

Veterinary Report Eurasian beavers – pre-release health check

Background

Two captive beavers were assessed on behalf of the Devon Wildlife Trust, for their suitability for release into the wild as part of the River Otter Beaver Trial. A condition of this release is that both individuals are fit for release and do not present any disease risk to human, livestock or other wildlife health.

As both individuals to be assessed were captive born in England, there was no requirement to screen for non-native pathogens, namely *Echinococcus multilocularis* or Tularaemia, as these individuals were not imported from positive areas and there is no documented opportunity for beavers to acquire these in the UK. The father of 4283 was a wild-caught adult from the River Tay catchment (Scotland) and recently tested negative for *Echinococcus multilocularis* via immunoblot screening undertaken by University of Bern.

Method

Health screening followed similar methodology for those implemented for the official Scottish Beaver Trial (Goodman *et al.* 2012) and retrospective health screening for unofficial free-living beavers on the River Tay and Earn catchments in Perthshire (Campbell-Palmer *et al.* 2015). Note health screening here did not involve a general anaesthetic, therefore various diagnostic screening including radiographs were not undertaken and there were no checks for malocclusion or signs of dental disease. However as both individuals had been held in captivity with no reports of feeding issues then no issues were presumed.

A physical examination was undertaken of both individuals. No obvious signs of disease, injury or abnormalities were noted. There were no signs of unusual discharge, ectoparasites or dermatitis. Body condition was good for both individuals (score 3) with a good covering of fat over the pelvic and spine region, with tail thickness being as expected for age class and time of year. Weight was measured and body score assessed according to the standard rodent body scoring system. Each beaver was scanned for the presence of an identity microchip, and if not present beavers were microchipped in the inter-scapular region to allow future identification.

Blood and faecal samples were collected. More specific disease screening included full haematology and serum biochemistry as a general assessment of each beaver's general state of health (SAC Consulting Veterinary Services, Scotland's Rural College). Further specific serological testing was performed as follows: European *Leptospira* serovars 1-6 using the microscopic agglutination test (MAT) (Animal Health Veterinary Laboratory Agency, Weybridge). Faecal samples underwent flotation with saturated salt solution for nematodes and sedimentation for trematodes, as well as microscopy for coccidia, *Cryptosporidium* spp., and *Giardia* spp. Standard microbiological culture for bacterial enteric pathogens, including enriched media for *Salmonella* and *Campylobacter* spp. was performed (SAC Consulting Veterinary Services, Scotland's Rural College).

Results

Beaver 4283

No enteric parasites or significant bacterial pathogens were isolated. Blood results were unremarkable although insufficient serum was available for *Leptospira* spp. serology or serum protein electrophoresis.

Beaver 5874

No enteric parasites or significant bacterial pathogens were isolated. Eggs of *Stichorchis subtrequetris*, the beaver intestinal fluke were identified. Blood results were unremarkable although mild elevation of liver parameters were seen these were not considered significant. This beaver was positive on serology for *Leptospira* pool 6 (positive for *L. hardjo prajitno* at 1/100) suggesting exposure to this organism. No evidence of an inflammatory white cell response or electrophoretic response was observed and renal parameters were within normal bounds suggesting no evidence of an active inflammatory response.

Conclusion

Both these individuals are considered suitable for release as part of the River Otter Beaver Trial, and are not considered to present a health risk to humans, livestock or other wildlife. Of note was the positive result for *Leptospira* spp. Given the normal exposure of British wildlife to this pathogen, this is not considered a finding that should prevent release, with a good chance of any beaver being exposed to this on release. Indeed some serological positive response to the organism (without evidence of an active inflammatory response) could be suggested to be beneficial as it suggests some immunity and *Leptospira* spp. have been suggested as a significant cause of morbidity and mortality in post released semi-aquatic rodents (Gelling *et al* 2015).

Faecal collection was difficult to obtain on the day of sampling, it was noted that faecal samples contained little fibrous materials and were more orange in colouration, most likely reflecting the captive diet presented. It would be recommended ahead of any release that these beavers receive a more naturalistic diet, containing a much greater percentage of browse, and a more varied diet including wild greens, to ensure good gastrointestinal health prior to release.

Physical examination, sample collection and body condition assessment was undertaken by Roisin Campbell-Palmer and Adrian Oliver MBA BVSc MRCVS. Interpretation of findings and validation of screening processes was undertaken by Dr Simon Girling BVMS (Hons) DZooMed DipECZM CBiol FRSE EurProBiol MRCVS.

References

Campbell-Palmer, R. Pizzi, R., Dickinson, H., Girling, S. (2015) Trapping and health screening of free-living beavers within the River Tay catchment, east Scotland. Scottish Natural Heritage Commission Report No. 681.

Gelling, M., Zochowski, W., Macdonald, D.W., Johnson, A., Palmer, M., Mathews, F. (2015) Leptospirosis acquisition following reintroduction of wildlife Veterinary Record 177(17):440.

Goodman, G., Girling, S., Pizzi, R., Roseel, F., Campbell-Palmer, R. (2012) Establishment of a health surveillance program for the reintroduction of the Eurasian beaver (*Castor fiber*) into Scotland. Journal of Wildlife Diseases 48: 971-978.