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### **Scottish Beaver Trial – proposal to use replacement beavers**

Dear Hugh

I am writing to you in connection with our licence from the Scottish Government (SG) to carry out a time-limited trial reintroduction of European beavers into the Knapdale forest of Mid Argyll.

**The purpose of this letter is to outline our case and detailed proposals regarding the use of replacement beavers for the purposes of the Scottish Beaver Trial, with a view to seeking an amendment to our current licence from the Scottish Government for the purposes of this proposal.**

### **The case for the use of replacement beavers in the Scottish Beaver Trial**

#### **Background**

In the autumn of 2008 a total of 17 wild European beavers comprising of four separate families were captured in Telemark, Norway and quarantined in the UK on behalf of the Scottish Beaver Trial (SBT) partners, the Royal Zoological Society of Scotland (RZSS) and Scottish Wildlife Trust (SWT). Their intended use was in the proposed SBT trial reintroduction project in Knapdale, Mid-Argyll. In the licence application made to the SG by the SBT partners a plan was outlined to procure a minimum of three families of beavers from the donor country, Norway and then following quarantine simultaneously release three families into the trial area<sup>1</sup>. The capture of four families recognized the fact that some mortality could be expected in quarantine, and therefore an additional family would provide some reserve capacity. The need for animal contingency was also identified in the SG licence, under condition no. 5<sup>2</sup>.

Prior to the capture of the main group of four families, a batch of eight animals (comprising of two families, each with an adult pair, one with two female kits and the other with two male kits) were captured in Norway for RZSS in January 2008. These animals were for use by RZSS as holding stock for their collections at

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<sup>1</sup> Section 7.2, p.15, The Royal Zoological Society of Scotland & Scottish Wildlife Trust, (2007). Application to Scottish Government by The Royal Zoological Society of Scotland and Scottish Wildlife Trust for a Licence under Section 16(4) of The Wildlife and Countryside Act 1981, as amended, to release European beaver, *Castor fiber*, for a Trial Re-Introduction in Knapdale, Argyll. 21<sup>st</sup> December 2007.

<sup>2</sup> "(5) We would recommend the collection and quarantine of a fourth family as a useful back-up, in case of any mortality during the quarantine period. Beaver mortality during quarantine is not uncommon."

Edinburgh Zoo and Highland Wildlife Park, but with a longer term view that it may have been necessary to draw on a larger pool of animals for the trial and that some of these animals may be used, if necessary, for release at a later date.

At the time of application to the SG a joint decision was taken by SWT and RZSS staff that the best approach for the trial would be to trap, quarantine and release families in their family groups. The rationale for this decision was based on the theory that well bonded family units would settle quickly both in quarantine and after release, and for the benefit of the trial we would effectively be translocating a small, established population from Norway into the wild at Knapdale.

### **Quarantine**

Of the original 17 beavers, five animals from different families died whilst in quarantine during the winter of 2008/09. Unfortunately loss of body condition and mortality of wild animals in a quarantine situation is often expected (e.g. Teixeira et al. 2007; Dickens et al. 2009). However the range of these mortalities experienced within trial beavers had the result of affecting the make-up of the families available for release. This is because following consultation with experts on the matter, it was decided by the SBT partners that families which suffered the loss of one or both adults during quarantine would not be considered for release<sup>3</sup>. As a consequence of this decision a further eight animals were deemed unsuitable for release after quarantine as they were now part of incomplete family units. Of these eight beavers two were coincidentally also not in good body condition following the quarantine process and were diagnosed as having a skin infection caused by the bacterium, *Pseudomonas aeruginosa*. As such the earlier tranche of beavers that had been imported by RZSS in January 2008 were considered as potentially being "reserve animals" in order that sufficient, intact family groups could be released on the agreed date. This proposal for the use of these reserve beavers was put to the SG on 2<sup>nd</sup> April 2009 and approval was granted on 19<sup>th</sup> May 2009.

### **Releases – May 2009 & May 2010**

Two of the three families released in May 2009 were reserve animals and appear, after nearly one year, to have become well established at their designated release sites at the Dubh Loch (adjacent to Loch Coille Bharr) and at Loch Linne. The third family released at Creag Mhor loch, which came directly from quarantine, dispersed outwith the trial area shortly after release for reasons unknown and only the adult male, was subsequently recaptured and then placed back into captivity for welfare reasons. Efforts continue in the search for missing animals, but these individuals have now been absent from the trial for nearly 12 months, and following our missing animal protocol (attached) will soon be presumed dead. Any missing beavers recaptured outwith the trial area are relocated back to the trial area, providing there were no animal welfare issues identified by veterinary surgeons which prevent this from happening. In this instance concern over particular welfare issues would likely result in the beavers either being returned to captivity or if necessary euthanased.

The SG licence allows the release of up to four families of beavers into the trial area and on the 4<sup>th</sup> May 2010 a fourth pair of beavers were released into the 'Lily Loch' (Un-named Loch, South) within the trial area, following consultation with and agreement by Scottish Natural Heritage, Forestry Commission Scotland and various key local stakeholding bodies. Although we are only ten days post this release, this pair of beavers appears to be settling into their new homes well.

The events experienced during the first eleven months of the trial following release, demonstrate that a number of factors have influenced the survival of individuals prior to and after release and that to date only two of the three original families released in May 2009 have remained stable at their specific release areas. It could also be interpreted that these two families have now become successfully established, suggesting that

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<sup>3</sup> Section 7.2, p.16. The Royal Zoological Society of Scotland & Scottish Wildlife Trust, (2007).

once initial hurdles are surmounted, wild caught beavers can adapt well to the Knapdale environment. The SBT partnership also recognizes the lessons learned during this initial phase and the need to capture and utilize such lessons to inform the adaptive management process required when delivering this complex conservation project.

### **Animals in holding**

There are currently eight beavers living within the trial area and three presently unaccounted for. There are currently six Norwegian beavers in three pairs held by RZSS in captivity at Edinburgh Zoo and Highland Wildlife Park. One of these pairs, comprising of a juvenile male ('Meaghan'- microchip ID no. 96800000293171) and juvenile female ('Elaine' – microchip ID no. 96800000323856) arrived from Norway on 30<sup>th</sup> April 2010 and following special permission granted by Scottish Government vets (see attached) were moved out of rabies quarantine on Monday 3<sup>rd</sup> May 2010.

### **Proposal to use replacement beavers**

The Scottish Beaver Trial has the following aims:

- To study the ecology and biology of the European beaver in the Scottish environment.
- To assess the effects of beaver activities on the natural and socio-economic environment.
- To generate information during the proposed trial release that will inform a potential further release of beavers at other sites with different habitat characteristics.
- To determine the extent and impact of any increased tourism generated through the presence of beaver.
- To explore the environmental education opportunities that may arise from the trial itself and the scope for a wider programme should the trial be successful.

The SBT partners recognise that the trial must aim to reflect a process that is as natural as possible in order that the science is valid, robust and meaningful. However, it is also understood that direct intervention by project staff is necessary for a number of reasons including:

1. Recapture of animals for:
  - (i) repatriation to trial area or captivity if required
  - (ii) health checks
  - (iii) replacement/removal of telemetry tags etc.
2. Management or removal of dams in order to comply with SG licence conditions.
3. Erection of deterrent fencing to prevent access to sensitive areas or ingress/egress routes.

The SBT partners believe that the beaver population itself may also require direct management and intervention to reduce the impact of potential catastrophic events on the security of the trial. The five year, trial reintroduction of beavers into Knapdale has a set of scientific aims which require a minimum number of animals to ensure the validity and meaningfulness of the derived data and its subsequent interpretation.

**The SBT partners believe that during the first two years of the trial efforts should be made to ensure the establishment of four separate breeding pairs of beavers in order that a 'stable critical mass' is reached and so that meaningful interpretation can be made of this population.**

This minimum core population living in adjacent territories should in time begin to reflect the characteristics of a true, wild, resident beaver population and demonstrate the range of normal behaviours (including breeding,

dispersal, natural mortality, formation of new pairs and territories etc.) that the trial needs to observe and study in order to scientifically demonstrate the effect of beavers living in a modern Scottish context.

Presently we are in a position where we have two established beaver families and one newly released pair of beavers, and as such the population remains in a small and fragile state. Should there be additional mortality of adult animals in the wild in the near future then this population would be at further risk of viability.

**The SBT partners propose therefore that, depending upon the cause and circumstance of loss of individuals or entire families, then active intervention should take place and the use of reserve animals should be considered by SG to ensure four pairs are maintained throughout the first two years of the trial.**

Such circumstances are listed below.

#### **Details of proposal:**

1. Our proposal relates to the use of reinforcement beavers, to replace dead or missing adult beavers in the trial. Circumstances in which, the use of reserve animals would be considered are as follows:
  - Death of one or both of the breeding animals within a family group
  - Dispersal out of the trial area of one or more members of a breeding pair where, for whatever reason, those animals are not returned to the trial area, and are not contributing to the specific aims of the Trial.
  - Loss of one or more of a breeding pair in line with the SBT missing animal protocol (see attached).
2. We propose that any replacement animals will only be released at Knapdale up to 29 May 2011 (i.e. within the first two years of the trial). After this date the population will be left to develop without any further releases.
3. We propose that replacements would only be used for the loss of one or both adults in a pair. If both adults in a pair were lost then our proposal would be to leave any young in situ within the trial area in an effort to reflect the behaviour of a wild population, where the loss of adults can occur. Should RZSS and the independent Dick Vet veterinary surgeons feel that there are welfare grounds for the removal of any remaining dependent young then this will be discussed with SNH prior to any action being taken.
4. We propose that any replacement animals would only be put in place after a short but intensive period of observation and tracking had taken place to establish whether or not an existing trial animal had already filled the gap left by a dead/missing-presumed dead adult. If such a gap had already been filled by another trial animal then the new pairing would not be disrupted by the trial partners, even if the missing-presumed dead animal was then re-located. In the situation where the missing-presumed dead beaver is relocated within the trial area then this animal would be left and not recaptured. In the situation where the missing-presumed dead beaver is recaptured outwith the trial area then this animal would be either relocated to another suitable, unoccupied water body within the trial site (see point 8 below), or if this were not possible then returned to captivity or euthansed.
5. We propose that replacements would only be used in two cases. Firstly in cases of proven death of an adult, and secondly in cases where adults which have been missing for a period longer than 6 months and are therefore presumed dead (see point 7 below).
6. We can confirm that post mortems are completed on all recovered beaver bodies as a matter of course, unless the body is in an advanced state of decomposition. Mortality of beavers in Knapdale could be

related to a range of potential causes and factors, both natural and man-made. We can confirm that any untimely deaths potentially related to adverse factors attributed to the trial site or trial situation would be fully investigated by the SBT partners. This would be done in collaboration with experts such as the RZSS and Dick Vet veterinary surgeons, Telemark University College and if necessary local Police Wildlife Crime Officers. In liaison with these bodies and with SNH, we would work to establish whether these factors or the risks associated with them could be adequately controlled or ameliorated before considering the use of any replacement animals at that site. We confirm that if it were not considered possible to remove or reduce the risks at the trial site to a satisfactory level, through actions such as active management (e.g. provision of deterrent fencing, increased public information and signage) or increased surveillance and monitoring (e.g. visual observations and live trapping), then the use of replacement animals would not take place.

7. We confirm that we have now revisited the SBT missing animal protocol (attached), and for *adult animals only* we have reduced the period of time that an animal is missing-presumed dead from twelve to six months. This change is based upon two considerations. Firstly our experience of searching and tracking for missing beavers since June 2009, in which we believe that the best chances of relocating animals comes from intensive searches of likely riparian habitat effort in and around the trial site, along with potential sightings by members of the public in the first few weeks following dispersal. Secondly we recognise that the 12 month time period for presuming missing animals dead may inadvertently result in preventing the necessary use of replacement adult animals being considered in certain circumstances and we feel that this would not be in the best interests of the trial process. The changes to the SBT missing animal protocol will be conveyed to the next local Stakeholder Forum and made publically available of the SBT website.
8. We propose that in potential situations whereby an adult is replaced because it had been missing-presumed dead, but is then found and captured then we would firstly propose to relocate this animal to another suitable, unoccupied water body within the trial site, following detailed discussion with Forestry Commission Scotland (FCS), SNH and key stakeholders (inc. Lochgilphead and District Angling Club, Argyll Fisheries Trust, Historic Scotland, Argyll & Bute Council). If another suitable site could not be secured then we confirm that the animal would be returned to captivity or euthansed.
9. We can confirm that it would be our intention to use only Norwegian beavers as replacement animals.
10. We understand that beaver mortality related to stress or other adverse effects of the trial situation is relevant to the success or failure criteria of the trial and in these circumstances the exit strategy would need to be considered on welfare grounds. We agree with SNH that the Dick Vet, as independent advisors on The Research and Monitoring Coordination Group should be asked to advise on this issue (licence condition 19), but also feel that it is essential that RZSS veterinary surgeons are included in this process also.
11. We propose that should a situation arise where a replacement animal may need to be released before 28 May 2011, then the specific details will be discussed and agreed with SNH at the time.
12. We can confirm that detailed discussions regarding this proposal have taken place with the FCS and the independent monitoring body SNH, and we believe that both agencies are supportive of our proposal. The proposal has also been discussed at the Local Stakeholder Forum and at an on site meeting with local National Farmers Union Scotland representatives. We have to date, received no formal comments or feedback on this proposal from these stakeholders.

- **Impact upon the SBT Independent Monitoring Programme**

The SBT partners believe that there are two levels of potential impact of this proposal upon the existing independent monitoring programme. Firstly in a situation where reserve animals are released singly as replacements for a recently deceased family member, then this is in effect similar in nature to a new, incoming animal in a wild situation and therefore is a like-for-like replacement. We consider this to have a negligible impact upon the monitoring programme. Secondly where reserve beavers might be released to a new location within the trial area, without an existing territory then we accept that this will have implications on monitoring related resources and the use of any subsequent monitoring data for comparative purposes. We confirm that in this situation we would on a case by case scenario, discuss and agree any changes to the programme with SNH.

### **Proposal to release a replacement pair of beavers into Creag Mhor loch**

We wish to propose that, following the detailed points listed above, *should* we receive an amendment to our current licence from Scottish Ministers to use replacement beavers, then it would be our intention to release *as soon as possible* the pair of juvenile beavers recently captured from Telemark, at the above site. This release would be to replace the family originally released at Creag Mhor loch in May 2009, who unfortunately dispersed outwith the trial area in June 2009. We can confirm that there are no beavers remaining at this location and this has been established by recent field sign surveys and observations, which found no evidence of beaver presence. Additionally there is no evidence to suggest that there are any 'site-based' adverse factors at this loch which may have caused the original animals to disperse and the area has good habitat for beavers and can easily support a family group. The loch is situated in an area with other suitable beaver habitat nearby, including water courses which link this area with some of the other lochs in the trial site. These water courses would be important dispersal corridors for animals, particularly juveniles attempting to set up new territories and meet new mates from neighbouring family groups.

#### **How will the beavers be released?**

The processing of animals in preparation for release would be carried out at Edinburgh Zoo in the morning prior to loading into transport crates and will involve the taking of samples for analysis and the attachment of telemetry devices. Similar to the recent 4<sup>th</sup> May 2010 release of the fourth pair, it is proposed that the pair would be simultaneously 'hard' released to the site by a small team of SWT and RZSS staff, from specialist transportation crates around dusk time. The release point (NR805911) would be opposite two pre-prepared artificial lodges, which would provide immediate shelter and contain food supplies and bedding taken from the animals holding facility.

#### **When could the beavers be released?**

This pair of beavers would, pending final health checks by the RZSS veterinary team, be available for *immediate release after the 24<sup>th</sup> May 2010*. As recently caught wild animals we feel strongly that is in the best interests of both animal welfare and the trial process to attempt to release these animals in the near future, should permission be granted by Scottish Government.

#### **How will the beavers be tracked and monitored?**

For the purposes of tracking both animals will be fitted with radio (RF transmitter) tags that are used on other beavers within the trial. Once released the new pair will be radio tracked every day for the first three weeks. After this period they will be regularly tracked and monitored by field staff and local volunteers in the same manner and frequency as the now resident animals using monthly visual observations, radio telemetry, field sign surveys and annual live trapping.

## **Site preparations**

### Baseline monitoring

SWT and RZSS understand that all necessary baseline monitoring required for the purposes of the trial has now been carried out on Creag Mhor loch by SNH staff or independent monitoring partners.

### Deterrent fencing

As with the recent 4<sup>th</sup> May 2010 release we will, prior to a possible release, erect a section of temporary beaver deterrent fencing across the main northern inflow to this loch (NR806914). This three wire electric fence would be approximately 100 metres long and will replace a similar fence previously used to encourage the resettlement of the dispersed adult male beaver first released at this site. The design and siting of this fence would be discussed and agreed with local FCS and SNH staff beforehand.

Based upon the detailed information supplied above we would be grateful therefore if the Scottish Government could give this proposal due consideration at your earliest possible convenience and please do not hesitate to contact myself if you have any questions regarding the proposal.

Yours sincerely

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## References

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