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RETURN OF THE NATIVE

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Young Pine Martens. A. Achterberg

Successful translocations of Pine Martens to recently and historically occupied suitable habitat in southern Britain could be a major proactive step towards improving the conservation status and genetic diversity of this iconic native woodland species.

The Pine Marten *Martes martes* could arguably be described as one of ‘the big five’ mammal species in Britain and one that many people would like to see in the wild. Yet it currently occupies only a restricted area of its historical range and is the second rarest carnivore in Britain. The Vincent Wildlife Trust (VWT) has been working on the Pine Marten for more than 30 years and has recently completed an initial assessment of the feasibility of undertaking translocations to boost Pine Marten numbers in England and Wales.

Pine Martens in Britain: past and present

A medium-sized, arboreal mustelid, the Pine Marten is found throughout mainland Europe, where it is associated predominantly with mature

forested habitat (Mitchell-Jones *et al.* 1999). Pine Martens were once widespread, being the second commonest carnivore in Britain after the Weasel *M. nivalis* during the Mesolithic (Maroo & Yalden 2000). The population, however, suffered a severe decline in the eighteenth and nineteenth centuries largely as a result of the intensive and indiscriminate predator-control associated with the rise in popularity of game-shooting during this period (Langley & Yalden 1977; Tapper 1992), when it was fashionable among landed gentry to imitate the pursuits of the royal family. This compounded the historic and increasingly pervasive effects of habitat loss and fragmentation, woodland cover representing less than 5% of Britain’s landscape at the beginning of the twentieth century (Watts 2006). By this time, the Pine Marten was extinct across most of southern Britain, with the population restricted to north-west Scotland and small pockets in northern England and Wales (Langley & Yalden 1977).

From the mid-twentieth century onwards, the Scottish population has been recovering and expanding its range southwards and eastwards.

Pine Martens have had full legal protection since 1988 under the Wildlife and Countryside Act (1981), and lethal control on sporting estates is now targeted at a small number of pest species. Woodland cover in Britain is currently back to similar levels to those in the eleventh century (Watts 2006), so that habitat availability for martens is at its highest for many years. In general, the nature of British forests has changed markedly, and a significant proportion of our woodland cover represents exotic conifer plantation, but this still largely meets the life-history requirements of Pine Martens, which display a high degree of behavioural plasticity and adaptability. For example, there is a thriving population of Pine Martens in the karst landscape of The Burren, in western Ireland. The Burren is scrubby, and devoid of mature woodland, but the three-dimensionality of the karst landscape provides shelter, foraging and secure denning opportunities for martens.

Studies in France and Scotland (Merget *et al.* 2011; Caryl *et al.* 2012), and our own field experience in Scotland, Ireland and the Netherlands, have shown us that Pine Martens can colonise and persist in scrubby, fragmented, cultivated landscapes, challenging the prevailing view that they are restricted to ancient woodland. Despite this, however, the species still remains very rare and largely absent south of the Scottish border (Birks & Messenger 2010).

The VWT has been collecting sightings reports and other evidence of Pine Martens, such as carcasses and scats, in England and Wales for more than 20 years. These records have been concentrated in upland areas such as the Lake District, Northumberland, the North York Moors and the Peak District in England, and Snowdonia, Carmarthenshire and the Cambrian Mountains in Wales (Birks & Messenger 2010; VWT, unpublished data). Nevertheless, despite concerted detection efforts in recent years and the use of new methods, including DNA analysis of scat and hair samples, camera-trapping and trained scat-detection dogs, only 17 unequivocal



The Burren, in Ireland, with its karst landscape where Pine Martens thrive. H. Schofield

records of Pine Martens have been collected from England and Wales since 1990 (Fig. 1), suggesting that populations are clinging on at or below the detection threshold, making them highly vulnerable to extinction.

It is perhaps unsurprising that we have been unable to detect Pine Martens by our standard survey methods, which revolved around scat detection, taking advantage of the Pine Marten's territorial behaviour. With our target populations

Figure 1 Locations of unequivocal records of Pine Marten in England and Wales since 1990.



so sparsely distributed and the animals so rare, energetically costly territorial behaviour, which is beneficial when one has speculative neighbours, is surely affected. Why spend time in patrolling territory and marking boundaries when there is no pressure to do so? The energetic cost of territory defence has been well described for model fish and reptile species (Warner & Hoffman 1980; Marler *et al.* 1995), and is a trade-off in the life history of most territorial animals.

The route to recovery

While it is probable that parts of northern England will be recolonised or restocked by the Pine Marten population in Scotland spreading southwards (Croose *et al.* 2014), the animals are unlikely to expand their range to recolonise central/southern England and Wales, owing to the distances involved and to the barriers to dispersal posed by intervening areas with large conurbations and other unsuitable habitat. With no evidence of natural recovery, translocations could be the only way in which to restore viable numbers of Pine Martens to southern Britain. Following two

decades of research and monitoring, we now feel that this is the most appropriate course of action to recover the populations in southern Britain. We shall initially concentrate our efforts in Wales, where a young male road casualty was discovered in 2012, and where our sightings database strongly suggests that the species persists, if only with a handful of isolated individuals.

A translocation would mean supplementing the current Pine Marten population in Wales with animals from elsewhere in the UK, and would initially constitute a reinforcement rather than a reintroduction. This is an important distinction; we are seeking to recover a functionally extinct but still present population of arguably non-breeding animals, rather than translocating animals to areas where they have been absent for a prolonged period of time. We have concluded that a reintroduction is appropriate in the near future for areas of southern England, but our initial phase of work will concentrate on throwing a lifeline to the Welsh population, preventing local extinction in the short term. What will happen to the population in the long term is obviously a matter of speculation, but it will form the subject of extensive research within

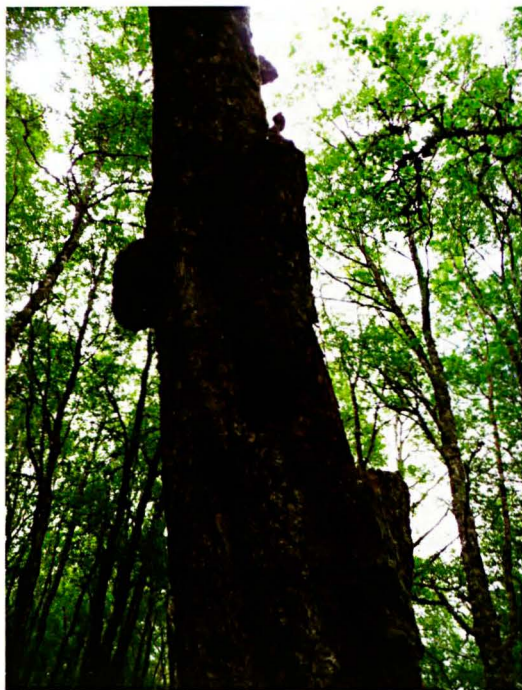
Pine Marten on log. Richard Revels



the VWT and in collaboration with our partners and fellow NGOs.

Previous proposals to reintroduce Pine Martens to England in the 1990s (Bright & Halliwell 1999; Bright & Harris 1994; Bright & Smithson 1997) were opposed on the grounds that too little was known about the status or genetic characteristics of any relict populations. This concern has since been addressed by a study which found that, while there were historical differences between the haplotypes of museum specimens from Scotland and those from England and Wales, this was not the case for contemporary (post-1950) populations across Britain (Jordan *et al.* 2012). This suggests that protecting relict populations from genetic dilution is no longer a matter of concern, and conservation translocations can now be considered as a means of re-establishing healthy, sustainable breeding populations of Pine Martens throughout their former range. The changing nature of our ecosystems, directly through land use and indirectly by climate change, coupled with the increasingly holistic approach to biodiversity conservation, places the role of genetic preservation under the spotlight. Preservation of unique genetic potential and variability is unquestionably important in biodiversity conservation. But is it perhaps more important, even prudent, given the immediacy, rapidity and severity of forecast climatic change, to build resilience and plasticity into our ecosystems now by replacing absentee natives, rather than to accept their continued absence because of constraints associated with genetic integrity or provenance? This theme was touched on by Andrew Kitchener and Johnny Birks (2014) in their excellent article on Polecat and Wildcat genetics in *British Wildlife*, and is pertinent to our work.

The decision to implement a translocation has not been taken lightly. A thorough feasibility study has been undertaken, in accordance with guidelines published by the International Union for the Conservation of Nature (IUCN) (IUCN 1995, 2013). Habitat-modelling and our database of reported Pine Marten sightings and other evidence were used in order to identify a number of potential reinforcement regions (PRR). These are areas of high predicted habitat suitability in regions where reports of recent sightings and other evidence suggest that Pine Martens are still present, albeit in extremely low numbers. For each



Pine Marten den. E. Croose

of these regions, analysis of variables that are likely to have an impact on establishment and spread, such as woodland-patch size, connectivity, and prey availability (in the form of quantifiable Field Vole *Microtus agrestis* abundance analogues) were carried out. Even a low rate of additional mortality will increase extinction risk and jeopardise the establishment of a newly reinforced population. Roads are likely to be a cause of mortality affecting the viability of newly reinforced Pine Marten populations – it is rare to spend much time in the Scottish Highlands without encountering a marten road casualty. The total length of roads in each PRR and the percentage of those within woodland, combined with annual volume of traffic, were used as means of evaluating the relative likelihood of marten mortality due to road-traffic accidents.

The results of these analyses suggest that central Wales is the most biologically suitable area for the first reinforcement. This region has a large amount of well-connected woodland habitat and therefore a high potential carrying capacity for Pine Martens. In addition, the extent of suitable habitat provides scope for avoiding certain areas should any unforeseen local problems arise, while still maintaining the integrity of the translocation programme. It is

also a region that will benefit from the predicted increase in wildlife tourism that such a significant project and so charismatic a species are likely to generate. Of all the potential reinforcement regions considered, those in central Wales have the lowest indices of risk to Pine Martens of road mortality, which is likely to be a significant factor during the establishment phase of translocations. We have also gathered our most recent genetically verified evidence of marten presence from this region, while credible sightings are continually reported.

Current and future work

Work has started on field surveys to confirm the GIS analyses and to address in more detail the question of whether sufficient prey, foraging habitats and suitable den sites are available. Pine Martens traditionally use holes in old trees to den safely, rearing their kits above ground for the first weeks after birth. As there is a lack of old trees *within* woodlands in the UK, we have developed a secure denning box as a surrogate. Thankfully, Pine Martens do not rely solely on den boxes and tree cavities, and will use brush piles, dense vegetation,

dry crevices, boulder piles, embankments, large bird nests and squirrel dreys. Intensive den-site surveys by our partner mammal group in the Netherlands have demonstrated that Pine Martens make use of a wide variety of alternative sites in young woodlands and, although there they do have the benefit of the supreme engineering efforts of the Black Woodpecker *Dryocopus martius*, former holes of Green Woodpeckers *Picus viridis* and Great Spotted Woodpeckers *Dendrocopos major* are also used by martens.

We are currently collecting baseline data through field surveys and in collaboration with other organisations to enable long-term monitoring of potential impacts of Pine Marten releases on other species present. The perception that the recovery of a native predator will have a negative effect on native prey species is a major concern for some stakeholders, and is an aspect of predator recovery which we are very keen to investigate. A thorough risk assessment has been carried out for the purposes of evaluating the ecological role of translocated animals in their new environment and determining the potential impacts on other species already present in release areas. The return of a healthy Pine Marten population

could provide benefits beyond the re-establishment of one of our rarest mammals. As mentioned, it could help to bring additional income to rural economies through ecotourism, as is the case in Scotland. In addition, recent research in Ireland has indicated that in areas where the Pine Marten is recovering there has been a decline in the non-native Grey Squirrel *Sciurus carolinensis* population which is benefiting the native Red Squirrel *S. vulgaris* (Sheehy & Lawton 2014). Further research into this is currently being carried out at Aberdeen University.

This work would not progress far without the support and acceptance of the public. The results of a widescale public-opinion survey carried out by the VWT suggest that the majority of people would be in favour of

Pine Marten in Argyll, Scotland. Richard Revels



action to prevent the Pine Marten from becoming extinct in Wales. This is perhaps a reflection of the effort which the VWT has put into raising awareness of the Pine Marten's plight in Wales. People cannot care about an animal they have never heard of, and the Pine Marten had slipped off the radar in Wales – a victim of 'shifting baseline syndrome', whereby generations come to accept the conditions in which they are brought up as being normal. The VWT has sought to address this and highlight the history of Pine Martens within Welsh culture: the place names, written references, pelt-sale receipts, and in Welsh literature such as the sixth-century poem *Peis Dinogat*.

More detailed consultation with stakeholders is now underway in prospective release areas in order to gauge local levels of support for the project and to identify potential points of conflict. All the information gathered during this stage will inform the final decision as to where the most optimal release sites will be.

Provided that further work confirms that translocations are appropriate, and that they have the maximum support of local communities, we aim to be in a position to translocate animals this autumn. There is a lot of work still to be done, but the VWT has been striving patiently towards this goal for 30 years. We are committed to taking action to enable the recovery of the Pine Marten in England and Wales and we hope that, in a few years' time, woodlands in both of these countries will once again have thriving populations of Pine Martens and that the marten will be seen as a symbol for ecosystem regeneration and positive conservation action.

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Resting Pine Marten. A. Achterberg



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