ECOLOGICAL SURVEY

Small Mammal Survey at Sunnybank Nature Reserve, Sheffield
22nd to 25th September 2012

Volunteers examining the catch (Photo Julie Riley)

September 2012

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1 INTRODUCTION

1.1 Site

Sunnybank is situated to the south west of Sheffield City Centre (Grid Reference SK 343 863), and covers an area of 0.8 ha. It is a small inner city reserve, located in the densely populated area of Broomhall, just a short distance from the city centre. Pedestrians and cyclists use the site regularly as a through route from/to Ecclesall Road.

The areas of Broomhall to the north and west of the site are characterised by the significant number of mature trees (150yrs+) present in private gardens and formal walkways, giving the area an open canopied forested appearance. There are three main habitat types on the reserve: secondary woodland, herb-rich grassland and a pond.

1.2 Aims of study

A small mammal survey was carried out at Sunnybank, with specially-designed Longworth traps being placed across the site. The survey aimed to give baseline information about the small mammals using the site, so traps were to be placed across the entire site, covering all habitat areas. However, the annual meadow cut had taken place the previous week, and there were also security considerations around hiding the traps well in a high-traffic area. Therefore, traps were placed only in the scrub and woodland areas, or hidden at the edge of more open areas such as the meadows and pond.

In order to give the mammals time to become familiar with the presence of the Longworth traps, and to maximise capture rates, the traps were set on a Saturday evening and then checked morning and evening over two nights, giving a total of 5 checks. 10 traps were across the site, with 9 being set on the Saturday and one additional trap set on Sunday morning.

2 METHODOLOGY

2.1 Field survey

The survey was carried out using Longworth mammal traps, using Natural England's general licence, and followed the Mammal Society's best practice guidance as laid out in the booklet ***Live Trapping Small Mammals: A Practical Guide*** by J. Gurnell and J.R. Flowerdew (London: Mammal Society, 1990). The surveyors found the short Mammal Society videos available on YouTube very helpful, both in viewing how to set the traps, and in how to identify the animals caught.

Longworth traps are made of aluminium and are in two parts; a tunnel with a trap mechanism and locking door, and a nest box which is filled with nesting material (hay, shredded paper) and bait (dried mouse food, fresh chopped apple for moisture, and live casters to feed any shrews that may be trapped).

Due to the small size of the site, and the need to conceal them well from members of the public, only 10 traps were used. These were placed across the site as follows:

Traps 1, 3, 4 and 7 were located in the woodland strips/patches present on the site, usually in the dense ivy ground cover and/or adjacent edge features such as woodpiles and fencing where possible, to take advantage of small mammals' preference for travelling along edges.

Traps 5 and 9 were placed under hedges growing against fences/walls on the outside edges of the site, immediately adjacent to footpaths, to see if mammals were using the hedges to travel.

Traps 2, 6 and 10 were placed in areas of mainly bramble scrub as close to the edge of open areas as possible, trap 2 was adjacent to an open scrubby area, and traps 6 and 10 were adjacent to the meadow areas.

Trap 8 was placed next to the pond to see if this would be attractive to mammals.

The very small size of the site meant that in practice, it was difficult to place traps in different habitat areas, especially as we were unable to place traps in the central sections – the wildflower meadows having been recently cut.

The traps were pre-filled with bedding and dry bait and taken on-site at 17:30 pm on the 22nd September. Chopped apple and carrot and live casters were added on site. To ensure the traps could be easily found, their locations were marked with a cane and red tape hidden discreetly in the surrounding grasses or foliage, and their GPS position was recorded.

Each trap was positioned carefully at a downward angle to make sure water could not collect at the end of the nest box, and the tunnel entrance were level with the ground as small mammals do not like to climb up into holes. Each trap was covered with vegetation to minimise temperature variation. The traps were then set so that they would be triggered if an animal entered the nest box. All traps had been set by 19:00 pm, except Trap 10 which was set the

next morning (a gang of youths was present in the desired location that evening).

The traps were then checked morning and evening starting at 06:50 am on Sunday morning, i.e. every 12 hours – a total of 5 checks altogether. The last check was on Tuesday 25th September at 07:05 am, at which point the traps were dismantled and removed.

The photographs below show the habitats in which the traps were set up.


Trap 3


Trap 4

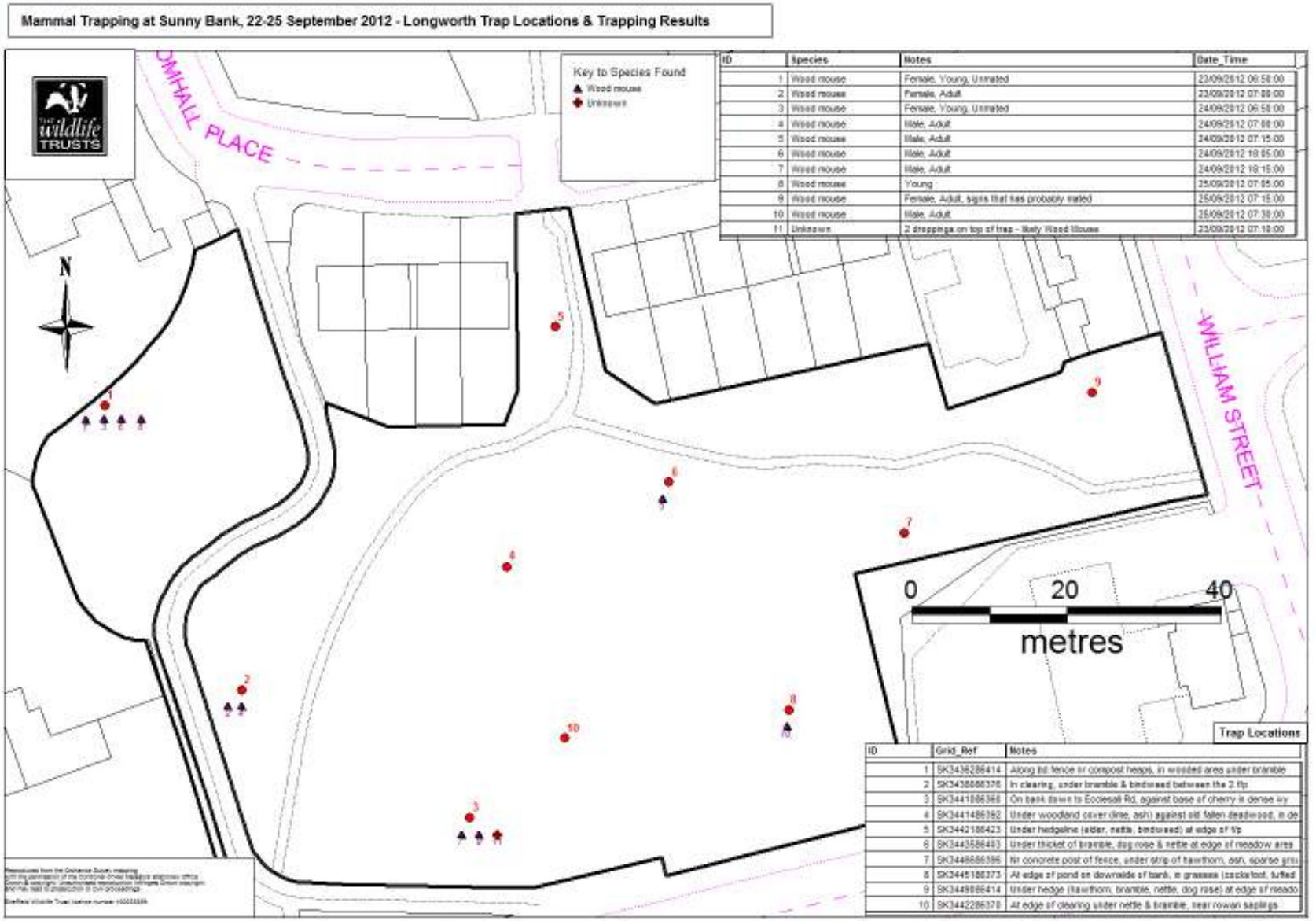

Trap 5


Trap 6

All photos by Martin Todd.

No photo taken of Trap 10.

3 Trap Locations & Results



ID	Species	Notes	Date_Time
1	Wood mouse	Female, Young, Unmated	23/09/2012 06:58:00
2	Wood mouse	Female, Adult	23/09/2012 07:00:00
3	Wood mouse	Female, Young, Unmated	24/09/2012 06:58:00
4	Wood mouse	Male, Adult	24/09/2012 07:00:00
5	Wood mouse	Male, Adult	24/09/2012 07:15:00
6	Wood mouse	Male, Adult	24/09/2012 18:05:00
7	Wood mouse	Male, Adult	24/09/2012 18:15:00
8	Wood mouse	Young	25/09/2012 07:05:00
9	Wood mouse	Female, Adult, signs that has probably mated	25/09/2012 07:15:00
10	Wood mouse	Male, Adult	25/09/2012 07:30:00
11	Unknown	2 droppings on top of trap - likely Wood Mouse	23/09/2012 07:10:00

ID	Grid_Ref	Notes
1	SK3436286414	Along bd fence nr compost heaps, in wooded area under bramble
2	SK3438886376	In clearing, under bramble & birdseed between the 2 ftp
3	SK3441886368	On bank down to Ecclesall Rd, against base of cherry in dense ivy
4	SK3441486382	Under woodland cover (lime, ash) against old fallen deadwood, in de
5	SK3442186423	Under hedgeline (alder, nettle, birdseed) at edge of ftp
6	SK3443586483	Under thicket of bramble, dog rose & nettle at edge of meadow area
7	SK3446886386	Nr concrete post of fence, under strip of hawthorn, ash, sparse gras
8	SK3445186373	At edge of pond on downside of bank, in grassess (cocksfoot, tufted
9	SK3449886414	Under hedge (hawthorn, bramble, nettle, dog rose) at edge of meado
10	SK3442286378	At edge of clearing under nettle & bramble, near rowan saplings

4 RESULTS

4.1 Field survey

	Date:	23/09/2012	23/09/2012	24/09/2012	24/09/2012	25/09/2012
	Weather:	Dry & cool (5°C)	Dry until 4pm then raining, cool	Wet, windy, 10°C	Wet & windy all day	Cool, rain overnight, dry a.m.
Trap #	**Location**	06:50 – 07:30	17:45 – 18:10	06:50 – 07:30	18:05 – 18:40	07:05 – 07:45
1	By boundary fence in woodland near compost heaps, in dead sticks/branches under dense ivy ground flora with bramble, elder, lime, dogwood, ash.	Wood mouse – female, young, unmated	X	Wood mouse – female, young, unmated	Wood mouse – male, adult	Wood mouse – very young (unable to sex)
2	In bramble and bindweed between two footpaths, in open area	Wood mouse – female, adult	X	Wood mouse – male, adult	X	Tripped by slugs
3	On bank down to Ecclesall Road, in dense ivy ground cover in wooded area, against the base of cherry tree near large patch of snowberry	2 droppings on top of trap – probably wood mouse	X	X	Wood mouse – male, adult	Wood mouse – female, adult, probably mated
4	Under wood cover (old lime, ash) next two old fallen deadwood logs, dense ivy ground cover	X	X	X	X	Tripped but empty, no signs
5	Under elder hedging along footpath, in patch of dense nettle and bindweed	X	X	X	X	X
6	Under thicket of bramble, dog rose & nettle at edge of meadow area, near young ash sapling	X	X	Wood mouse – male, adult	X	X

7	Along fence line next to concrete post under a strip of ash & hawthorn with sparse ground cover	X	X	X	X	X
8	At edge of pond on other side of bank, in grasses (cocksfoot, tufted hair grass) under hawthorn sapling	X	X	Tripped but empty – badly set?	X	Wood mouse – male, adult
9	Under hawthorn hedge at edge of cut meadow with bramble, nettle & dog rose	X	X	X	X	X
10	(Set 23/09 a.m.) At edge of clearing adjacent to woodland, under nettle and bramble, near rowan sapling	Set this round	X	X	X	X

On removal, the traps were double-checked to ensure that they were still in working order, which they were. The only other creatures caught in the traps were slugs.

The only species captured were wood mice. The wet and windy conditions meant that fewer photographs were taken than normal, however these photographs are illustrative of the wood mice caught during the survey.

Wood mouse (photo Julie Riley)

Sexing a wood mouse in a plastic bag (photo Julie Riley)

5 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion of results

This survey had a reasonably successful capture rate, despite the wet weather, with a total of 10 wood mice being caught in the traps. Other traps had signs of visitation or in several cases were tripped by large slugs.

To enable comparison with future surveys, or surveys at other sites, the capture rate can be expressed as **Captures per 100 Trap Rounds**. (This is often known as Trap Nights but as we kept the traps open continuously and checked morning and night, I have used rounds rather than nights.)

This is calculated as follows:

> X traps were set for Y rounds - 10 traps were set for 5 rounds (with 1 round removed as trap 10 wasn't set until Sun am) = **49 trap rounds**.
>
> Correcting for sprung traps and captures which means 'available' trap rounds were lost – 0.5(captures + sprung,empty traps) – 0.5(10 + 3) = 6.5. So 49 minus 6.5 = **43.5 corrected trap rounds** (CTN) – using Beauvais & Buskirk's 1999 formula**.**
>
> Index of abundance = $\frac{\text{Captures x 100}}{\text{CTN}}$

i.e. 1000/43.5 = **23 captures per 100 trap rounds.**

5.1.1 Wood Mouse

The wood mouse is found throughout the British Isles and is our most common and widespread wild rodent. It lives mainly in woodland and fields but can be found in a variety of habitats including scrub, gardens and allotments. They are predated on by tawny owls (and presumably other birds of prey such as kestrels), foxes and weasels.

Conservation measures are not considered necessary due to the abundance of this species. They have a very catholic diet, eating seeds, green plants, fruits, buds, caterpillars, worms and centipedes, blackberries and fungi.

At Sunnybank, wood mice were the only species captured, and were also the most likely source of droppings found on one trap that was visited but not triggered.

5.1.2 Location of catches

Traps were distributed fairly evenly across the site (apart from central meadow areas, as previously discussed). However the catches were almost all from the northwest to southern edge of the site, with only one catch towards the north of the site and nothing caught in the majority of the central, northern and eastern sections.

The most successful trap was Trap 1 near the boundary fence in the northwest corner of the site, with wood mice trapped 4 out of 5 times. The

second most successful site was Trap 3 with 2 confirmed catches plus signs on another occasion. Both of these traps were within good woodland cover.

Traps 2 and 6, which were both placed in bramble adjacent to open areas, were also successful in catching wood mice. The only other catch was from Trap 8 next to the pond.

5.2 Conclusions and recommendations

The capture rate of 23 per 100 trap rounds was reasonable, particularly bearing in mind the small size of the reserve, and shows that the habitat is suitable for small mammals, particularly wood mice.

The fact that catches were restricted to the northwest – west – south edge of the site is not surprising when one looks at the aerial photograph of the site; the flats and residential area towards the north and east are relatively devoid of cover, with open mown spaces and few trees. In contrast, the private housing to the northwest and west has relatively large garden areas and mature trees, providing much more of a continuous, covered habitat that is suitable for wood mice.

Aerial photo of Sunnybank NR (Google Maps)

Had the meadow area been unstrimmed, we would have been able to judge whether mammals utilised this area as well; a future survey could be undertaken before the annual meadow cut and specifically target the grassland areas (although security considerations will still be a concern).

Other small mammals such as bank voles and shrews were not found on site. This is likely to be because of the lack of suitable habitat, particularly the absence of rank grassland and large areas of scrub and dense woodland. It could also be because of the fragmented nature of the location, with a busy main road and built-up surroundings mitigating against easy transit of animals from place to place.

The length of the survey was adequate to get a good sampling rate and any future surveys should be done over multiple nights/mornings. There did not appear to be any requirement to lock the Longworth traps open for a night to allow mammals to become familiar with them. It would be interesting to conduct a survey in the spring, to see whether there is a marked difference in mammal numbers when compared to late autumn.

As small mammals are often popular with the public, a future small mammal survey could provide an opportunity to get local volunteers involved as part of community engagement work. Having a larger pool of local volunteers might also mean a survey could take place over a longer time period as there would be more resource available to check and reset traps. It could also mitigate against security concerns on this frequently used site.