Returning to a richness of martens

Jenny MacPherson, Principal Scientist at the Vincent Wildlife Trust, brings us up to date on the successful reintroduction of pine martens into Wales.

Photo: Robert Cruickshanks

The pine marten (*Martes martes*) is a cat sized member of the weasel family, primarily associated with woodland habitat. Despite being widespread in Europe, this native carnivore was once on the brink of extinction in Wales and southern Britain but is now back in healthy numbers as a result of recent conservation efforts. For 3 years beginning in autumn 2015, the Vincent Wildlife Trust (VWT) translocated more than 50 pine martens from across the Highlands of Scotland and released them in the forests of mid-Wales, at the heart of the Cambrian Mountains. This was followed 2 years later by a reintroduction with Gloucestershire Wildlife Trust (GWT) and Forestry England to the Forest of Dean on the Welsh-English border. Both populations established and have been successfully breeding and increasing their numbers and distributional range.

Radiotracking pine martens.

Photo: Vincent Wildlife Trust

The collective noun for pine martens is 'a richness' and, indeed, there was a time when these charismatic little carnivores could be found right across Britain. They started to disappear from some areas as much of their woodland habitat was cleared for agriculture and settlement. It was during the 19th century that the species underwent the most dramatic decline, largely due to increases in predator control to protect gamebirds. By the early 20th century, pine martens had all but disappeared from most of Britain. The majority of the remnant population was restricted to northwest Scotland, with a few isolated animals remaining in the remote uplands of Wales and northern England.

Since the latter half of the 20th century, the pine marten population in Scotland has made a significant recovery, with an expansion south and eastwards from the core areas in the northwest Highlands; however, the species is still relatively rare in the UK. In 2018, the total number of pine martens in Britain was estimated at around 3,700, with most of these in Scotland. In Wales, despite scattered records suggesting that possibly a handful of animals still remained, there had been no discernible natural recovery of a viable population of pine martens by 2014. This prompted the start of VWT's Pine Marten Recovery Project. Initially, a detailed study was carried out to look at the feasibility of using translocations as part of the conservation strategy for this species. Conservation translocations are the deliberate movement and release of animals (or plants) into the wild for the purpose of conservation, such as to reintroduce them to an area where they have become rare or absent. National and international guidelines for conservation translocations were followed throughout the process. Central Wales was identified as having the highest biological suitability because of the large

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amount of well-connected, suitable woodland habitat and relatively low risk to pine martens of road mortality. Surveys in Scotland confirmed a number of sites where pine martens could be taken from for translocation.

The social acceptability of restoring a viable pine marten population to Wales was as important as the ecological feasibility. In-depth discussions were held with stakeholders and communities in the prospective release areas to answer questions, share any concerns and ensure that there was local involvement with developing the project. All the feedback gathered in these early stages was used to inform where, or indeed if, releases should take place. The communities in and around North Ceredigion were very supportive, so it was here that 51 pine martens from Scotland were released over the 3 years from 2015 to 2017.

As part of the feasibility study and translocation plan, we assessed the number, age class and sex ratio of individuals required to maximize the chances of the translocation achieving its goals. Results of population viability analysis suggested that a minimum of 30–40 pine martens should be released in an area to have a reasonable likelihood of establishment. Capture methods, holding, transportation and release protocols were all designed to minimize stress for the animals and maintain the highest standards of animal welfare.

Trapping and translocations were carried out in early autumn. By this time of year, spring-born young are independent, adults have mated in late summer, and food availability is high. Captured animals were lightly anaesthetized by a wildlife veterinarian and given a full health check. Biometric data were collected, and samples taken for further screening and surveillance. Animals not suitable for translocation (not of breeding age, or a surplus of either sex) were released back at their capture site after recovery. Pine martens selected for translocation were microchipped, the throat patch photographed for subsequent visual identification and a hair sample taken for genotyping. Blood samples from all translocated pine martens were sent to Glasgow University Veterinary School to be tested for canine distemper by virus neutralization assay. All of the pine martens we tested were seronegative for CDV, but they were kept in temporary captivity for up to 7 days at the release site so that they could acclimatize to their new surroundings and so that we could wait for the results of blood tests for each animal before releasing it.

Early exploration and establishment

All of the translocated pine martens were fitted with a radio collar incorporating a mortality sensor to monitor post-release survival. Combined collar and transmitter weights did not exceed 3% of the body mass of each animal, as recommended. Each animal was radio-tracked for up to 12 months after release and the data provided a huge amount of information which has been used to inform subsequent reintroductions. Our radio-tracking results showed that the first pine martens released in 2015, into 'empty' habitat, initially made some relatively long-distance exploratory movements, often using wooded river valleys to travel around, before returning (in most cases) to the release area. It took approximately 4 months before they established stable home ranges. However, those released in the second year, when there were other martens already present, settled much more quickly. These animals established territories within about 2 months of being released and in relatively close (in pine marten terms) proximity to those of the animals from the previous year. Pine martens occupy a large amount of space relative to their size and are solitary except during the brief mating and breeding season. Depending on the type of habitat, the home range of a single male pine marten can be anything from 5 km^2 to around 30 km^2, whereas female territories are much smaller.

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Monitoring mortality

During the course of pine marten translocations to Wales, we continually reviewed what we were doing to see if we could refine or improve the methods and protocols for translocation and release. There was no mortality during translocation, and post-release survival rates were high, with observed mortality rates within the range reported for unperturbed marten populations in the wild. All pine marten mortality was monitored, and carcasses were retrieved immediately where possible and sent for post-mortem as part of an ongoing health surveillance programme. During the course of the year following the first releases in 2015, six out of 20 pine martens died. This was within the range of average annual mortality for marten populations (reported as between 30 and 50 percent of adult animals). Mortality in the first 12 months was higher for males (40%) than females (20%), as expected. Male martens are probably more exposed to risk factors such as roads than female martens because of their larger foraging areas and home range. The cause of mortality for most was natural predation, most likely by foxes.

In the year after the second tranche of translocations in 2016, only one of the 19 animals that were released is known to have died. She was found on an A-road in the release area and post-mortem examination confirmed that a vehicle collision was the most likely cause of death. She was particularly unlucky as it was not a very busy road, but she was found on a blind bend where the road bisected a forested area. Of the animals released in the third and final tranche in autumn 2017, only one, an adult male, died while being radio-tracked. A second male from the first year of releases was found dead in 2018 after being hit by a vehicle on an A-road near Belper in Derbyshire. The carcass was retrieved and scanned for a microchip, which confirmed the initial identification indicated from his throat pattern. He had been resident in a forest in north Wales for the preceding 2 years, and it is not known how or why he moved from there to Derbyshire. Two animals were found dead on, or next to, roads in 2019; and a further one in 2020. Post-mortem examination confirmed they were all sub-adult males, probably killed on the road while dispersing.

People and pine martens

Engagement with people and communities continues to be key to the recovery of pine martens in Britain. Ultimately, local involvement and support is as important to the long-term integration of pine martens back into the natural landscape as all the science and preparation that goes into any species recovery programme. Throughout 2018–2019, volunteers carried out surveys using trail cameras and walking transects searching for scats (droppings) across an area extending 30 km beyond the known pine marten distribution in Wales. The results showed that, just 4 years after the first releases of animals in 5 hectads (10 km x 10 km squares), pine martens were then confirmed as being present in 22 hectads. A core population of martens is now well-established in the original release area, centred around the horseshoe of forestry that follows the Ystwyth and Rheidol rivers. Beyond this, pine martens appear to have a relatively continuous range along the spine of the Cambrian Mountains. North of the release area, pine martens quickly expanded their range up into Eryri (Snowdonia), while to the south, they have now spread right down into Carmarthenshire. There is also recent evidence of dispersal into Bannau Brycheiniog (the Brecon Beacons) southeast of the release area (Figure 1).

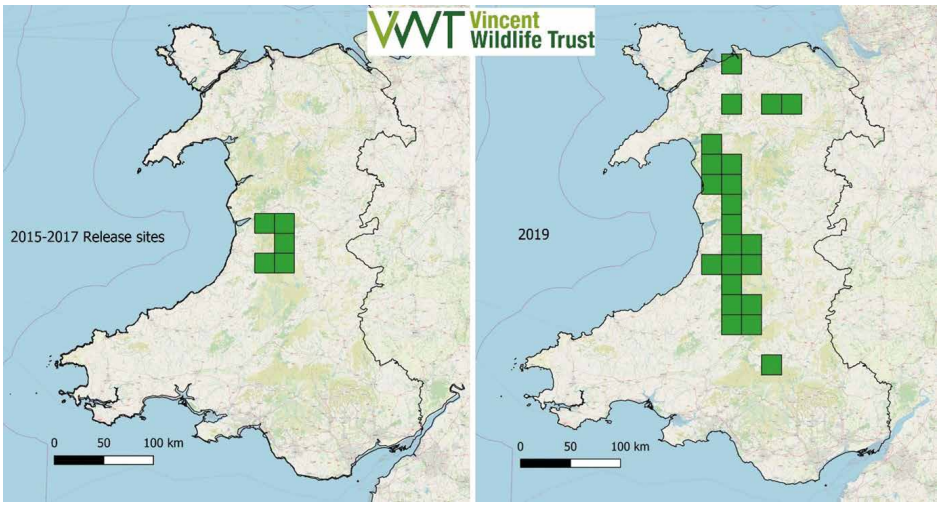

FIGURE 1: Maps showing the 10 km squares where pine martens were released (left), and (right) those with confirmed evidence of pine marten occupancy from the survey in 2019.

Beyond Wales: Pine martens back 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, but with 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 before the decision was taken to proceed with pilot releases in autumn 2019. The Disease Risk and Animal Health Surveillance (DRAHS) team from the Zoological Society of London (ZSL) provided the Disease Risk Assessment and mitigation plan for the project. VWT was asked to provide the expertise to survey and select source sites and to carry out trapping and radio-collaring, with the same team and methods used for the Welsh releases in previous years. This included mammal biologists from VWT and Dr Alice Bacon, an experienced wildlife veterinarian.

In addition to the animals' welfare, a high priority was to minimize any impact on the Scottish population of martens. This meant using forests that hadn't been 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. 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 the Forest of Dean, which has a relatively high density of roads and traffic, 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 challenging, but it meant that, within 3 weeks of trapping, we were able to get 18 pine martens radio-collared, transported down to Gloucestershire and released in their new home. This small core population settled and began breeding in the Dean and Wye Valley but a planned second tranche of translocations had to be postponed during the height of the Covid pandemic in 2020. However, we were able to resume trapping in Scotland again in late summer of 2021 and a further batch of pine martens were released bringing the total released up to a healthy 35. These animals soon established territories in and around the release sites and have been breeding and increasing their numbers and distribution ever since.

Pine marten leaving a release pen in mid Wales.

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At the beginning of 2021, VWT produced a long-term strategic recovery plan for pine martens in Britain, with support from both Natural England and NatureScot. With limited resources and suitable donor populations for actions such as reintroductions, it is important to identify how to achieve the maximum conservation benefit for pine martens. While reintroductions can be very valuable, they should always be a last rather than a first resort. If reintroduction is the only option, then it is an acknowledgement that we have failed to protect and preserve a species. Ultimately, we should be aiming to prevent local extinctions in the first place. Looking forward, our focus is now on facilitating natural recolonization and recovery while developing and implementing effective monitoring schemes for existing and expanding pine marten populations.