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**THE SCOTTISH BEAVER TRIAL • SAVING SCOTLAND'S RED SQUIRRELS  
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# Reintroductions – Theory versus reality

## The Scottish Beaver Trial – achievements to date and lessons learnt

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Kit swimming. Photograph by Philip Price

Reintroduction is seen as a viable means of reversing biodiversity loss and achieving ecological restoration. Such projects tend to be popular with the public and easier to fundraise for compared with other ecological restoration measures such as invasive species removal or habitat protection projects. However, this is very species-dependent and no reintroduction can be deemed straightforward or a guaranteed success. It should also be remembered that reintroductions are only one aspect of species conservation.

Potentially reintroductions can lead to conflicts with existing wildlife and human land uses as well as creating challenges for evidence-based monitoring and managing concepts of individual welfare. So should conservation efforts prioritise reintroduction projects? If we accept that they should, then which species do we bring back and focus limited conservation funds and efforts on? Flagship species, such as red squirrels, can generate

large sums of money and capture public support; however, it is well documented that certain species will have a disproportionate effect on ecological restoration. Iconic flagship species generate funds and capture public imagination, but may not have the desired ecological restoration effects that keystone species can have. Fortunately beavers are not only charismatic mammals, but are real keystone species, that is a species which plays a unique and crucial role in the way an ecosystem functions. Without keystone species, the ecosystem would be dramatically different or cease to exist altogether. However, these ecological engineers can create conflicts with human land-use, especially as their former native range has become progressively more developed. In order to address these concerns, the first formal reintroduction of a mammal to Britain is a time-limited, scientifically monitored trial.

### The Scottish Beaver Trial (SBT)

The Scottish Beaver Trial (SBT) is a partnership project between the Royal Zoological Society of Scotland and the Scottish Wildlife Trust hosted on Forestry Commission Scotland land. The independent monitoring of this trial reintroduction is

coordinated by Scottish Natural Heritage, and the licence from the Scottish Government has conditions relating to the number of animals released, release area and length of

time the trial runs for. This makes the process different from a full reintroduction in the sense that no population supplementation occurs; the final decision on the future of beavers to Scotland has yet to be made by the Scottish Government and therefore an exit strategy is in place to facilitate the removal of these animals. The longer term future of beavers in Scotland will be decided in 2015

when the Scottish Government considers the outcome of the Scottish Beaver Trial, in conjunction with the findings from the monitoring of the unlicensed wild beaver population now found across the River Tay catchment. In 2012 the Scottish Government took the decision to tolerate and monitor this unlicensed population of beavers, which is thought to have been founded by escaped beavers from private collections, in order to provide additional information on beavers and their effects and to complement the scientific monitoring work carried out in the official trial in Knapdale. SNH recently published a survey report on the Tay beaver population which estimates that as many as 150 beavers could

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Beaver release emerging from crates.  
Photograph by SBT



Tag glueing. Photograph by SBT



Ear tagging operation. Photograph by SBT



Kit and adult. Photograph by Philip Price

be living wild across the Tay catchment. Reintroducing beavers to Britain is not a new concept, with proposals gathering momentum a couple of decades ago. Considerable background research and feasibility studies have been undertaken by a range of scientists. The IUCN reintroduction guidelines have provided the framework for much of this work. SBT has strived to fulfil these recommendations that extend across a range of disciplines from veterinary science to ecology. The cause of the beaver's original decline has been identified and removed, vital for any reintroduction success. Much research has already been undertaken on beaver population status and biology, population and habitat analysis have been undertaken with special reference to Scotland. One of the main purposes of the trial is to monitor the effects of beavers and their activities in a Scottish context. SBT has also seen the most thorough veterinary screening programme of any beaver reintroduction in consideration to Britain's island status. Vital to any reintroduction programme is public support and information dissemination.

A number of assumptions were made prior to the onset of the Scottish Beaver Trial in the Knapdale forest, Mid Argyll in 2009. Four beaver families were presumed to be enough to achieve the main aims of the trial, in a catchment area that was predicted to act as a closed system, thereby retaining dispersing beavers which would, in turn, form new breeding pairs and establish territories. It was also presumed that the beavers would have

hydrological impacts through their damming activities that could be monitored. Given advances in animal tagging, it was determined that every individual would be tagged throughout the length of the trial so that their locations could be monitored. In reality, animal losses in captivity during the long rabies quarantine period resulted in changes in social structure and the need to form additional pairs and import replacement animals. Dispersing beavers, especially those reaching sexual maturity without forming new breeding pairs within the trial area, led to questions about the functionality of a single, 'enclosed' catchment as the sea did not act as an effective barrier. Beaver-induced hydrological changes have been less than expected, with little damming activity witnessed so far, with habitat use remaining mainly around the original release points. Long term tag attachment methods and retention times vary and remain an ongoing issue.

### Reintroductions

Eurasian beaver reintroductions have occurred widely across Europe and many lessons can and should be drawn from these. After an absence of 400 years and being a scientific trial as opposed to a full scale reintroduction, certain limitations and presumptions were made during the development of the project proposal and independent monitoring programme. In theory, monitoring the effects of four beaver families caught in Norway and then reintroduced to Scotland within a specific area appears straightforward,

especially given our increased knowledge in conservation, veterinary, animal welfare and wildlife monitoring science. However, much can be learnt through practical application and ability to continually review and adapt the reintroduction process. This is a crucial element for success whereby developments in best practice and scientific knowledge can be implemented, thereby not only raising the welfare of individual animals involved and providing robust data to inform future reintroductions, but also hopefully encouraging greater public acceptance and support for the value of reintroductions as a means to aid ecological restoration.

### The Eurasian beaver

The Eurasian beaver was almost hunted to extinction largely for its fur. By the late 19th century it is estimated that only around 1,200 individuals existed in eight very isolated populations across Europe and parts of Asia. Hunting bans and active conservation measures have seen the recovery of this species across much of its former native range. The first recorded beaver reintroductions occurred in Sweden in 1922; currently over 203 separate reintroduction/translocation events have occurred across the species' range; these have been a mix of government sanctioned and illegal/unofficial releases. The return of the Eurasian beaver can definitely be described as a conservation success story; however, this comes with a caution sign. This species was almost totally extirpated through human actions, and the European population could in theory fall again in the future should some key factors exert a widespread influence and begin to depress population levels. Such factors would include an accelerated rate of wetland habitat loss across large parts of Europe, or increased levels of human intolerance to the flooding and tree felling behaviour of beavers leading to unsustainable culling practises or illegal persecution. Lastly, an established and spreading population of North American beavers (*Castor canadensis*) can be found across Finland and Russia, with smaller pockets now turning up in parts of Germany, Belgium and Luxemburg. Without the appropriate management this non-native species is likely to continue its spread across Europe with undetermined consequences for the Eurasian beaver.



Kit and adult. Photograph by Steve Gardner