



NOVA

University of Newcastle Research Online

nova.newcastle.edu.au

Shuttleworth, Craig; Hayward, Matt; Bamber, Jack. Personality as a conservation translocation tool. Published in *Mammal News* Vol. Spring 2021, Issue 189, p. 17-19 (2021).

Accessed from: <http://hdl.handle.net/1959.13/1422820>

Jack Bamber, Matt Hayward and Craig Shuttleworth

Pine Marten Personalities

In the UK, if you visited a local Zoo the chances are that European pine marten (*Martes martes*) would not be on display. This is because there are only a handful of captive animals within the entire national captive collection. Despite their rarity though, captive individuals have offered research opportunities that have benefited wild populations. For example, the Vincent Wildlife Trust den box was developed following observations of a prototype used by animals within a woodland enclosure at the Welsh Mountain Zoo. Elsewhere, feeding trials involving measured volumes of food items and analysis of associated scat samples have offered an opportunity to better calibrate wild diets from scat analysis.

The scarcity of captive animals is a factor explaining why translocation programmes had singularly sourced animals from the wild Scottish population. However, relative to wild conspecifics, captive born individuals may also be at a disadvantage because of insufficient hunting training/experience and potential behavioural maladaptation that would potentially elevate mortality risk. Despite these risks, the opportunities offered by captive founders meant that we investigated the value of captive founders in establishing a pine marten population in North Wales as part of the Restoring Gwynedd project. In North American translocation studies, the use of captive-bred mustelids is clearly associated with a greater probability of translocation failure. Why then attempt to use captive bred pine marten in a UK translocation? The answer is two-fold. We lack empirical evidence for this European species and, although pine marten is currently common across its European range, we cannot preclude zoonotic disease or other catastrophic event leading to a need to breed and release them from captivity in the future, as exemplified in recent Tasmanian devil conservation.

In 2017 and 2020, we released captive-bred red squirrels and pine marten respectively into North Wales. In doing so, we developed bespoke translocation protocols taking the opportunity to assess personality. Personality was tested in both studies prior to release, after a habituation period and was collected through video recording to remove any external influences on behaviour. Individual personality may influence survival. Therefore understanding what behavioural qualities are associated with mortality is a means to select only those animals most appropriate release animals. The main aspect of personality that may influence survival is boldness. More timid animals are likely to be cautious of high-risk scenarios within their new environments. This trait may improve survival chances by reducing fatal interactions such as predation or road death. In reverse, using bolder animals in translocations might present advantages in the form of more active foraging, and increased dispersal from their original release site. To put it simply, the bolder pine marten may take more risks and be more successful at hunting, but in so doing may expose itself to a greater predation risk for example by a fox. Clearly, individuality presents an opportunity for release programmes to select animals based on the specific identified project aims. For example, if attempting reintroduction, timid animals may be better to build a population as they may survive longer. Alternatively, if seeking to undertake population reinforcement,

perhaps to bolster genetics or link existing fragmented populations, bolder animals may serve this purpose better as they may range further.

Personality assessment was performed on six red squirrels housed in small groups prior to release where interactive behaviour, fleeing and reappearance time after human disturbance was used to assess individual personalities. Post release, squirrels were monitored and tracked using a camera trap network set at 100 m intervals. From this testing, we found that reappearance time after exposure to a threat was significantly longer for more timid animals, highlighting an ability to avoid threats more effectively. Other factors showed trends in the predicted direction: following release, movement distances of bolder animals were further and that they did not flee from a risk as quickly as more timid animals, despite the low sample size. This shows that there is a need for further collaboration and research between different red squirrel conservation groups.

The study on Pine Martens took place in 2019 on three of four released animals. These animals were kept separately in individual pre-release pens due to the species' territoriality and to maintain welfare standards. This meant that assessment of personality was performed through the addition of novel stimuli - unique items that the animals would not be familiar with, such as rope toys, hard plastic balls and boxes. Response and interactions with these new stimuli were recorded, with bold or timid responses creating a personality score showing that personality was identifiable in pine marten. Alongside personality, activity rates and patterns were assessed in each marten for assessment of natural behavioural patterns and comparison with personality. Of the three assessed martens, contact with the boldest animal was lost within a few weeks of release from captivity, whilst the more timid animals remained close to their release site and both have established defined territories. Further assessment of movement patterns and dietary breadth compared with their individual personality type will hopefully provide further insight into how they respond with their new environment based on relative boldness.

Whilst sample sizes in these two studies are low, there is indication that personality can be assessed and quantified in individuals, and that it may influence survival once released back into the wild. Personal observations post study indicates real differences in the way animals interact with their new landscape, in combination with the personality and activity seen prior to their release. This highlights the potential for further research of this topic and collaboration between release programmes occurring across Britain to truly establish if personality can be of benefit to translocation projects. Personality may become a standard assessment when choosing which animals are selected for release programmes, alongside health and genetic suitability.

Six months since the first captive bred pine marten was released, three of the four animals are known to be living locally. Den sites reflect those typically used by wild conspecifics and include squirrel dreys, tree hollows, beneath tree root plates and within boulder fields. Scat has contained a variety of fruits, small mammal and avian bones with individual martens ranging through heath, grassland, hardwood and coniferous plantation. So far the animals have shown an ability to survive in the wild, avoiding predation and vehicle collision, and we

look forward to continuing to monitor their behaviour with the hope that successful reproduction is recorded.