

BRIEFING NOTE: MONITORING

If we were to apply for a licence to reintroduce lynx, we would need to provide comprehensive evidence that the lynx would be closely monitored after they are released, in the form of a Monitoring Plan.



This is so that their movements, health, activity, and impacts on the surrounding environment would be known. It would enable us to objectively evaluate how well the reintroduction has gone, compare our predictions about the lynxes' behaviour to what they actually do, and to intervene if there are problems.

What is monitoring?

Monitoring is the term used for any ongoing systematic process of carrying out measurements and observations in a standardised way. It allows us to detect changes over time, or in relation to other factors that are also monitored in parallel.

In the context of lynx reintroduction, monitoring is concerned with collecting evidence (meaning data and knowledge) about the project, the lynx, and their interactions with the environment over time so that we can track patterns and trends and then analyse and interpret them.

Why do we need to monitor the lynx?

Any licence application made to reintroduce lynx must include a detailed Monitoring Plan that explains how the lynx and their effects on the surrounding environment will be monitored. There is clear guidance on what this plan must contain from the UK authorities¹ and the international conservation community², and there is also useful precedent available from lynx projects in Europe and from other species translocation projects in the UK, such as wildcats. We would need to monitor the lynx for several reasons:

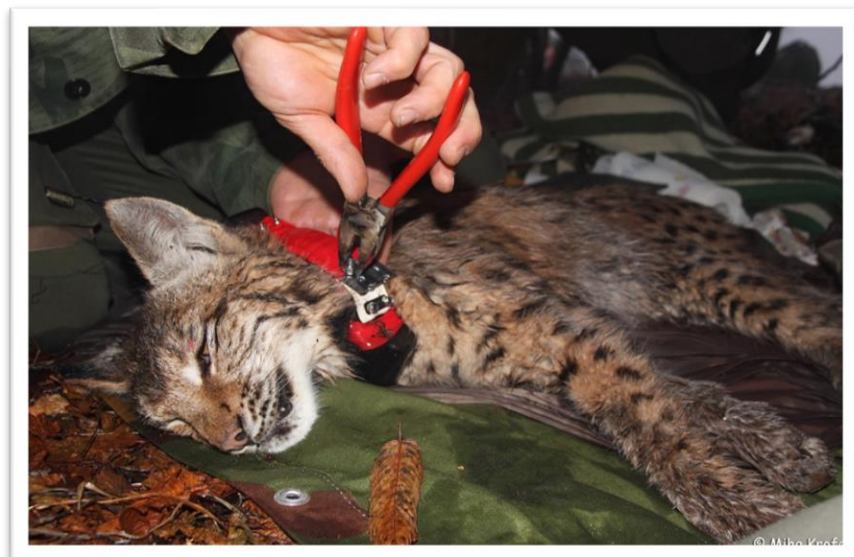
1. To be able to evaluate the success of the reintroduction effort. Are the lynx thriving in their new environment? Are they establishing a population? Are they behaving as we would expect them to?

2. To track the physical health of the lynx and the genetics of their offspring to ensure they remain healthy and that they develop into a genetically diverse population. This tells us if veterinary interventions are needed or if additional lynx must be released in future to bring new genes into the population.
3. Ongoing continuous monitoring means we can quickly refine and improve the project methods in response to what is needed, allowing us to adapt to the current circumstances and to develop better techniques. It enables greater efficiency in the project as it progresses, and this knowledge can be usefully shared with other similar projects in Britain or elsewhere.
4. To be able to share information about the current status and behaviour of the lynx with interested members of the public.
5. It gives us the opportunity to learn more about how the lynx behave and interact with the ecosystem in Britain. This would be a novel, unprecedented opportunity for biologists to study the ecological consequences of the return of a mammal top carnivore to Britain, and how it fares in its new home.

How would the lynx be monitored?

There are two main categories of monitoring method for lynx. The method is either 'invasive' in that it requires interfering with the lynx in some way, or it is 'non-invasive' in that it does not affect or interfere with the lynx behaviour. Both categories are likely to be employed to build the most complete picture possible.

Invasive methods include the collection of clinical samples (e.g. blood, tissue, or body measurements), or the attachment of tracking devices (such as GPS or VHF radio collars), which allow the movement of lynx to be tracked remotely. This requires the lynx to



Lynx being fitted with tracking collar © Miha Krofel

be captured, which is time-consuming, costly, requires a skilled team to implement, and is not without risk to the lynx.

Non-invasive methods can include the use of a network of remotely triggered camera 'traps' to take videos or photos of lynx and thereby assess their physical condition (e.g. evidence of breeding) and their health (e.g. any evidence of injury, disease, or malady). It might also include the collection of hair samples from rubbing posts, which can be genetically analysed, and the collection and analysis of lynx scat which can reveal what they are eating, or indeed locating the carcasses of their prey.

Various other modern techniques such as eDNA (a method of detecting the presence of different species from their DNA when it is shed into environmental samples such as snow, water, soil, or faeces), or the use of drones with infra-red cameras can be employed in specific ways if certain aspects of lynx activity need to be monitored.

Deceased lynx would also be collected for autopsy wherever possible.



Camera trap (two cameras positioned on trees between a well-used animal path, and close-up of a camera) © Carole Munro

What else would be monitored?

We would also monitor aspects of the natural and human environment to assess what impact the lynx are having. For example we may wish to know whether they are influencing deer numbers or deer behaviour, or if lynx predation is affecting other species directly (e.g. if the lynx eat rare or protected species), or indirectly (e.g. if the lynx eat or displace smaller predators, such as foxes, and in this way enable smaller animals to flourish).

We would also monitor public attitude and opinion regarding the lynx, any incidence of conflicts (e.g. attacks on sheep), and any relevant economic activity (e.g. lynx-based businesses) as time progresses, so that we can measure

change. This also helps us to understand and be able to address any recurring problems between lynx and the local community.

How would we monitor these other non-lynx aspects?

Traditional walked ecological surveys can be carried out repeatedly over time to monitor the change in species assemblage, or condition of the habitat (such as how much woodland regeneration is occurring), both before the lynx are reintroduced and then at intervals following reintroduction. Drone survey and camera traps are useful for monitoring the presence and abundance of deer. We would also explore the possibility of using 'citizen science', in which the local community are involved in collecting ecological data as part of the ongoing monitoring.

Opinion surveys are a useful approach for gaining insight into people's attitudes toward lynx, and these would be designed and carried out by experienced practitioners to ensure good practice and repeated at intervals for the duration of the project.

What would need to be done before a licence application?

The Monitoring Plan would need to be prepared and included in any licence application. This requires a sufficiently detailed description of the aim and objective of the monitoring programme, the specific elements being monitored and rationale for monitoring them, ensuring that suitable methods will be employed to provide the information intended, with a plan for how each method will be carried out in practice, including the equipment, people, locations, and timing of the work. Certain types of monitoring, such as the invasive sampling, will need specific and detailed protocols to be written and appended to the application. This will ensure that any planned monitoring is rigorously assessed and is appropriate and feasible to implement in practice if a licence is granted.

Endnotes

¹ National codes of practice for conservation translocations in England

<https://www.gov.uk/government/publications/reintroductions-and-conservation-translocations-in-england-code-guidance-and-forms> and Scotland

<https://www.nature.scot/professional-advice/protected-areas-and-species/protected-species/reintroducing-native-species/scottish-code-conservation-translocations>

² International Union for Conservation of Nature (IUCN) and Species Survival Commission (SSC) guidance on species translocation

<https://portals.iucn.org/library/efiles/documents/2013-009.pdf>