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Lesser Horseshoe Roost Monitoring

Northern Quarter

Cinderford

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2017

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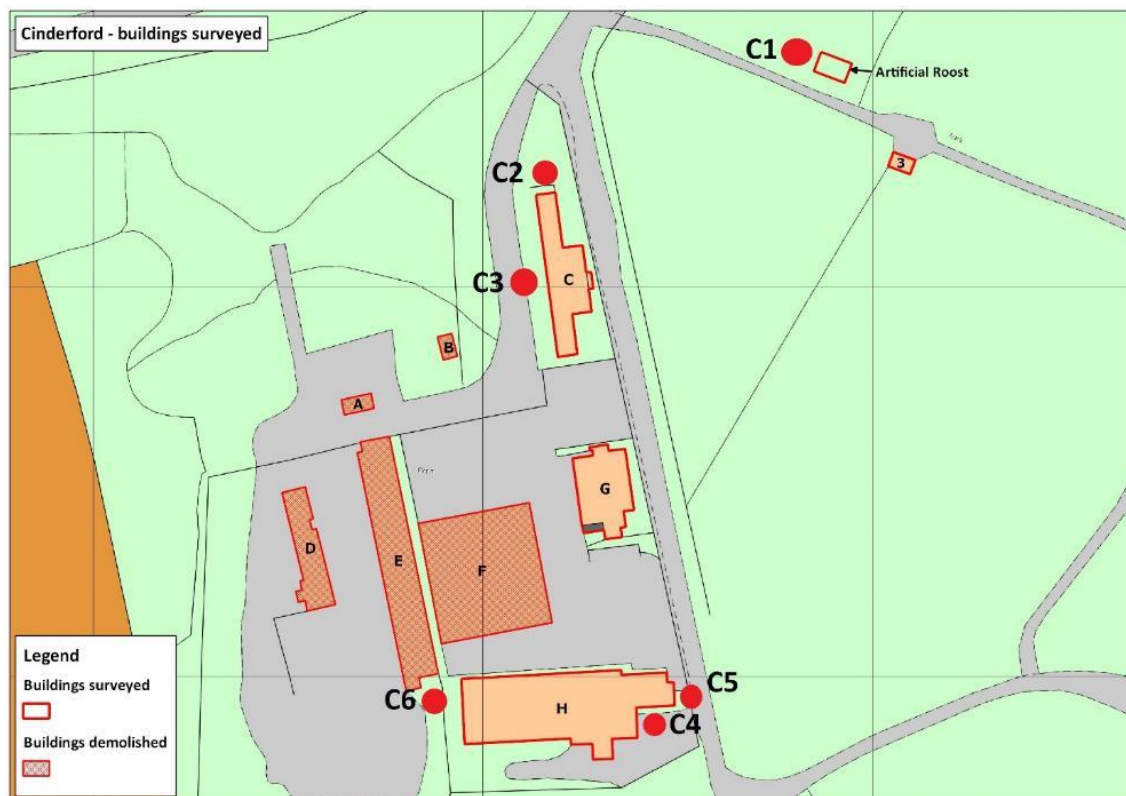
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1 Introduction

- 1.1 AEWCLtd. was commissioned by the Forest of Dean Council to conduct monthly monitoring surveys of all buildings present at the Northern Quarter site from January 2017 to through to December 2017.
- 1.2 These surveys are a continuation of monthly surveys conducted at the site by AEWCLtd. from July 2013 and by other consultancies prior to this.
- 1.3 This report provides the results of the surveys conducted to date at the site by AEWCLtd since January 2017 to December 2017. The results of this monitoring are intended to be used to inform for any proposed development of the site and to be used with licence applications for this site.

2 Method

- 2.1 There are 5 structures that are surveyed each month by licenced ecologists, the bath house, canteen building, office building, woodland shed and artificial roost. The same survey methodology has been used as was used by AEWCLtd surveys from July 2013 to ensuring consistency of data gathered.
- 2.2 Surveys are conducted once each month with all buildings surveyed on the same day to ensure accuracy of surveys and no bats are moving between buildings being re-counted.
- 2.3 Each month internal surveys are conducted on the bath house, canteen building, office building and woodland shed, the Artificial roost is only surveyed internally during colder months from October to April due to the high levels of disturbance this would cause to the main maternity roost colony during summer months and inaccuracy of using this survey method with high numbers of active bats present.
- 2.4 During summer months from April to October emergence surveys were conducted using night vision cameras and IR illuminators to enable the visual identification of bats emerging from the building in low light and dark conditions which are otherwise impossible to count the bats present.
- 2.5 Following on from years of data collected at the Bath House and Office building, where repeated low counts were identified using these buildings, these two buildings were counted during daytime internal surveys, and the artificial roost was counted by emergence survey. If numbers were identified to increase in the office or bath house and an internal survey could not get an accurate count then these would also have emergence surveys conducted.



Plan 1 – showing 6 camera locations (C-office building, G-canteen building, H-Bath House, 3-woodland shed)

Lesser horseshoe emergence counts.

- C1- Camera located on artificial roost emergence point.
- C2- Camera located on the North end of office (Building C) covering roller doors.
- C3- Camera located western side of office (Building C) covering dormer entrance.
- C4- Camera located covering the southern emergence point in the south-eastern area of the Bath House, bath house emergence point A (Building H).
- C5- Camera located covering the eastern emergence point in the south-eastern area of the Bath House, bath house emergence point B (Building H).
- C6- Camera located covering the western emergence points of the bath house (building H) bath house emergence points C + D.

NB – emergence points C4, C5 and C6 were not conducted in 2016

3 Results

- 3.1 During 2017 there have been a number of changes at the artificial roost in both repairing heaters, and roost modification creating additional access point for the larger colony and to provide an alternate access to reduce risk to the colony from the single access available. The counts have been variable, some months recording the highest recorded, by a notable number, and other months lower than the previous year. Trapping surveys at the roost sites in 2013 did identify that there were unusually high proportions of male bats present using the roost sites, and how the males may move between this and other sites is unknown, however these surveys conducted in 2017 cannot identify the sex of bats present to identify if this has continued into recent years, or of the proportion of the sexes changes throughout the year.

Monthly observations

January 13th 2017 – during this survey it was noted that numbers were notably lower than usual, and were the lowest recorded since surveys began in 2013.

It is notable that the heating had broken and been off for the first time that winter.

No bats were found in the Canteen or the woodland shed.

There were two bats present in the Office building, these were both Juveniles in the ridge and were both identified as dead individuals.

The Artificial roost had only 13 bats present, the lowest ever recorded.

February 12th 2017 – Numbers were still very low during this survey, and a new record low ever recorded since 2013.

It is important to note that the heating was still off, and during this survey, works were conducted to install a new heater and create a new access into the north-eastern corner, although not yet opened. At the end of works the bats were still present.

No bats were found in the Canteen or the woodland shed. The two dead bats were present in the Office and one Brown long-eared.

The Artificial roost had only 12 bats present, the lowest ever recorded.

March 13th 2017 – Numbers had notably increased inside the artificial roost, up to 72. The heater was found to not be as warm as it should be and the thermostat was increased.

Low numbers of bats were present in other buildings, with 3 in the office, 3 in the bath house and 2 in the canteen.

The new access was not open as there was an issue with the internal door that needed repairing.

April 13th 2017 - Numbers had increased again in the artificial roost to 178. This included at least three with rings on. At the end of this survey the new access for bats on the ground floor was opened up.

The office had 13 and one had a ring. All bats were in the drying room. The bath house had 4. One in west cupboard, 2 in main cupboard and one in east cupboard.

The canteen had one LHB in electrics room and one Natterers in hole in roof.

May 16th 2017 – the Artificial roost had good numbers of bats present and these were mostly in the hot box, showing it was working well. A total of 25 bats emerged from the new emergence point. This survey had 343 LHB using the artificial roost, the highest ever recorded in May by 90 bats since 267 were present in 2014.

The office had 11, all but one in the roof. The canteen had one in the electrics room and the bath house had 2, one in the western and main cupboard.

June 12th 2017 – The Artificial roost again had good numbers of bats present. An internal survey was not conducted as there were high numbers present and bats will be pregnant, possibly very given bats had already been identified breeding early in many places. In total 462 bats were found present, the highest recorded in June. Additionally, a total of 197 bats were found to use the new access point showing this was successful.

The office had a high number of bats present, in a cluster in the main roof with 38 in total in the building. The canteen had on natterers inside the crevices around pipework in the main roof. The bath house had only 2 bats present, one in toilet block and one in main cupboard.

July 12th 2017 – The artificial roost had a good population present with 400 bats emerge and 7 adults inside at the end of the survey. This was the first juvenile pup count and there were 124 pups present inside the roost at the end of the survey.

The office again had a higher number of bats present, with 38 again, which included 2 pups on mums. The canteen had one LHB in the electrics room and the bath house had an increased number of bats typical with the weather warming with 14 adults and 3 pups.

19th August 2017 – this month commenced the monthly surveys of the two new artificial roosts Birch wood and Nelson.

Birch wood – 4 common pips were identified present in the southern bat box, none in the eastern one. The rear room had no bats, but the largest concentration of droppings to date with over 100 fresh droppings present. Inside one LHB was present in torpor in the end room and one active upstairs, there were a couple of hundred droppings present at various locations including inside hot boxes.

Nelson – no bats in the east bat box, and Hornet Nest present in west bat box. No bats inside but a couple of scattered droppings.

The artificial roost had another high number of bats present, 547, although this was not the highest recorded to date. At the end of the survey only 15 bats were present inside the building, showing that all juveniles were now volant.

The office has a similar number of bats to previous months, bats were not clustered together as warmer weather but mostly scattered along the main roof. One pup was still on mum. The canteen had one Natterers in gaps around the pipework in the main roof. The bath house had again a low number of 20, including one pup on mum. Additionally, one BLEB was present in the electrics store room.

14th September 2017 –

Birch wood – 6 common pips were identified present in the southern bat box, one in the eastern one. The rear room had no bats present. Inside two LHB were present in torpor, both downstairs one was in a LHB box. A tawny owl was noticed fly away from the northern emergence point from the building.

Nelson – no bats in the east bat box, and Hornet Nest present in west bat box. No bats inside.

The artificial roost had a notably reduced count of 317 bats, this was notably lower than the previous September count of 412, approximately a 25% reduction.

The office has reduced back to its no summer low number of bats, one BLEB was present within the main roof and only 5 LHB.

The canteen had one Natterers in gaps around the pipework in the main roof and one LHB in the electrics room. The bath house had again a low number of only 6 LHB, including one in main entrance hall, one in mail toilet block, and 4 in main cupboard.

16th October 2017

Birch wood – 2 common pips were identified present in the southern bat box, none in the eastern one. The rear room had the first recorded LHB present roosting in a LHB box. Inside two LHB were present in torpor, both downstairs in the LHB boxes. Nothing found upstairs or in basement.

Nelson – no bats in the east bat box, the Hornet Nest is now dead. No bats inside.

The artificial roost obviously still had a high number of bats present, and although not planned an emergence survey had to be conducted to achieve a population count. The count identified an unexpected increase on the previous months count with 346 bats present, the highest recorded on an October count, indicating the previous month may not indicate any notable trend.

The office had 10 bats present, higher than the previous month, but still very low number, but most bats in torpor in the drying room.

The canteen had one LHB in the electrics room. The bath house had again a low number of only 5 LHB, including one in west toilet block, one in main cupboard, two in east corridor / hall and one in east toilet.

17th November 2017

Birch wood – only 1 bat was identified in the bat boxes, one Common pip in the eastern box. No LHB were found in the basement or ground floor, and one was found in the roof void at the very northern end.

Nelson –No bats identified inside the building. The dead hornets' nest was cleaned out of the bat box.

The artificial roost had again a high number of bats present with 290, notably higher than any previous November count. Possibly due to the mild weather.

The office had four LHB present, with no bats identified in the canteen, woodland shed or bath house.

14th December 2017

Weather conditions had changed notably recently with very cold weather and heavy snow over the last week.

Birch wood – no bats identified present. Heater was cold.

Nelson –No bats identified present, heater was cold.

No bats were identified in the Bath house, Canteen, Office or woodland shed.

The artificial roost had notably different conditions, the water table was very high causing up to 2 inches of flooding in some areas downstairs. No bats were found in the main areas downstairs, which was a first recorded, however, 7 LHB were present under the water tank cover. 13 bats were found in the roof space, mostly in the area behind the hot box with 10 present.

- 3.2 The results of the internal counts are shown in table 1, note that the Artificial roost was not internally counted on all months due to the very high number of bats present during this time which would be very disturbing, as well as the inaccuracy of this survey method with such high numbers of active bats present, therefore for these months there is no total. The emergence survey results are shown in table 2.

Table 1 – 2016 internal counts

2017 - internal counts - all speceis

| Building | Area | January 13th | February 8th | March 13th | April 13th | May 16th | June 12th | July 12th | August 19th | September 14th | October 16th | November 15th | December 14th |
|------------------|-------------------|-----------------|-----------------|---------------|---------------|-------------|--------------|----------------|------------------------|-------------------|-----------------|------------------|------------------|
| Artificial roost | small room+stairs | 3 | 3 | 18 | 6 | NA | NA | NA | NA | NA | 29 | 10 | 0 |
| | large ground | 9 | 7 | 46 | 169 | NA | NA | NA | NA | NA | 68 | 68 | 7 |
| | upstairs | 1 | 2 | 8 | 3 | NA | NA | NA | NA | NA | NA | 212 | 13 |
| Shed opposite | Artificial roost | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Office | main roof | 0 | 0 | 0 | 0 | 9 | 34 | 15 (+1pup) | 34 (+1pup) | 1bleb | 1 | 2 | 0 |
| | second roof | 0 | 0 | 2 | 0 | 1 | 2 | 20(+1pup) | 7 | 3 | 3 | 1 | 0 |
| | storage room | 0 | 0 | 1 | 13 | 1 | 2 | 1 | 0 | 2 | 6 | 1 | 0 |
| Canteen | | 0 | 0 | 2 | 1 + M.n | 1 | M.n | 1 | M.n | 1+1Mn | 1 | 0 | 0 |
| Bath house | | 1 | 1 + BLEB | 3 | 4 | 2 | 2 | 14 (+3pups) | 19 (+1pup)+ BLEB | 6 | 5 | 0 | 0 |
| Total LHB | | 14 | 14 | 80 | 195 | 14 | 40 | 56 | 62 | 11 | 113 | 294 | 20 |

BLEB-Brown Long-eared bats, M.n – Natterers bat, Bat – unidentified species, pup – juvenile lesser horseshoe

- 3.3 During 2017 the emergence surveys were conducted from May to October, this was since October was notably mild and there were still a notable population present and could not be accurately counted during an internal inspection.
- 3.4 During 2017 emergence surveys were not conducted of the Bath House or office, the surveys during the previous years had only ever identified low numbers of bats present within the bath house and as such the internal counts were considered accurate, and more accurate to count the bats during the daytime than emergence surveys when not all emergence points were visible. If during internal inspections high numbers of bats were identified present, then an emergence survey would be conducted.
- 3.5 The total peak counts of Lesser Horseshoe bats using each building and the total for the site is shown in table 2. Generally, the number of bats present using the Northern United buildings is low, especially during the hibernation period where there is only the very odd individuals present. The bottom of table three shows the percentages of the number of bats identified each month using the two main buildings on the Northern United site, the Office and the Bath House. The average occupation of the proportion of bats using the Northern united buildings is 5.9%.

Table 2

Total Lesser horseshoe only counts for each building 2017 (inc pups)

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---------------------|---------|----------|-------|-------|------|------|------|--------|-----------|---------|----------|----------|
| Artificial roost | 13 | 12 | 72 | 178 | 343 | 462 | 531 | 547 | 317 | 346 | 290 | 20 |
| Shed oposite | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Office | 0 | 0 | 3 | 13 | 11 | 38 | 38 | 42 | 5 | 10 | 4 | 0 |
| Canteen | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | |
| Bath House | 1 | 1 | 3 | 4 | 2 | 2 | 17 | 20 | 6 | 5 | 0 | 0 |
| Peak Total | 14 | 13 | 80 | 196 | 357 | 502 | 587 | 609 | 329 | 362 | 294 | 20 |
| % LHB in Bath House | 7.1% | 7.7% | 3.8% | 2.0% | 0.6% | 0.4% | 2.9% | 3.3% | 1.8% | 1.4% | 0.0% | 0.0% |
| % LHB in Office | 0.0% | 0.0% | 3.8% | 6.6% | 3.1% | 7.6% | 6.5% | 6.9% | 1.5% | 2.8% | 1.4% | 0.0% |

Table 3 – Total number of bats found in Birch Wood and Nelson Roosts

| Building | Area | January 13th | February 8th | March 13th | April 13th | May 16th | June 12th | July 12th | August 19th | September 14th | October 16th | November 15th | December |
|------------|--------------|-----------------|-----------------|---------------|---------------|-------------|--------------|--------------|----------------|-------------------|-----------------|------------------|----------|
| Birch Wood | Loft | NA | 0 | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| | Ground Floor | NA | 0 | 0 | NA | NA | 0 | 1 | 1 | 2 | 2 | 0 | 0 |
| | Basement | NA | 0 | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Small room | NA | 0 | 0 | NA | NA | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| | South Box | NA | 3xCp | 0 | NA | NA | 0 | 1XCp | 4XCp | 6XCp | 2XCp | 0 | 0 |
| | East Box | NA | 1xCp | 0 | NA | NA | 0 | 1xCp | 0 | 1Xcp | 0 | 1XCp | 0 |
| Nelson | Loft | NA | 0 | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Ground Floor | NA | 0 | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Bat Boxes | NA | 0 | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

4 Constraints/Limitations

- 4.1 The bat numbers on the site fluctuate notably, not only throughout the seasons but can change notably from one month to the next, and, it is believed from one day to the next. Each survey only acts as a snapshot in time and gives an indication of the numbers of bats using the site, however, numbers present may fluctuate daily with bats moving to, or between, other sites.
- 4.2 Changes were made to the Artificial roost during 2017, including the heater which stopped working was replaced, and temperature changed, and a new access point was created, these may create disturbance, the level of which is unknown and could affect bat numbers.

5 Discussion

- 5.1 The counts in summer of 2017 are again high with a peak of 609 individuals in August, however, the population did not reach the peak of last year when 614 were counted and patterns and numbers present has been different this year.
- 5.2 The winter counts were the lowest ever recorded with a low of 13 bats present in February 2017 compared to 55 the previous year. It is believed that this low count is most likely due to the failure of the heater present within the artificial roost, demonstrating how this is useful to bats throughout the winter as well when they may use it periodically when rousing from hibernation or periodic bouts of winter foraging.
- 5.3 Following heater repair, and subsequent increase of temperature output numbers returned quickly during March, April and May, with a high count of 357 in May, notably higher than previously recorded during a May survey, 343 in the Artificial roost, 47% higher than the previous year.
- 5.4 June and July both also had high counts of bats present, with a total of 502 and 587 respectively. However, the July count includes a now present population of Pups, with 126 counted, demonstrating that there had actually been a notable reduction in the number of adults present between these months.
- 5.5 The total adult counts in June was 502, of which 462 were using the artificial roost. However, in July the total population of adults on the site was 458, of which 407 were in the artificial roost showing that the number of adults on the site had dropped during this period.
- 5.6 September saw the population drop quickly from over 600 to 329. It was noted that during 2017 bats breed early and bats may have left the breeding site to swarming/mating sites earlier, however the count increased during October to 362 and stayed high in November with 294, both higher than previously recorded and

may be a result of bats taking advantage of the heater to continue to forage later into the year with the mild autumn conditions.

- 6.1 The number of bats using all the Northern United buildings has remained notably low over the 2017 season. Although the peak was 62 bats in August this was only 10% of the colony and the highest proportion recorded throughout the year.
- 6.2 While a high proportion of bats were found to be using the bath house in January and February, this was simply due to the low number of bats found in the site, and , this consisted of one solitary individual.
- 6.3 The use of the bath house has remained very low, with more than 10 bats being identified present on only two occasions, with a peak of 20 individual in August. The average occupancy is 5.5 bats representing 2.58% of the colony. The bath house has continued to be used by other species with Brown long-eared identified during two surveys, however the Bechstein's bat was not identified during 2017.
- 6.4 The office is used by a higher number of bats, and has a recorded a peak of 42, representing 6.9% of the colony in August 2017, fewer than the previous year. Proportionally the number of bats using the building isn't high with an average of 13.6 representing 3.3% of the colony.
- 6.5 The canteen and office building have regularly been identified as being used by other species, with a natterers bat and Brown long eared identified present.
- 6.6 Surveys of the Birch Wood and Nelson new artificial roosts were conducted in February, March and June onwards. These roosts are still very new and considered stabilising with modifications being made to improve conditions and monitoring ongoing.
- 6.7 The surveys have identified that the Birch wood site is being used, there are droppings found in a number of locations, predominately within the loft void areas, including inside hot boxes and incubator, as well as on the ground floor and a low number of droppings in the basement.
- 6.8 To date the Birch wood has identified a peak of 7 Pipistrelle bats using the bat boxes, and 3 LHB present during October.
- 6.9 The Nelson roost has remained very damp and less suitable, no bats have been identified present inside the building and as the bat box was colonised by hornets during the summer of 2017 this was not used by bats.