

Monitoring the behaviour of individual badgers during a sett exclusion exercise

A report by the Central Science Laboratory and the Rural Development Service.

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1. Background

Badger setts can cause serious structural damage to property, roads and railways. In some cases it may be necessary to carry out an operation to exclude the resident animals and close the 'problem sett' to prevent further damage. Excluded badgers are expected either to occupy alternative setts within their home range, or in the absence of such opportunities an artificial sett may be constructed. However, currently there is little published evidence regarding the success of exclusion exercises (although ad hoc evidence suggests badgers do often find alternative setts) and the behaviour of badgers towards artificial setts.

An ideal opportunity to examine these issues was provided by a badger damage case in a suburban area in southern England. In this particular case, a large main sett was causing damage to several domestic residences. An attempt had been made to exclude the badgers from the 'problem sett' but it failed. At the time it was concluded that there were probably no available alternative setts nearby. Hence, in 2003 a licence was granted by Defra to allow the sett to be closed down. The resident badgers were to be excluded in the hope that they would use two artificial setts to be constructed nearby. This exclusion exercise with artificial sett provision, provided a valuable opportunity to carry out a detailed monitoring programme to collect evidence on the potential of this approach for resolving similar cases in the future.

The costs involved in the construction of two artificial setts and associated 'badger-proofing' to the affected properties, were met by Defra as part of this project. The artificial setts were designed and constructed by The Badger Consultancy. All operations associated with badger-proofing around the 'problem sett', trapping and exclusion were organised and carried out by staff from the National Wildlife Management Team of Defra's Rural Development Service (RDS). Badgers were fur-clipped and monitored by staff from the Central Science Laboratory (CSL).

2. Site description

During preparation for the exclusion exercise staff from the RDS and CSL carried out initial inspections of the site. Four properties were directly affected by the 'problem sett', and a further two were visited by the resident badgers (Figure 1). The digging of tunnels associated with the sett had resulted in undermining and damage to structures including walls, steps and patio's. Drainage services were also threatened and the activities of the badgers denied the residents normal use of their gardens. The majority of badger sett entrances were located in two neighbouring gardens, with tunnels also extending under three adjacent properties. It was concluded that one large main sett was involved, and that the resident badgers should be excluded from all six affected properties. It was not possible to determine with any accuracy however, the number of badgers that were likely to be resident in the 'problem sett' on the basis of signs of activity.

Inspection of the surrounding area identified another large sett consisting of at least ten entrance holes, in a copse approximately 500m away from the 'problem sett'. This was considered to potentially belong to the nearest neighbouring badger social group, although there was no direct evidence to support this contention. In order to be sure that badgers excluded from the 'problem sett' could find alternative accommodation, two artificial setts were constructed in nearby properties. The first was located immediately adjacent to one of the properties where the problem sett was situated and the other was about 50 metres from this site. These sites were made available by residents keen to assist in providing the badgers with alternative setts. The proximity of these artificial setts to the 'problem sett' meant that they were likely to be within the same territory.

A mini-digger was used to excavate the sites for the artificial setts. Sett chambers were constructed using wooden posts for the walls and covered with exterior plywood. Sheep netting was placed around the external walls of chambers to discourage the badgers from further excavations and plastic drainage pipes were installed to form the tunnels. The ground areas above and surrounding the artificial setts were then reinstated. The larger of the two artificial setts (the main artificial sett) consisted of two sub-divided chambers served by two pipe tunnels, whilst the other (the outlier artificial sett) comprised a single chamber with one tunnel.

The purpose of the work described below was to monitor the behaviour of the badgers excluded from the 'problem sett' and in particular to record their use of the artificial setts.

3. Methodology

3.1 Sett exclusion

Once the artificial setts had been constructed the perimeter of the gardens that encompassed the 'problem sett' (consisting of gates, boundary structures and other entry routes) was made 'badger-proof'. This involved installing chain link fencing, sections of weld mesh, wood panels attached to existing vulnerable fencing and improving the exclusion offered by existing gates and walls. However, both before and during the trapping exercise the badgers were allowed to move freely via access points in the perimeter. During the period of approximately six weeks between completion of the main artificial sett and the commencement of trapping operations, badgers were encouraged to visit both artificial setts by the provision of food and bedding.

A variety of techniques were used to closely monitor the 'problem sett' during the trapping period to determine when all the resident animals had vacated the site. Signs of badgers using sett entrance holes were monitored by lightly blocking them with straw-filled sacks, placing thin sticks across them and inspecting patches of sand deployed to record footprints. Regular inspections were undertaken to check for signs of activity.

3.2 Trapping and marking badgers.

Badgers were trapped using steel mesh box traps baited with peanuts (Cheeseman & Mallinson, 1979). On September 9th, 2003, 14 traps were deployed within the badger-proofed perimeter surrounding the 'problem sett' and affected properties. The traps were secured in the open position and badgers allowed free access to take bait, which was replenished daily. During this period badgers were able to move freely in and out of the badger-proof perimeter via purpose built gaps in the fencing and other access points. On September 22nd the traps were baited and set for capture. Traps were checked early in the morning following each trap night. The access points in the perimeter were closed on the day that the first badgers were caught. The trapping exercise continued until October 30th.

Captured badgers were transferred to a smaller holding cage and anaesthetised by intra-muscular injection of a combination of ketamine, butorphanol and medetomidine (de Leeuw et al., 2004). This provided general anaesthesia and allowed the animals to be examined by a veterinary surgeon to ensure that they were in a healthy condition.

In order to check that excluded badgers were not getting back into the enclosure surrounding the 'problem sett' it was necessary to mark each individual animal. Although some badgers may be individually recognisable on the basis of physical appearance, this is a subjective and unreliable method that has not been validated in any published scientific study. Hence, each captured animal was given a unique fur-clip applied to both flanks, to allow subsequent identification. This involved removal of the outer layer of guard hairs in a distinctive pattern on each flank (Stewart & Macdonald, 1997). The procedure is entirely harmless and the clipped guard hairs are replaced following subsequent moults. This is the least invasive method of attaining reliable temporary marks and can be used to accurately distinguish between individuals. These fur clips are particularly visible on video footage. Once the veterinary surgeon was content that the badgers had fully recovered from the effects of the anaesthetic they were released at the artificial setts. In order to prevent badgers from leaving the setts during daylight hours and to allow them time to fully recover, grilles were placed over the sett entrances. These were removed later that same day at dusk.

3.3 Monitoring badger behaviour

Video surveillance equipment consisted of a time-lapse video recorder linked to a camera with infra-red illumination. Prior to the exclusion operation, a camera was located near each artificial sett such that the field of view included all the entrance holes. The video recorders were set to record activity at the artificial setts from September 23rd to October 4th. Each night of video footage was examined on the following day.

For 12 consecutive nights following the first time traps were set, video surveillance was carried out at both artificial setts. Following a break of 5 days when there was no filming, video surveillance continued for 10 consecutive days at both artificial setts. Thereafter, video surveillance was carried out for a further 11 consecutive days at the outlier artificial sett, and for 24 consecutive days at the 'problem sett'. Further video surveillance was sporadic and reactive to events.

4. Results

During the period prior to trapping, when food and bedding were provided at the artificial setts, direct observations and monitoring for signs of activity indicated that badgers were visiting both.

On the first night of trapping three female badgers were caught, comprising two adults (A & B) and one cub (C). All were anaesthetised and given unique fur clips. They were judged to be in good condition by the veterinary surgeon and released the same day to the larger of the two artificial setts. One of the adults (A) appeared unable to pass beyond a bend in the entrance tunnel, despite attempting to dig its way past and into the chamber. It stayed in the entrance tunnel until dark, when it left the sett and was never observed using either artificial sett again. However, this badger was known to be still active in the immediate vicinity for a further 23 days, during which time it was twice captured on video passing behind the outlier artificial sett. The female cub (C) left the main artificial sett after one night and although it was seen on three occasions during the following 26 days to briefly visit the outlier artificial sett, it did not use it as a daytime refuge. Video surveillance showed that the other adult female (B) stayed at the main artificial sett for at least 25 days. During this period it appeared extremely nervous, remaining within the sett for the first two nights, and thereafter only emerging briefly to feed or take bedding and/or food back down the sett. Food and bedding was provided by the residents in whose gardens the setts were located. Initially, this practice extended from when the setts were established through until January 2004 when it became apparent that badgers were not using the setts. Feeding was then stopped in an attempt to discourage foxes that had taken up residence in the setts, from frequenting these areas. Feeding recommenced in March 2004 when badgers re-occupied the setts.

Two days after the three females had been caught, one adult male (D) was captured at the 'problem sett', anaesthetised and fur-clipped. The veterinary examination indicated that it was also in good condition and it was released to the outlier artificial sett on the same day. However, that evening the badger left this sett and on the following day signs of digging were observed under a gate that formed part of the badger-proofed perimeter around the 'problem sett'. The animal was able to gain entry as a result of a contractor failing to install buried chain-link netting at this location. This was installed immediately and concrete slabs added to discourage any further digging. The adult male (D) was recaptured seven days later within the enclosed area surrounding the 'problem sett' and again released at the outlier artificial sett, which it once more left on the same evening. It was subsequently not observed at either artificial sett, although 18 days after its last release it was once more observed within the enclosed area around the 'problem sett'. On this occasion it appeared that the badger had squeezed through a small gap under a fence panel. It was recaptured several days later and held off site at an animal welfare centre for 18 days, by which time the 'problem sett' had been completely blocked by filling the chambers and tunnels with expanding foam and the perimeter proofing made secure. Following release at the main artificial sett the badger did not emerge until the fifth night. A detailed chronology of trapping and video surveillance events is given in Appendix 1.

Results

Video surveillance at the site ceased on November 21st, after the male badger (D) had been released for the third time. However, RDS staff continued to periodically inspect both artificial sett locations and the affected properties during daylight hours for signs of badger activity. Through January to mid February 2004 the absence of any signs of activity suggested that no badgers were using the artificial setts. The location and activities of the released animals during this period are not known. During this period foxes became resident in both artificial setts, although by late February and during March it became apparent on the basis of field signs that badgers were using both artificial setts.

Following a site inspection in mid March 2004, field signs indicated that a badger was present within the excluded area. Night viewing confirmed that this was the male badger (D). This animal had regained access to a section of tunnel in the original main sett that had not been blocked with expanding foam. The animal had entered via a gate that had been left open by a resident. This was confirmed by the presence of fresh excavations and footprints. A one-way gate was incorporated into the proofed boundary and the badger was encouraged to use it by providing food on both sides. After 13 nights, a period during which these measures were regularly checked, the badger was again excluded.

Monitoring by regular site inspections has since continued. During this period a single badger gained access to one of the gardens but failed in an attempt to enter the area of the blocked sett. This problem was resolved by adding a baffle to the section of wall over which it appeared that the animal had climbed. The site is due to be more permanently proofed in the near future. Apart from this incident, the relevant areas have remained secure with no evidence of entry by badgers or attempts to dig back into the area surrounding the main sett. The artificial setts continued to be well used, as observed at the last visit made at the beginning of June 2004, although no evidence of cub activity was detected at either. Three of the four previously excluded animals (B, C & D) have been observed using the artificial main sett during periodic video surveillance carried out by RDS, although hair re-growth is now making individual identification of fur clips difficult. In addition up to three unmarked badgers have also been observed using the artificial setts. The RDS National Wildlife Management Team carried out further video surveillance at both artificial setts during the summer of 2004 (see Appendix 2).

5. Discussion

Badgers are opportunistic and adaptable, and the behaviour of the adult male D illustrates how some individuals can be extremely persistent and resourceful in retaining access to their sett. However, since the animal was last released no further incursions have occurred to date, suggesting that the badger-proofing is currently sufficient to prevent access, although it will require future maintenance to ensure that this continues to be the case.

The artificial setts were generally poorly used by excluded animals immediately following their release. It appears likely that they were able to find alternative local sites as most were subsequently recorded in the vicinity by video surveillance. However, in the longer-term both the artificial setts showed signs of occupancy and three of the four animals previously marked during the exclusion exercise have been observed using them.

Several unmarked badgers have also been observed using the artificial setts. Indeed, unmarked badger(s) were seen investigating and occupying the outlier artificial sett only shortly after the exclusion exercise took place. Unfortunately it is not possible to state whether the marked and unmarked animals belonged to the same social group, as no information was available on social organisation of the local badger population. In addition, badgers that were resident in the problem sett were able to vacate the area without being trapped. Hence, unmarked animals could have originated either from the problem sett, another sett belonging to the same social group, or that of a neighbouring social group.

6. Conclusion

Despite the relatively frequent use of exclusion and artificial sett provision to solve badger damage problems or accommodate site developments, their effects on badger behaviour have seldom been documented although anecdotal evidence suggests that badgers often do find alternative setts. The present study therefore provided valuable information on the behaviour of excluded badgers, and in particular their use of two artificial setts.

One monitoring exercise cannot by itself provide a generally applicable assessment of the behaviour of badgers towards artificial setts or of their potential as refuges for displaced badgers. However, monitoring of this case does provide further support for the ad-hoc evidence that at least in some circumstances excluded badgers do find alternative setts whether or not artificial setts are provided. In this particular case the provision of artificial setts did not appear to be crucial to the successful exclusion and short-term survival of the badgers.

This study has provided valuable information that together with that obtained from similar future operations may in due course allow an objective assessment of the potential of artificial setts to accommodate badgers excluded from 'natural' setts.

7. References & Acknowledgments

Acknowledgments

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References

Cheeseman, C. L. & Mallinson, P. J. (1979). Radio tracking in the study of bovine tuberculosis in badgers. In Amlaner Jr, C. J. & Macdonald, D. W. (eds). *A Handbook on Biotelemetry and radio tracking*. 649-656. Pergamon Press, Oxford and New York.

de Leeuw, A. N. S., Forrester, G., Spyvee, P. D., Brash, M. & Delahay, R. J. (2004). Experimental comparison of ketamine with a combination of ketamine, butorphanol and medetomidine for general anaesthesia of the Eurasian badger (*Meles meles* L.). *Veterinary Journal* 167, 186-193.

Neal, E. & Cheeseman, C. L. (1996). *Badgers*. T & A. D. Poyser Ltd, London.

Stewart, P.D & Macdonald, D.W. (1997). Age, sex and condition as predictors of moult, and the efficacy of a novel fur clip technique for individual marking of the European badger (*Meles meles*). *Journal of Zoology*, 235: 237–245.

Appendix 1.

Chronology of badger trapping and video surveillance events.

Date (for trapping this is the date on the morning traps were checked and for video surveillance this is the date on the evening when cameras were set)	Trapping Activity at Original Sett	Video Surveillance Main Artificial Sett	Video Surveillance Outlier Artificial Sett
Tuesday 23/9/03	2 adult females (A & B) & 1 cub female (C) caught. All clipped and released at main artificial sett that day.	A leaves sett and does not return.	Nothing seen.
Wednesday 24/9/03	Nothing caught.	C leaves sett and does not return.	Nothing seen.
Thursday 25/9/03	1 large male (D) caught, clipped and released at outlier artificial sett that day	Nothing seen.	D left the sett and did not return.
Friday 26/9/03	Nothing caught.	B seen in entrance hole & taking bedding.	Nothing seen.
Saturday 27/9/03	Nothing caught.	Nothing seen.	Nothing seen.
Sunday 28/9/03	Nothing caught.	B seen in entrance hole & taking bedding.	C passed behind sett.
Monday 29/9/03	Nothing caught.	B emerged briefly to feed.	Nothing seen.
Tuesday 30/9/03	Nothing caught.	B seen briefly at entrance hole.	Nothing seen.
Wednesday 1/10/03	Nothing caught.	B seen briefly at entrance hole.	Nothing seen.
Thursday 2/10/03	D re-caught at main sett. Released again at outlier artificial sett.	B fully emerged, stayed close to sett to feed.	D leaves sett and does not return.
Friday 3/10/03	No trapping.	Nothing seen.	Unmarked badger briefly investigated sett and left.
Saturday 4/10/03	No trapping.	Nothing seen.	A passed behind sett. Unmarked badger investigated and entered sett several times then left.
Video surveillance becomes periodic hereafter.			
Friday 10/10/03	No trapping.	No surveillance.	Nothing seen.
Saturday 11/10/03	No trapping.	Nothing seen.	Unmarked badger investigated and entered sett with bedding then left.
Sunday 12/10/03	No trapping.	B emerged briefly several times to take food back down.	C passed by, stopping briefly to feed and enter the sett but then left.

Appendix 1.

Monday 13/10/03	No trapping.	B emerged briefly several times to feed.	Nothing seen.
Tuesday 14/10/03	Nothing caught.	B emerged briefly several times to feed.	Nothing seen.
Wednesday 15/10/03	Nothing caught.	B emerged briefly several times to feed and take food back down.	Nothing seen.
Thursday 16/10/03	Nothing caught.	B emerged several times to feed.	A passed behind sett. Unmarked badger arrived, entered the sett once then left.
Friday 17/10/03	Nothing caught.	B emerged several times to feed and take food back down.	C came to sett, entered briefly but didn't stay.
Saturday 18/10/03	Nothing caught.	No filming.	No filming.
Sunday 19/10/03	Nothing caught.	B emerged several times to feed and take food back down.	Nothing seen.
Video camera moved from main artificial sett to original sett.			
Monday 20/10/03	Nothing caught. Video surveillance showed D had gained access back into the original sett.	No filming.	C came to sett, drank from bowl and left.
Tuesday 21/10/03	D entered a trap to feed but it did not spring.	No filming.	Unmarked badger emerged from sett and left.
Wednesday 22/10/03	D observed near a trap.	No filming.	Unmarked badger emerged from sett and left.
Thursday 23/10/03	D entered a trap to feed but it did not spring.	No filming.	No badgers seen, but two foxes very briefly entered the sett then left.
Friday 24/10/03	D cautiously took bait from unset traps.	No filming.	Unmarked badger emerged from sett and left.
Saturday 25/10/03	No trapping or filming.	No filming.	No filming.
Sunday 26/10/03	No trapping or filming.	No filming.	No filming.
Monday 27/10/03	No trapping. Nothing seen.	No filming.	Nothing seen.
Tuesday 28/10/03	Nothing caught. D observed on film.	No filming.	Nothing seen.
Wednesday 29/10/03	Nothing caught. D observed on film.	No filming.	Unmarked badger entered the sett briefly then left.
Thursday 30/10/03	D recaptured. Being held off-site pending closure of sett.	No filming	No filming

Appendix 1.

Video camera from outlier artificial sett also moved to original sett.			
Friday 31/10/03	Nothing seen.	No filming.	No filming.
Saturday 1/11/03	Nothing seen.	No filming.	No filming.
Sunday 2/11/03	Nothing seen.	No filming.	No filming.
Monday 3/11/03	Nothing seen.	No filming.	No filming.
Tuesday 4/11/03	Nothing seen.	No filming.	No filming.
Wednesday 5/11/03	Nothing seen.	No filming.	No filming.
Thursday 6/11/03	Nothing seen.	No filming.	No filming.
Friday 7/11/03	Nothing seen.	No filming.	No filming.
Saturday 8/11/03	Nothing seen.	No filming.	No filming.
Sunday 9/11/03	Nothing seen.	No filming.	No filming.
Monday 10/11/03	Nothing seen.	No filming.	No filming.
Tuesday 11/11/03	Nothing seen.	No filming.	No filming.
Wednesday 12/11/03	Nothing seen.	No filming.	No filming.
Friday 14/11/03	Nothing seen.	No filming.	No filming.
Video cameras returned to artificial setts			
Monday 17/11/03	The original main sett had been fully filled in by today.	D released at sett at 16.30, but not observed emerging all night.	Nothing seen.
Tuesday 18/11/03		Nothing seen.	Nothing seen.
Wednesday 19/11/03	Nothing seen.	Nothing seen.	No filming.
Thursday 20/11/03	Nothing seen.		No filming.
Friday 21/11/03	Nothing seen.	D emerged from sett and left.	No filming.

Appendix 2.

Final Phase – Monitoring and other action

Introduction

This report covers the period July–November 2004. During this time the Defra National Wildlife Management Team continued to monitor the progress of the exercise that involved establishing artificial setts to accommodate badgers removed from the problem areas, and proofing the vulnerable properties.

Telephone contact was maintained with the residents involved and at regular site visits visual inspections of the gardens protected by the perimeter proofing and the properties containing the two artificial sett sites were undertaken. Video surveillance equipment was used on several occasions at both setts in order to record the level of badger activity and sett use and obtain other relevant information.

Where necessary, measures were taken to ensure that the integrity of the barriers and other exclusion methods were maintained. In addition, vegetation growth was controlled within the gardens where it might otherwise encourage animals to enter these areas and make inspection of the previously blocked setts and vulnerable sections more difficult.

Monitoring Summary

1. Protected Gardens

Regular visits were made, normally once or twice a month, to check for evidence of badgers regaining access to the protected area, to inspect the proofing measures and to assess use of the artificial setts. When appropriate these were combined with the servicing and operation of the video surveillance equipment.

The gardens in which the problem sett was located, were inspected for signs of badger excavations. In response to the re-growth of vegetation in these areas, an approved herbicide was applied using a knapsack sprayer.

At each visit the perimeter fences, gates and other structures that had been proofed to exclude badgers were checked, and repairs were made where necessary. Residents were reminded of the need to keep gates securely shut and to report any evidence of badgers attempting to breach the boundaries.

Appendix 2.

Throughout this 5-month monitoring period badgers remained excluded from the protected gardens, although foxes continued to visit. On several occasions foxes sought unsuccessfully to dig into entrances that had been blocked with foam. Blocking with rubble and soil discouraged these attempts. Where necessary the chemical repellent 'Renardine' was used to assist in deterring this activity. Some action had been taken by the householders to reinstate the gardens and further work to clear and consolidate damaged areas is likely to further discourage badgers in the longer term.

During the visits contact was maintained with the residents either affected by the problem or who had been involved in some way with the measures that were taken. No reports were received of badgers causing problems to these properties, or of damage to neighbouring gardens or building structures.

2. The Artificial Setts

At each visit the setts and surrounding areas were inspected. The sett entrances were checked for signs of use by badgers, and the garden and perimeter proofed boundaries were inspected for evidence of digging, or other damage. Access routes used by the badgers were also checked to make sure they were not obstructed.

Householders who had provided locations for the setts were consulted to obtain information on the activities of any badgers using these areas and to provide advice as required. These visits involved checking the video equipment and viewing the recordings made during the previous night. The summary at the end of this report provides further details on the presence and movement of badgers.

2.1 Main Artificial Sett

During the monitoring period the artificial sett remained in continuous but variable use with the exception of a 2–3 week period at the beginning of September. This coincided with a close-boarded fence being erected above the sett on a neighbouring property and it appears likely that this work temporarily disturbed the badgers. The blocking of this boundary also had the effect of diverting badgers to a point further along the rear of the gardens. The main access route continued to be the gap in the fence adjacent to the sett. The neighbours currently encourage the badgers to use their garden but problems would arise if they changed their attitude or the property was sold to residents who were not prepared to tolerate such movements. If the hole was blocked this would have a significant adverse impact on access to and from the sett.

The residents continued to feed badgers on a regular basis with food being placed close to the sett. This also had the effect of attracting foxes to the garden.

Appendix 2.

The electric fencing used to deter badgers from seeking to dig under the boundary proofing was removed in July and subsequent monitoring confirmed that no attempts were made to breach these barriers. Minor diggings occurred at several locations within the garden but blocking with soil and laying wire mesh netting over the disturbed areas successfully dealt with these. Badgers sought to dig into the sett below one of the entrances but appeared to give up this attempt due to the difficulty of excavating tunnels in the chalk located just below the ground surface at this point.

2.2 Outlier Artificial Sett

Signs of badgers were regularly observed in the garden and the sett was in use throughout the monitoring period. The residents regularly put out food for the badgers but this also attracted a number of foxes that often consumed most of the food before the badgers emerged.

Badgers excavated a significant quantity of chalk spoil from the single entrance but this was likely to have been the material provided for them at the time of construction. There was no evidence that they had extended the sett. Throughout this monitoring period there were no attempts by badgers to dig further setts within the garden.

The animals continued to use access routes in the corner of the garden beyond the sett and there were no reports of damage or other problems with regard to neighbouring properties.

3. Summary

Site visits and video surveillance confirmed that throughout this period badgers were using both artificial setts with the exception of a short time when they appeared reluctant to use the main sett whilst fencing work was undertaken nearby. Identification of individual badger furclips became increasingly difficult owing to moulting and regrowth of hair. Nevertheless, the remnants of furclips were sufficiently visible to positively identify some animals using the artificial setts as those that had been excluded from the problem sett. However, it was also clear that several badgers that were not excluded (i.e. were from other setts) were also using the artificial setts.

No damage or other problems were reported by the residents who had provided the artificial sett locations or by their neighbours. It appears likely that the excluded badgers are currently also using another sett in the locality.

The proofing measures surrounding the protected gardens continued to successfully exclude badgers from these areas although vigilance will be required to maintain this situation.

Future contact with the relevant parties will continue in combination with occasional site visits to assess the long-term success of this exercise.

Summary of video surveillance June – October 2004

NB. Where reference is made to an unidentified or unmarked badger these are animals that could not be positively confirmed as one of the original group that were fur clipped.

Figure 1. Site map showing domestic residences and badger sett entrances



Appendix 2.

Date	Main Artificial Sett	Outlier Artificial Sett
Monday 14/06/04	2 unidentified adult badgers seen at sett	–
Tuesday 15/06/04	D removed bedding from sett and then fed. B left sett and returned.	–
Wednesday 16/06/04	D feeding at sett and moving bedding. 2 unidentified / unmarked badgers in area; one left sett and one feeding. Both returned to sett.	–
Thursday 17/06/04	D exited from sett moved bedding and fed. Left area and returned entering sett. 2 unidentified badgers seen in area and entered sett.	–
Tuesday 22/06/04	–	Unidentified badger left and re-entered sett. Seen feeding
Wednesday 23/06/04	–	2 unmarked badgers left sett, active in area and then left the garden.
Thursday 24/06/04	–	D exited from sett, fed and left area.
Tuesday 29/06/04	B left sett. Unmarked badger entered area. D left sett and fed.	–
Wednesday 30/06/04	D and unmarked badger exited sett and both fed. A further unidentified badger into area. All badgers entered sett.	–
Wednesday 01/09/04	2 unmarked badgers exited sett. D entered area and dragged bedding into the sett. A further unmarked badger appeared and all 3 entered sett.	–
Friday 03/09/04	No sightings	–
Monday 06/09/04	No sightings	–
Thursday 09/09/04	No sightings	–
Thursday 16/09/04	–	2 unmarked badgers exited sett and bedding dragged into sett. B entered the area.
Friday 17/09/04	–	2 unmarked badgers seen in area and entered sett. Joined by a further unmarked badger which then left the garden.
Thursday 23/09/04	2 unmarked badgers exited sett and fed. Re-entered sett.	–
Tuesday 28/09/04	An unmarked badger exited sett and re-entered sett.	–
Thursday 07/10/04	An unmarked badger exited sett and left the area.	–

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