-line information we need for the conservation plan over the winter. We also attended a brilliant conference on the biodiversity of Lokrum, which celebrated 70 years as a protected area.

It has been a pleasure to work so closely with Lokrum island's Conservation Manager, Marija Crnčević, and our friends in CBSS, and it feels like we have made huge progress in our understanding of this little long-eared bat, despite challenging fieldwork in temperatures approaching 40°C. Nearly as challenging as convincing our colleagues back in the UK that we weren't on holiday!

Kolombatović's bat is roosting in a derelict monastery on Lokrum

A busy year and exciting times ahead

Anita Glover, Bat Programme Manager

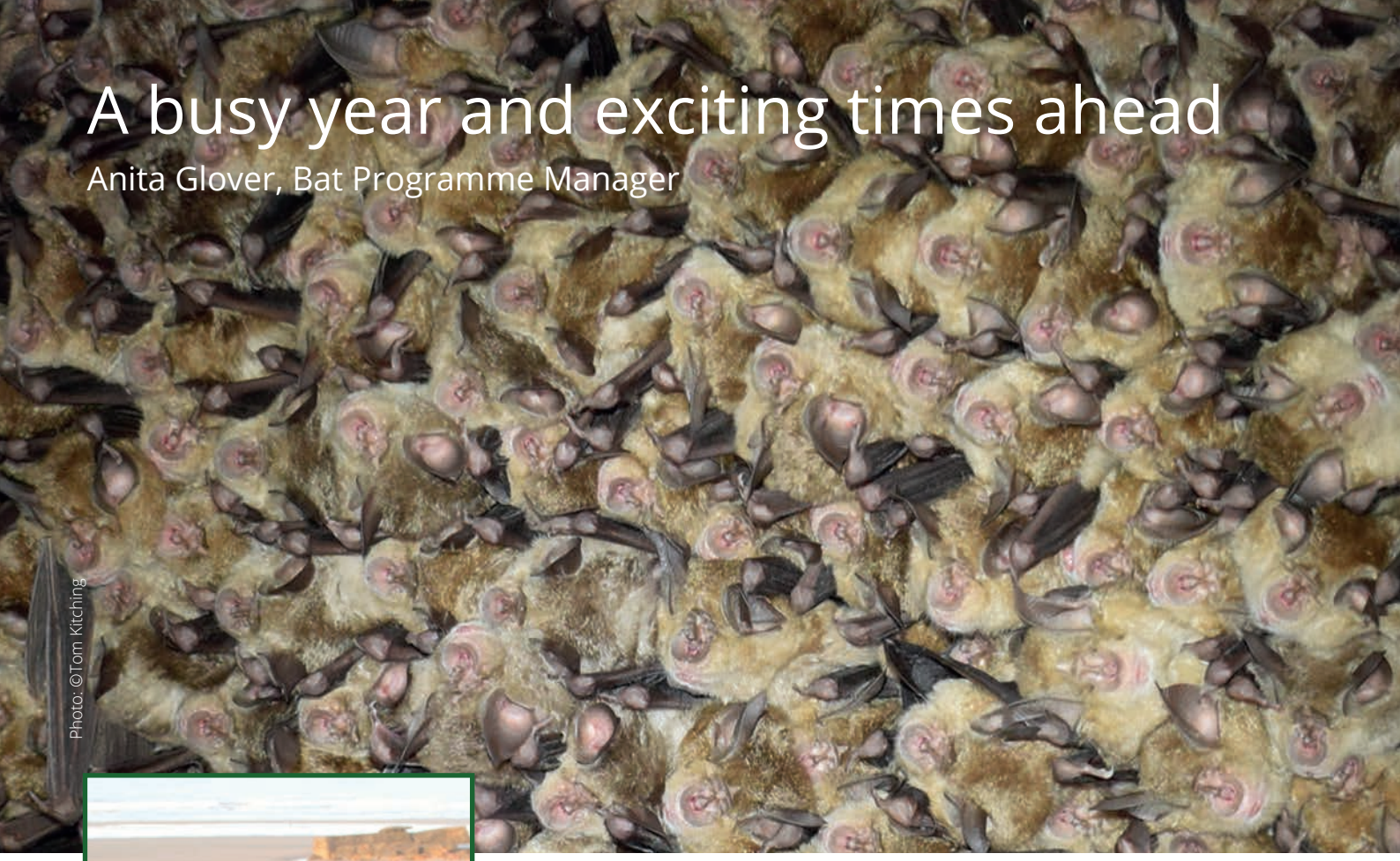


Photo: ©Tom Kitching

It's been a busy year for the Bat Programme, and there is much more on the horizon to look forward to.

As I write this, it's coming up to a year since our Bat Conservation Officers, Tom and Marina, joined Vincent Wildlife Trust. To say it's been a busy twelve months is an understatement, but it's been a good year nevertheless.

Many people find the first few months of the year a bit depressing as the excitement of the holiday season has passed, the days are still short and the weather is often miserable. Yet, in the bat calendar, this is when the annual hibernation counts take place, which is something to look forward to and gets us out of the office. Many of my formative 'bat years' were spent searching vast cave systems to find the odd bat tucked away in a crevice. It's mind blowing, therefore, to walk into one of VWT's bat reserves and count several hundred horseshoe bats, deep in torpor, just above our heads! Try counting a cluster of 300 greater horseshoe bats — it's impossible. At least it is without disturbing them, since they are very sensitive to our body heat and the light from our torches. Speed is therefore of the essence, and so we photograph the mass of furry bodies and move on quickly, leaving the bats to their winter slumber. Later, we will use computer software to count the faces in the photograph, which will give us an accurate count of the cluster with minimal disturbance.

But it's not just the horseshoe bats in our own reserves that we count. In March, we were fortunate to participate in monitoring bats at one of the most impressive hibernation sites in Europe. Nietoperek, in western Poland, is a World War II bunker system built by the Germans as part of their eastern defences against the Russians. In the winter months, it is home to 35,000-40,000 bats, with ten species regularly recorded. This was an opportunity for Tom and Marina to acquire new field skills and gain experience with a wider range of species. We were tasked with surveying the coldest, but also the most species-rich, section of the bunker system. This is where, in previous years, we would have found large clusters of barbastelles, which are a cold-tolerant species. However, a series of mild winters has seen the disappearance of the large clusters and an overall decline in the number of barbastelles overwintering here. Presumably, in the absence of cold continental winters driving them underground, they are able to survive the winter in tree roosts.

While there may not have been many barbastelles, hidden away in a deep fissure in the concrete was a large, dark bat that Marina's eagle eyes spotted and correctly identified as a serotine. It was the only one we found that day.

In February, we visited our colleagues in Ireland and assisted with their winter counts of lesser horseshoe bat reserves in Kerry. This was also a valuable opportunity to work together on a number of future project proposals centred around improving landscape permeability and habitat connectivity for horseshoe bats. For lesser horseshoe bats in Ireland, the challenge is a fragmented population with areas of unsuitable habitat forming barriers to the movement of bats between sub-populations. We have been working on a range of potential agri-environment prescriptions that could improve landscape connectivity for horseshoe bats, and we're now exploring a modelling approach to inform where those measures would have the most impact.

The visit to Ireland was not the only opportunity to work collectively on future project plans. In May, the whole Conservation team spent a couple of days working on our new Ten-year Conservation Plan. The backdrop for our residential workshop was the Knepp Project in Sussex, a pioneering rewilding project on a 3,500-hectare estate that was once intensively farmed. We camped, and each morning were woken by the most incredible dawn chorus. At night, we were serenaded by nightingales, which was a magical experience, even if we didn't get much sleep.

Tom and Marina worked like Trojans during the summer and somehow completed the summer monitoring of our reserves around the fieldwork in Croatia. Although we have a fantastic group of volunteers who carry out the counts at a number of our reserves, this is an area where we would value the help of more volunteers with this important aspect of our bat monitoring work.

VWT is proud of its work to restore and enhance historic buildings for the benefit of greater and lesser horseshoe bats, and the contribution this has made to the ongoing recovery of these two species in Britain. However, we must not rest on our laurels. Both species face ongoing threats in the wider landscape from development pressure, an expanding road network and increasing light pollution, along with the complex and unpredictable impacts of climate change. With this in mind, the Bat team has spent the autumn reviewing the future resilience of its reserves and identifying practical measures to ensure that bats have the best chance of coping with changes that arise in their environment. Next year, we plan to implement some of these measures, including predator proofing roost access points and ensuring that the spaces within roosts offer a range of microclimates so that the bats can cope with unpredictable or extreme weather events.

Photo: ©Tom Kitching

With new initiatives underway, lots of volunteering opportunities opening up and a new Ten-year Conservation Plan kicking in, next year is shaping up to be really exciting for the Bat Programme.

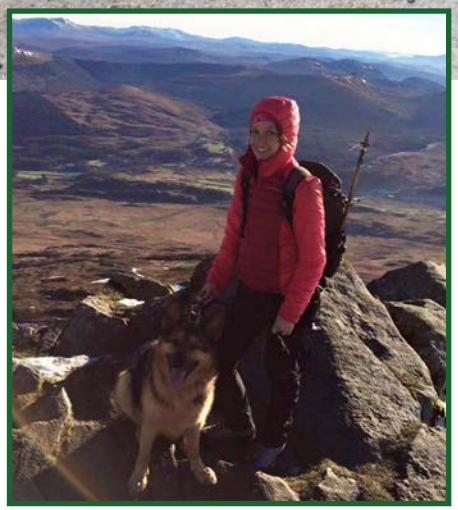
The annual emergence counts are so much easier with the help of commited volunteers and infra-red cameras.


Photo: ©Tom Kitching

Gemma Fisher

Volunteers contribute to conservation

Gemma Fisher, Volunteering and Community Engagement Officer



Volunteers are vital to the work of VWT and 2019 has been an exceptional year of volunteer efforts.

In the last 40 years, the Trust has led the way in the research, conservation and recovery of threatened and under-studied native mammals, including in more recent years, pine martens, horseshoe bats, stoats and weasels.

Though my own journey so far with VWT has only been two years and counting, those two years have been a continual eye-opening experience, particularly in recognising the invaluable and integral contribution that community engagement and dedicated volunteer input can make toward current conservation issues.

Last year was an impressive effort, but 2019 will most definitely be a memorable one for me when it comes to VWT volunteers. They have monitored tens of camera traps and have installed feeder boxes in Northumberland in search of pine martens; they have carried out emergence surveys at our lesser and greater horseshoe bat reserves in England, Wales and Ireland; have joined staff for pine marten den-box checks in Wales, taken part in bat-box checks in England and Ireland, have trialled the use of the Mostela at Knepp Wildlife Estate and have managed the Pine Marten Den at Devil's Bridge Railway Station. Volunteers joined VWT staff as part of the ongoing bat research field-work in Croatia this summer, as well as helping with VWT's work alongside Gloucestershire Wildlife Trust for the Forest of Dean Pine Marten Reintroduction Project.

As if all that that wasn't reason enough to be thankful, the volunteer input this year has taken on new heights and significantly increased the conservation impact much more than VWT staff could have managed alone. In Ireland, volunteers who took part in our Fiddaun Detector Study in July surveyed transects with hand-held detectors and have helped to significantly increase our understanding of how lesser horseshoe bats use the landscape surrounding roost sites in that area.

Ireland also hosted the first trial of the Mostela to monitor the local Irish stoat population. Masters student and volunteer, Brian Hughes, worked with VWT staff in gathering hours of camera trap footage, which was analysed and will feed into wider research into the effectiveness of this

non-invasive method for monitoring British and Irish mammals.

Last, but by no means least, 2019 has seen one of VWT's largest citizen science surveys that has taken place since the start of the Pine Marten Recovery Project (PMRP). As the population increases in number and range, there is a need for up-to-date information on pine marten distribution in Wales, and so the Expansion Zone Survey was launched. Between them, staff and volunteers have so far surveyed an incredible 196 survey sites, which span the length and breadth of Wales, in search of pine marten scats. Through the incredible effort that has been demonstrated by volunteers, we will be able to verify scats by DNA analysis, and to update our species distribution maps and develop our understanding of how pine martens are recovering in Wales.

On behalf of all of us here at VWT, thank you to all volunteers who have chosen to share their time, skills and enthusiasm for mammal conservation this year. All who have been involved have made a valuable contribution to the ongoing research and conservation efforts by VWT, and I look forward to sharing this year's volunteering insights with you in our second Volunteer Newsletter.

Sometimes, volunteering means being the first to trial a method, as with the Mostelas in Ireland *(left)*.

Developing a nose for pine marten scats is just one skill that can be developed as a volunteer on the Pine Marten Expansion Zone Survey *(right)*.

Volunteers are vital for the annual counts of bats during the summer evenings *(above)* as well as for regular daytime checks on bat boxes (left).

Putting up pine marten den boxes is much quicker with the help of volunteers *(below)*.

Volunteers helped us to survey most of Wales to add to the previously known distribution of pine martens (red dots).

Updates on VWT's PhD research projects

Domhnall Finch, PhD student
VWT/University of Sussex

How species move in the landscape and which features act as a barrier to their movement is fast becoming a critical aspect for species conservation. This is particularly true with the continual urbanisation and intensification of agricultural land across large parts of the country. These pressures can cause fragmentation at a landscape scale and understanding how these influence species could be key to joining up populations rather than isolating them.

Over the last two years, and in collaboration with Devon Wildlife Trust, I have focused my PhD research on testing how features of the urban environment can potentially impact on bat activity and feeding behaviour, particularly the greater horseshoe bat (*Rhinolophus ferrumequinum*). To test the impact of traffic noise on bat activity we created a phantom road by playing traffic noise through speakers along linear features that had not been exposed to such noise before. Our results suggest that traffic noise alone can negatively affect both activity and feeding levels of the entire bat community. This highlights that it is a universal impact across the entire community rather than isolated to individual species.

Light pollution affects bat communities and so alternatives are being trialled to reduce the impact on species such as the greater horseshoe bat.

Photos: ©Domnhall Finch

There is also overwhelming evidence that bat communities are strongly affected by light pollution, particularly from street lighting, and so we have been testing new 'eco-friendly' streetlights to try to find the least impactful design and therefore alleviate some of the existing anthropogenic pressures associated with lighting. This would enable us to design effective mitigation measures to reduce the overall impact of light pollution on nocturnal species.

The more we learn about the impacts of anthropogenic pressures, such as lights or traffic noise, the more we can strategically plan to limit their impact on our landscape, and to help with this, we are developing a predictive tool to investigate functional connectivity within the landscape for greater horseshoe bats. We hope this tool will enable authorities, such as county councils, to visualise where the bats might be flying, which routes they are taking at a landscape scale and how best to plan future developments to reduce the detrimental impact of anthropogenic pressures on nocturnal species. We hope, ultimately, that this will increase free movement at a landscape scale and enable higher connectivity between habitats and meta-populations in the environment.

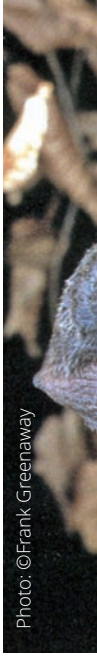
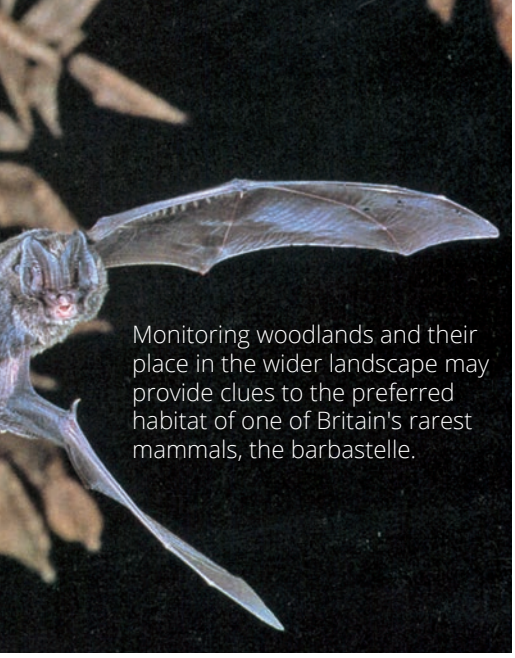


Photo: ©Frank Greenaway

Kieran O'Malley, PhD student
VWT/University of Sussex

In early May 2019 I moved to Brighton to start my four year-long PhD at Sussex University researching one of Britain's rarest mammals, the barbastelle. On the surface, the premise of my PhD is rather simple. By better understanding the causes for the current distribution of barbastelle maternity roosts, we can begin to discern the actions that are needed to improve the landscape for them. Unfortunately, this is somewhat impeded due to a lack of information concerning the current



Monitoring woodlands and their place in the wider landscape may provide clues to the preferred habitat of one of Britain's rarest mammals, the barbastelle.

population size of barbastelles, the location of their roosts, or how best to effectively survey for them.

To address these data deficiencies, I have spent the past summer testing a variety of acoustic survey methods within ancient woodlands, which is the preferred habitat of the barbastelle. Using mostly static detectors in a number of woodlands in the south of England, over a period of 40 nights, I collected more than 5,500 barbastelle recordings. By comparing activity levels across the woodlands, I am beginning to better understand the role that acoustic data can have in determining woodland occupancy by barbastelle colonies. I am also starting to quantify the survey effort required to detect the expected levels of activity in a woodland containing a maternity colony.

Now that the foundations of an effective framework to survey barbastelles have been set, I plan to liaise with local bat groups and volunteers during the next year to collect data across a much larger network of woodlands. Following this, my goal is to determine why two apparently suitable woodlands may differ in their occupancy by barbastelles. For this, I aim to place these woodlands in the context of the landscape around them, and subsequently identify important features in both the woodlands and landscape that are vital for maternity colony persistence.

Tom Dando, PhD student
VWT/University of Exeter

The task of restoring one of Britain's rarest and most elusive species is one that should by no means be taken on lightly. As a ghost in our landscape, the decline and extinction of the European wildcat (*Felis silvestris*) from most of Britain is not fully appreciated by many, and this, coupled with the terminology of the 'Scottish' wildcat, has created a lack of association between wildcats and the rest of Britain with a resulting shift in cultural apathy for the species outside of the Highlands.

However, the European wildcat was, until the mid-1800s, present throughout England, Wales and Scotland and belongs in the forests of southern England just as much as those of northern Scotland. The rapid decline of the species has been caused by habitat loss and fragmentation, persecution and, crucially in Scotland, hybridisation and disease transfer with feral and domestic cats, resulting in the remaining relict population in Scotland being declared functionally extinct by the IUCN Cat Specialist Group earlier this year.

In September, I began my PhD at the University of Exeter, co-funded by Vincent Wildlife Trust and Durrell Wildlife Conservation Trust, and through it I am seeking to understand the social and ecological feasibility and practicalities of re-introducing wildcats into England and Wales. The first step was a preliminary feasibility assessment of suitable habitat led by Jenny MacPherson, which identified potential candidate landscapes for wildcat re-introductions to take place... which is where I start.

I'm seeking to take that information and investigate those candidate landscapes at a finer scale, in order to understand key parameters that are fundamental for any wildcat re-introduction to be successful, such as threat assessments and prey abundance, as well as modelling future population dynamics under varying scenarios. This work will then inform where social engagement can begin. Social science will form a large part of the next three years of the PhD, but especially so at this initial phase. Understanding public attitudes, potential conflict points and fostering an understanding of wildcats will be vital for the long-term success of any re-introduction.

Photo: ©Mark Williams

The PhD is only in its first few months and, while there are numerous ideas about where this research needs to go, exact plans and research topics are still being scoped out, but they will cover key social, ecological and *ex situ* elements to inform the overall project direction. Discussions between all partners on this project are planned over the coming months, which should give greater clarity to timelines and future plans. For now, it's exciting just to get stuck in and build momentum behind the project and the PhD.

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Cover photograph: Kolombatović's bat ©Henry Schofield