The Vincent Wildlife Trust

Prospects for Pine Martens e-zine

April 2011

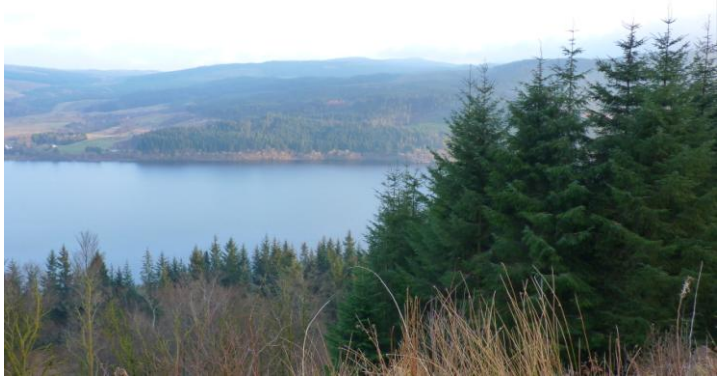
Pine marten survey in Scotland

A few weeks ago, we headed up to Argyll, Scotland, to undertake some pine marten surveys. Unlike in England and Wales, pine marten populations have recovered very well in Scotland and are increasingly abundant in many areas, making this a good area to test and validate some detection techniques.

The question of how to effectively detect pine martens in areas where they are living at low densities has perplexed naturalists and conservationists for years and undermines many surveys. We have recently been working with Louise Wilson of Wagtail Ltd – a company specialising in the use of detection (sniffer) dogs (see http://www.wagtailuk.com/index.htm for more information.) As well as using dogs to detect drugs, explosives and carcasses, Louise is interested in using trained dogs in conservation to help detect rare species. Louise has been training Luna, her 'scat detection dog,' to detect pine marten scats, and we were fortunate to be joined by both of them in Scotland to trial Luna in an area with a known pine marten population.

Over 4 days, we scoured the woodlands of Argyll and Kintyre for pine marten evidence and we weren't disappointed. Overall, we collected a rather impressive 157 possible pine marten scats! This made a nice change to our recent scat surveys of England and Wales where collecting just one marten scat is a rare occurrence!

Luna, the scat detection dog



A loch-side view: Inverliever forest, home to plenty of pine martens!

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Luna impressed us with her scat detection skills, indicating on numerous marten scats, many of which were some distance off the main forestry tracks and would therefore likely escape the eyes and noses of a human surveyor. She also indicated in a number of areas in which there weren't any scats, including a tree and a root plate, which suggests that she may have detected where a marten had been scent-marking or denning. On no occasions did Luna indicate on scats from any non-target species, and so this was a valuable exercise and shows promise for future work in England and Wales following refinements in training and more field trials.

Luna in action

Along with the scat surveys, we also set up 30 baited hair-tubes and a couple of remote cameras. These were set in 15 pairs where one tube was pasted with commercial marten lure (a supposed attractant) and one with a control.

A baited hair-tube

Just one of each of the two tube types contained hair when they were checked last week- a month after deployment- and that is despite what appears to be a thriving marten population in the area, as our scat results testify. Indeed, in one case a non-visited tube augmented with lure was passed (<10m) on four occasions by a marten, as the photos below show. Unfortunately the marten was in a hurry (perhaps to get away from the smell!?) and so we only got shots of its tail and rear paws.

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A pine marten caught on camera (you may need to look twice at the final photo!)

As one of the main aims of this survey was to compare the efficacy of various methods of detection in areas of known marten presence, it'll be interesting to compare the results of the scat surveys, both with and without the scat detection dog, and hair-tube surveys, and this will allow us to make recommendations for future marten surveys.

The DNA results showed that out of the scats we collected, 66% were from a pine marten, with 33% from fox and just 1% that didn't yield DNA. These survey results are excellent news as they clearly demonstrate that scat surveys are an effective method of surveying for pine martens in areas where they are present. However, it is worth bearing in mind that the area in which this survey was carried out has an abundant pine marten population, which contrasts markedly with the situation in England and Wales where martens are living at

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much lower densities. It is also interesting to note that even in areas where pine martens are relatively common, surveyors still collected many fox scats. This highlights the fact that marten and fox scats can appear morphologically similar, making it incredibly difficult to determine the origin visually. We learned much from Scottish scats!

Spot the difference! Pine marten scats (above) and fox scats (below)

Our second aim of the survey was to establish the haplotype (genetic) composition of pine marten populations in western Argyll. This had become of interest to us because last year, we heard that two pine marten kits had been rescued by the Scottish SPCA when their mother had been excluded from a building that they had been denning in on the Isle of Eriska off the west coast of Oban. After DNA testing scats from the kits, we learnt that the kits (and therefore the mother) were of a particular genetic type – haplotype *i.* From our recent research on the genetics of pine marten populations in the UK, we had found that the genetic type of historic marten populations in England and Wales was haplotype *i.*

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However, this haplotype has not been detected in England since 1924 and Wales since 1950 and appears to have been replaced predominantly by haplotype *a*, the probable dominant haplotype of pine martens in Scotland. Therefore, we were extremely surprised and intrigued to find that the pine martens found on the Isle of Eriska were of haplotype *i* – a genetic type not detected in the UK for sixty years! Could the isles and peninsulas of western Scotland provide a refuge for relict haplotype *i* pine marten populations? We decided that to explore this issue further and try to determine the genetic composition of these populations, we would collect DNA by undertaking scat surveys and hair-tube surveys in the forests of Argyll and Kintyre and on Eriska. These samples will be haplotyped at the Waterford Institute of Technology and will be incorporated into our assessment of pine marten genetics across the British Isles. We await the results with interest.

The isle of Eriska

Researching the origins of pine martens in England and Wales

For the past year, we have been researching the genetic composition (known as the haplotype) of pine marten populations in Britain, in order to shed some light on the origins of pine marten populations in England and Wales. The origin of these small populations has been debated for some time. Long-term persistence of evidence from core areas, including sightings reports and DNA samples, show that pine martens are still surviving in parts of England and Wales, albeit at a low density. However, recent genetic data has shown that the unique haplotype of the indigenous/relict pine marten populations has not been found in current pine marten populations for sixty years. Therefore, these data paint a potentially confusing picture of the recent method of population persistence in England and Wales, which we wanted to investigate further.

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In order to establish the haplotype of the indigenous population of pine martens in England and Wales, we took samples from 63 pine marten specimens held in museums and collections, with the earliest specimen dating from 1828! These samples were subjected to genetic analysis, and 36 yielded DNA and halpotype data. The results showed that all specimens from England and Wales collected pre-1950 were of haplotype *i*, a unique genetic race in Britain. However, this original or relict haplotype has not been detected since 1924 in England and 1950 in Wales respectively. You will see in our piece on our survey in Scotland, that haplotype *i* has also recently been detected in western Argyll, whereas it was previously assumed that the dominant and possibly only haplotype of pine martens in Scotland was haplotype *a.*

Old pine marten specimens provide clues on the origin of today's pine marten populations

Samples in the form of scats and carcasses from current populations in England and Wales (from 1990 onwards) seem to represent a mixed picture. Many of the samples are haplotype *a*, which is the dominant haplotype of martens in Scotland and was not detected in England until 1993 and Wales until 1996. Furthermore, genetic analysis of some samples in northern England show evidence of introgression with the American marten, possibly as a result of animals having escaped or released from local fur farms. Therefore, this most recent genetic data has so far found no evidence of the persistence of indigenous/relict populations (haplotype *i*) in England and Wales.

So what can we conclude from this? This limited genetic evidence suggests that the indigenous pine marten population in England and Wales may have become extinct at some point during the mid-late 20th century and today's populations consist at least partially of individuals or their descendents that have escaped from captivity and/or were translocated from elsewhere. It is not clear whether relict animals from the indigenous population are still surviving today below the detection threshold, but we do know that they have not been detected for sixty years.

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The implications of this work are now being considered as part of our pine marten conservation strategy, which we are developing with other stakeholders. The results of this research are currently being written up in a peer-reviewed paper, which will appear on our website when completed, and we will be presenting a poster at The Mammal Society's Easter Conference.

Publicity

We've still been busy spreading the word and raising awareness of pine martens. Neil has been giving talks all over the country, including to Shropshire Wildlife Trust, Carlisle Natural History Society, Northumberland Natural History Society and Yorkshire Mammal Group. He was also invited to Umeå University in Sweden, where he gave a talk on VWT's work on pine martens, and our recent DNA work in particular.

You may have also caught us on TV recently! We've had features broadcast on BBC's The One Show and ITV's The Lakes, which has resulted in an influx of pine marten sightings reported to us.

Goodbye to Neil!

As our Prospects for Pine Martens project comes to an end, it is with great sadness that we say goodbye to Neil. Neil has been Pine Marten Project Manager for the Trust for two years but regrettably his contract is coming to an end as the project funding has finished. Neil will be heading off to pastures new to Botswana, where he will be working for the Botswana Predator Conservation Trust, researching scent communication in African wild dogs. Neil will be sorely missed and we wish him all the best on his new adventure!

Neil doing what he does best: scat collecting!

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What next?

So, what's next for VWT's work on pine martens? The Trust will continue to have an overview of pine marten monitoring and conservation in England and Wales, although unfortunately with fewer resources available. All pine marten enquiries and information should be directed to Lizzie- elizabethcroose@vwt.org.uk.

We now have 154 den boxes set up in hotspots all over England and Wales, and with the help of land managers and volunteers, we will continue to monitor these to determine whether or not they are being used. If you are interested in helping us to monitor any of the boxes, we would love to hear from you. We will also continue to collate sightings reports and any other evidence of martens that is reported to us by members of the public.

Unfortunately, as the funding for the project has finished, we will now have to restrict the number of scats that we are able to DNA test. We will prioritise scats found on or below den boxes, and will be interested to hear from anyone who has found scats of this description, as this is one of the indications that a box is in use by a marten(s).

A room with a view! One of many den boxes set up across the country

We have developed a long-term pine marten conservation strategy, which highlights priority areas for research in England and Wales. These include determining factors limiting the survival and recovery of marten populations; developing effective monitoring methodologies; promoting targeted creation and expansion of woodland; and continued assessment of distribution, status and marten behaviour in England and Wales. We will be working with a variety of statutory and voluntary conservation organisations to implement this strategy including Natural England, Countryside Council for Wales, Scottish Natural Heritage, People's Trust for Endangered Species, The Mammal Society, Forestry Commission, Waterford Institute of Technology, The Game and Wildlife Conservation Trust and individual consultants. The outcome of these priority actions will provide the basis for future plans for pine marten conservation in the UK.

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New Project!

We are about to embark on an exciting new project monitoring rare mammals in west Wales. The Mammals in a Sustainable Environment (MISE) project is a partnership between VWT, Waterford Institute of Technology, Countryside Council for Wales (CCW), Snowdonia National Park Authority, Waterford County Council and the Irish National Data Centre and is funded by the European Regional Development Fund (ERDF) through the Ireland Wales Programme (INTERREG 4A). The project will focus on developing non-invasive DNA-based techniques to monitor mammals of conservation interest, including pine martens, as well as red squirrel, otter, bats, dormouse and harvest mouse. Therefore, we hope to use this project to build upon and expand our recent pine marten work in Wales. VWT and CCW have each employed a Project Officer to coordinate the project, who will be starting soon.

Thank you!

We'd like to say a huge **thank you** to all of you who have helped us with this project. We simply could not have achieved half of the things we have without you!

We would like to mention a few people in particular who have contributed huge amounts of time and enthusiasm to the project:

Julian Berkeley in the Lake District for tirelessly making and monitoring hair-tubes and raising awareness on his patch. Also in the Lakes, Ian and Philippa McMurdo and Kate Swinburne for their help with various fieldwork.

John Martin in Cumbria for his invaluable local knowledge, helping with den boxes, chasing up sightings reports, and help with everything else besides!

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Mandi and Bill Taylor in Snowdonia for their countless scat collections and for successfully collecting the most mustelid scats!

In mid Wales, Gareth Jones and Sorcha Lewis for their persistent scat collecting and chasing up sightings and Phil Morgan and Huw Denman for their advice on woodland management and help with den boxes and hair-tubes.

Kevin O'Hara and Steve Lowe at Northumberland Wildlife Trust for their help in the north east and their part in the exciting discovery of a pine marten scat on their patch-the first DNA evidence of martens in Northumberland for 16 years!

In North Yorkshire, Derek Capes and Laura Winters for their ongoing scat surveys and Elizabeth Sanderson who wins the award for posting the best packaged scats!
Also, Mick Douch, Brian Walker and Rona Charles for helping to rally the troops for surveys and passing on sightings reports.

Hugh Webster for encouraging Ampleforth College to get involved and make 36 den boxes from scratch for deployment in North Yorkshire, and for continuing to chase elusive beasts!

Pete Turner and his team at Waterford Institute of Technology for holding his nose and DNA testing literally thousands of smelly scats!

Tom Fairfield for interesting snippets and shared frustrations!

Johnny Birks for providing years of expertise and moral support!

John Messenger for his insight, critical evaluation and innovative approach to pine marten conservation throughout the project.

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Finally, the Forestry Commission, Lake District National Park, North York Moors National Park, National Trust, United Utilities and other landowners who have allowed us onto their land to search for scats and set up hair-tubes, cameras and den boxes.

This is by no means an exhaustive list and we extend our utmost thanks and gratitude to everyone who has helped with the project in any way!

We hope that you have enjoyed volunteering with the Trust and if you would like to stay involved in the future, we would be delighted to have you!

As mentioned above, we are about to embark on a new project – Mammals in a Sustainable Environment- in west Wales. This will provide ample survey and field work opportunities for those of you based in this part of the country so please keep an eye out for these. We are also planning to develop our polecat work and hope to have a new methodology for monitoring polecats in the next year and we will keep you posted on this.

We hope to see many of you again soon!

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