Use of a remote camera to rapidly assess Eurasian badger *Meles meles* occupancy within a sett to be lost due to pipeline laying near Uppingham, Rutland, England

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SUMMARY

A remote controlled camera proved a practical solution to survey a single, one-entrance outlying badger *Meles meles* sett in late January (outside the normal licensing period for disturbing badger setts), which was found to be present on the route of a proposed water pipeline. Upon ascertaining that the sett was almost certainly unoccupied, the sett was immediately taken apart and filled in following strict guidelines specified under the terms of the Natural England licence (supervised by the relevant authority), to allow pipe laying activities to continue. Once the pipeline is installed and construction completed, badgers will be able to re-colonise the same area of ground.

BACKGROUND

Anglian Water Services is required to supply potable water to its customers in central and eastern England, to ensure future supplies and to improve security of supply. Consequently a need was identified to install three pipelines to transfer water from Empingham in Rutland to Hannington in Northamptonshire.

The pipelines form part of a much larger strategic programme. These new pipelines will provide a water supply to the three million people and businesses who live and work within an area covering Rutland, Peterborough, Corby, Kettering, Market Harborough, Milton Keynes, Northampton, Wellingborough, the northern area of Buckinghamshire and much of Bedfordshire.

As part the Environmental Impact Assessment for the pipeline produced by Mott MacDonald (environmental consultants) in 2006, a range of protected species surveys were carried out, including surveys for the Eurasian badger *Meles meles*.

Badgers are protected by The Protection of Badgers Act 1992:

A person is guilty of an offence if, except as permitted by or under this Act, he interferes with a badger sett by doing any of the following:

a) damaging a badger sett or any part of it;

b) destroying a badger sett;

c) obstructing access to, or any entrance of, a badger sett;

d) causing a dog to enter a badger sett; or

e) disturbing a badger when it is occupying a badger sett,

intending to do any of those things or being reckless as to whether his actions would have any of those consequences.

Despite surveys of the pipeline route and change of alignment to avoid known setts, a one-entrance badger sett was identified at a late stage of the project (late January 2008) within the area required for trenching and pipe installation. This sett, considered to be an outlier sett (sett definitions follow Neal & Cheeseman 1996), was located near the town of Uppingham in Rutland in the centre of a large arable field (Fig.1) which was not accurately surveyed prior to the works as disturbance and damage to the crop would have been caused.

Figure 1. Outlier badger sett (left side of photo) in the arable field within the pipeline easement.

January is outside the usual time period that Natural England (the Statutory Nature Conservation Organisation (SNCO) responsible for licensing) will grant licences to interfere with setts for the purposes of development; licences are usually only issued for sett interference and destruction between July and November to avoid the badger breeding season. However, a delay to this section of pipeline from January until July due to the presence of this single sett would have had huge implications for project delivery.

Due to the scale of the project, the works were phased, with the first phase commissioning in autumn 2008 aiming to be fully operational by the end of 2009. Initial construction activities were already well underway by January 2008, including the installation of fencing and removal of hedgerows and trees, with land drainage to follow shortly. All of these activities were to allow the main pipe-laying operation to commence from March 2008. The discovery of the outlier sett and the position of the sett in the centre of the working corridor placed into question both the commissioning of the pipeline and the overall target for completion by December 2009.

ACTION

Initial sett monitoring: Daily monitoring of the sett entrance by ecologists for 14 days revealed continued badger activity as shown by the presence of footprints in the earth around the sett entrance. At least two badger setts, more extensive in size, were known to be present nearby in an area of woodland; presumably it was individuals from one of these setts which were using this outlier sett.

Remote camera observations: Instead of further lengthy monitoring of the sett and potential delays to the pipe installation programme, an alternative solution was proposed. A licence was obtained from Natural England to observe the inside of the sett using a remote camera. On 13 February 2008 a wheeled, remote controlled device with a pan and tilt camera (connected by a wire cable to a nearby van installed with a close circuit television (CCTV) unit) was sent into the badger sett (Fig. 2). Present at the site were representatives from Mott MacDonald Ltd. (consultant), J.N. Bentley Ltd. (pipe-laying contractor), Natural England (SNCO) and the two CCTV operatives.

Figure 2. Remote camera device used to explore the badger sett.

During this time a hand-held, cable avoidance tool (C.A.T scanner) was used to detect the direction of camera movement within the tunnel from above ground. The camera device calculated the distance travelled into the sett as well as providing live images of the tunnel.

CONSEQUENCES

The pan and tilt facility enabled identification of any potential forks leading from the main tunnel. The camera provided very clear images (Fig. 3) which were viewed on a wide screen TV monitor in the vehicle.

The use of the remote camera proved to be a practical solution. The inspection (lasting approximately 1.5 hours) gave good evidence that the sett was not currently occupied. There was not 100% certainty that the sett was empty as despite the camera having a pan and tilt facility which provided 360 degree visibility,

uneven ground meant that not every dark shadow could be fully explored.

Figure 3. Still image from video footage taken by the remote camera of the badger sett tunnel.

The sett structure was found to be simple, with one main tunnel of 5.6 m long. One branch to the tunnel was found. This was also explored using the camera. No evidence of bedding or occupation by badgers and / or badger cubs was found. Despite signs of recent digging, the tunnel did not widen into a sleeping chamber at any point. This allowed the sett to be immediately taken apart using an excavator as specified under the terms of the Natural England licence.

Once the sett was taken apart and the area back-filled, the ground was proofed using heavy duty chain-link fencing to prevent re-entry by badgers. This area was subsequently further monitored by ecologists until the pipe was laid in the ground; during this time no evidence of new digging by badgers was found. Once the pipeline is installed and construction has finished, badgers will be able to re-colonise the same area of ground.

Camera hire costs: The cost of the hire of the camera, vehicle with CCTV and two camera operatives was not excessive (£500) and significantly less costly than the potential delays to project programme.

Applicability to other projects: This technology may have benefits for other projects. Each situation would need to be discussed with Natural England licensing team and reviewed individually with respect to sett size, potential complexity and ground conditions.

REFERENCES

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