



Hedgehog Improvement Areas (HIAs)

2018 Report

Dr Deborah Wright

The following report summarises the progress of the Solihull and Rugby HIAs in 2018 before they come to a close in 2019. There was a transition in staff during 2018 with the former Rugby Hedgehog Officer taking over as Senior Hedgehog Officer at the start of the year, and a new Hedgehog Officer being employed in April. Activity is broken down into distinct areas of work throughout the report.

1. Community Engagement

1.1. Events

The hedgehog team engaged with 2765 people face-to-face in 2018. Nineteen events were attended in Solihull and 28 in Rugby. People reached spanned from families, to ‘friends of’ groups, to older adult groups, to school children.

Events included talks, training and networking events and practical workshops and activities. Highlights included a ‘hedgehog heroes’ family craft workshop at Rugby Art Gallery and Museum attended by over 100 people, and two family fun days held in green spaces in Solihull, each attended by over 110 people.



Figure 1. A hedgehog ecology day workshop held in a village in Rugby. Copyright Warwickshire Wildlife Trust.

1.2. Education

Educational work comprised hedgehog training workshops, survey work and outside learning, including work with 'Change Makers' groups of children, educated about healthier living. The educational work was significantly scaled down across the HIAs in 2018, with primary schools having been visited and engaged with in previous years of the project. The majority of schools had also been issued with a footprint tunnel surveying kit which they could continue to use in later years and with multiple class groups.

The focus in 2018 was on engaging older children, with secondary schools having proven difficult to engage with throughout the project due to time and curriculum constraints. Targeted work was conducted with work experience students and 1st year degree students at Solihull College.



Figure 2. A hedgehog ecology day with work experience students. Copyright Warwickshire Wildlife Trust.

There was also a focus on creating legacy by training teachers in hedgehog conservation and ecology, which they can then continue to use and pass on into the future. A CPD event was held with lecturers at Solihull College and University, a talk was given to Scout leaders and a greener schools event attended for school and local authority delegates. This legacy training has been conducted alongside the development of a freely downloadable 'Educational Resources Pack' for schools, due to be released in 2019.

1.3. Community Groups

Adult community groups have been engaged and supported in hedgehog work throughout 2018. Engagement has included survey work, hedgehog house building, events and habitat improvement works to increase nesting habitat.

Areas of public green space were surveyed with the involvement and training of four local community groups in Rugby, including the *Friends of East Rugby Group (FERG)*, *Cawston Greenway*, *the Rugby Wildlife Group* and the *Cock Robin Wood work party*. A hedgehog house building workshop was also held with the *Newbold Quarry work party*. The work with FERG is a continuation since a partnership was formed alongside Rugby Borough Council (RBC) in 2016. Work has continued with this group on a hedge throughout 2018 that was planted on a local

recreation ground as part of the project in 2016, with gap planting and maintenance sessions that volunteers have been able to attend and learn new skills from.



Figure 3. Hedge maintenance with FERG. Copyright Warwickshire Wildlife Trust.

The Senior Hedgehog Officer has also been working with the *Coventry Diocesan Environment Group* to raise awareness of hedgehog conservation with church groups and encourage habitat improvement works. St Leonard's Church, Birdingbury, has been working on a wildlife area in their churchyard following an event and magazine article in 2017. This was followed up by an outdoor Hedgehog House Building workshop at the Church of Saint Nicholas in the nearby village of Frankton in August. An event was also held at St Margaret's Church, Wolston as part of Cherishing Churchyards in June, with parishioners involved in footprint tunnel surveying the churchyard and an additional child-friendly 'Messy Church' session with a hedgehog and animal theme. These events represent core engagement in rural areas of Rugby borough, meeting a key objective of the project and raising awareness in otherwise difficult-to-reach communities.



Figure 4. Hedgehog House Building Workshop in Frankton, Rugby. Copyright Warwickshire Wildlife Trust.

1.4. Volunteers

The *Warwickshire Hedgehog Helpers* group was established in spring 2018, comprising 35 volunteers. These volunteers were involved in a range of hedgehog conservation activities, from community engagement, to surveying, to practical habitat works to data management, and gave 450 hours of their time in 2018 (see Table 1).



Figure 5. A *Warwickshire Hedgehog Helper* at a community event in the Solihull HIA. Copyright Warwickshire Wildlife Trust.

Community Engagement	52
Footprint Tunnel Surveys	102
Torchlight Surveys	110
Practical habitat works	137
Data management	50
Total volunteer hours	450

Table 1. Number of hours given by *Warwickshire Hedgehog Helper* volunteers in 2018.

A series of training events were held for volunteers during 2018 to provide them with the skills to continue hedgehog conservation into the future. These included learning about hedgehog ecology and decline, surveying by footprint tunnel and torchlight, and learning how to maintain and lay hedges. Additional funding was provided by the D'Oyly Carte Charitable Trust for equipment and training resources. This enabled a full weekend hedgelaying course run by professionals to be held for volunteers on a rural farm in Rugby in November 2018.

When the project ends in 2019, it is envisaged that the *Warwickshire Hedgehog Helpers* group will become a subsidiary of the Warwickshire Mammal Group (WMG). This volunteer group is core to the project legacy, enabling hedgehog conservation to continue in Warwickshire despite the project end.



Figure 6. Several Warwickshire Hedgehog Helper volunteers taking part in a hedgelaying course in 2018 within the Rugby HIA. Copyright Warwickshire Wildlife Trust.

1.5. Dissemination

The project continued to receive media attention in 2018, including television coverage by *BBC Midlands Today* and radio coverage by *BBC Coventry and Warwickshire*. Newspaper articles also featured in the *Coventry Telegraph*, *Birmingham Mail*, *Stratford Herald*, *Rugby Observer* and *Rugby Advertiser*. Articles were also written for targeted and varied audiences, such as young children in *Wildlife Watch* and village communities in the *Marton and Cawston Parish Newsletters*.

The www.helpforhedgehogs.co.uk project website was fully redesigned in January and the project rebranded to appeal to adults as well as children. A range of new watercolour artwork was commissioned from British artist Ceri Thomas. The website now forms a key component of the project legacy, acting as a platform where people can find information and download a range of resources to enable them to set up their own self-sustaining HIAs. The website was officially re-launched during *Hedgehog Awareness Week* in May to reach a maximum audience and has been periodically updated with more new resources. These updates will continue into 2019.

The HIAs have also continued to be promoted and audiences engaged through social media, with over 900 followers on the Help for Hedgehogs Facebook page and 3,200 on the Twitter page. The campaign *#adventhog* was hugely successful in 2016 and 2017 and was relaunched in December 2018 using stop motion lego rather than plasticine. In December 2018, there was more than 16 times the number of Tweet impressions than in December 2015. Followers of the campaign have stayed following the pages, providing lasting engagement with a varied audience.



Figure 7. Example new leaflet freely downloadable from the project website, featuring the new artwork and branding. Copyright Warwickshire Wildlife Trust.



Figure 8. Example still from #adventhog 2018. Copyright Tara Higgs.

The work of the HIAs was also widely disseminated in 2018 to over 330 biological recorders, hedgehog experts, scientists, ecologists and rehabilitators at a range of meetings and conferences including the annual Mammal Society conference and Oxford Hedgehog Summit. Dissemination work has been considered a priority as the project comes to a close, following 5 years of concentrated hedgehog conservation engagement. Dissemination focussed on sharing knowledge, what can be learnt from such projects and ways forward into the future. Sharing and collaboration was placed at the core of the project in 2018, with advice being given regularly to those wanting to set up new hedgehog projects across the country and input into ventures such as the *Hedgehog Housing Census*.

2. Surveying

2.1. Sightings

A total of 369 hedgehog sightings were submitted for Warwickshire in 2018, including 48 in Solihull (71% alive) and 204 in Rugby (76% alive).

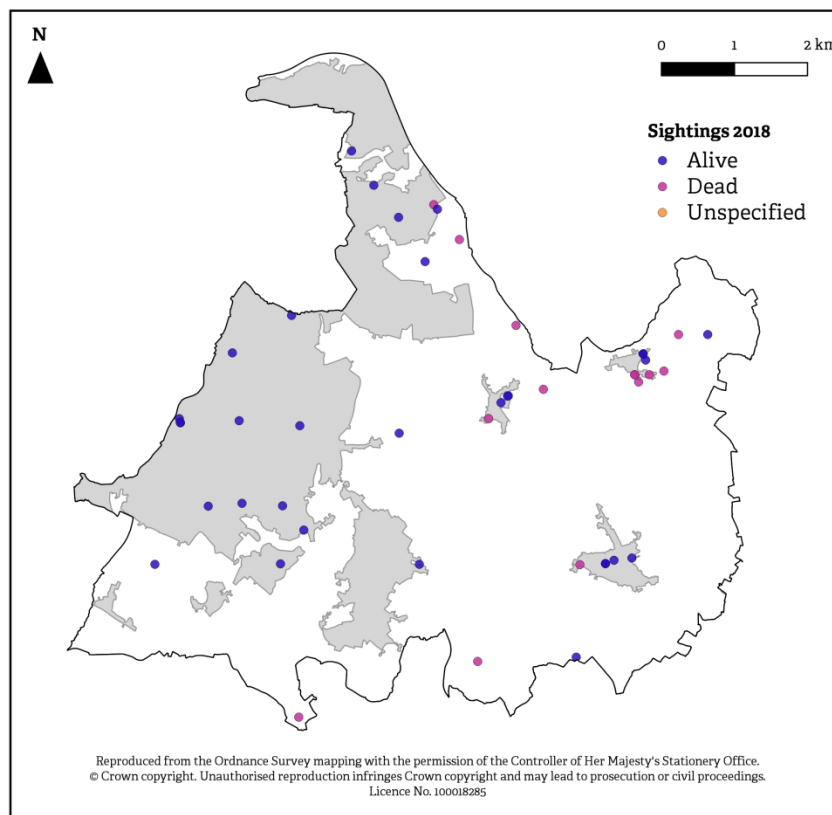
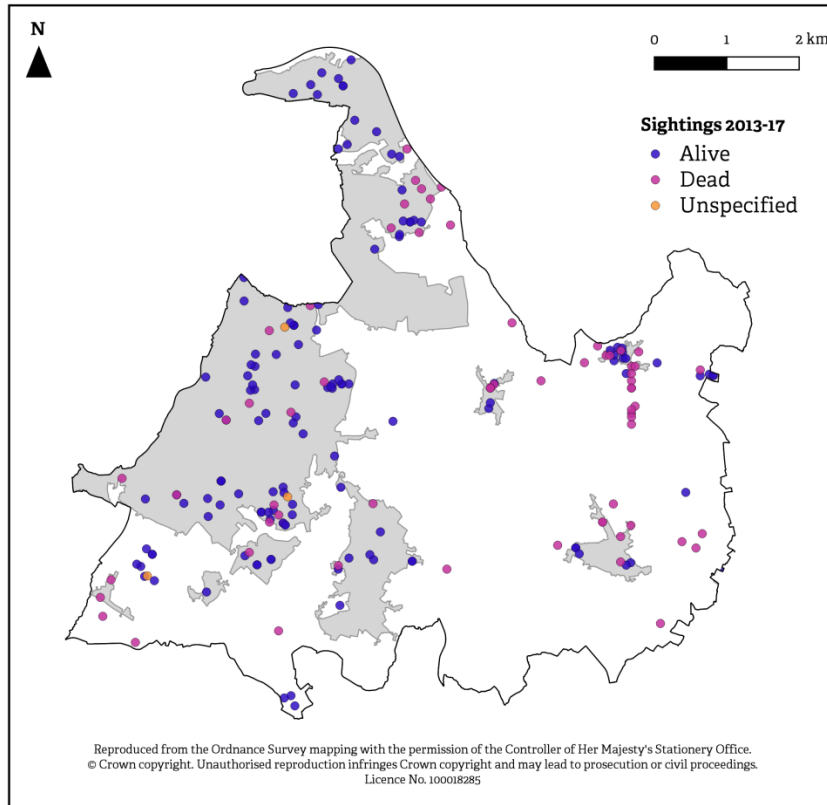


Figure 9. Distribution of dead and live hedgehog sightings within Solihull metropolitan borough, with urban areas shown in grey, from 2013-17 (above) and 2018 (below).

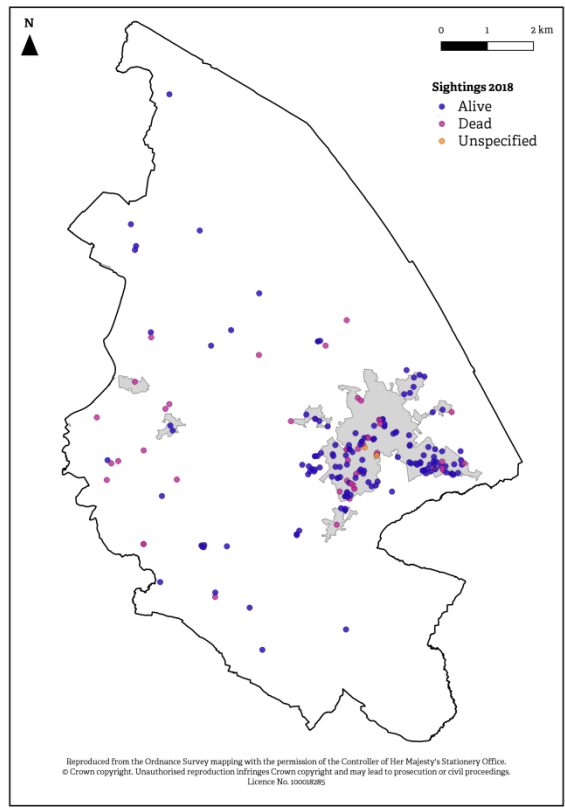
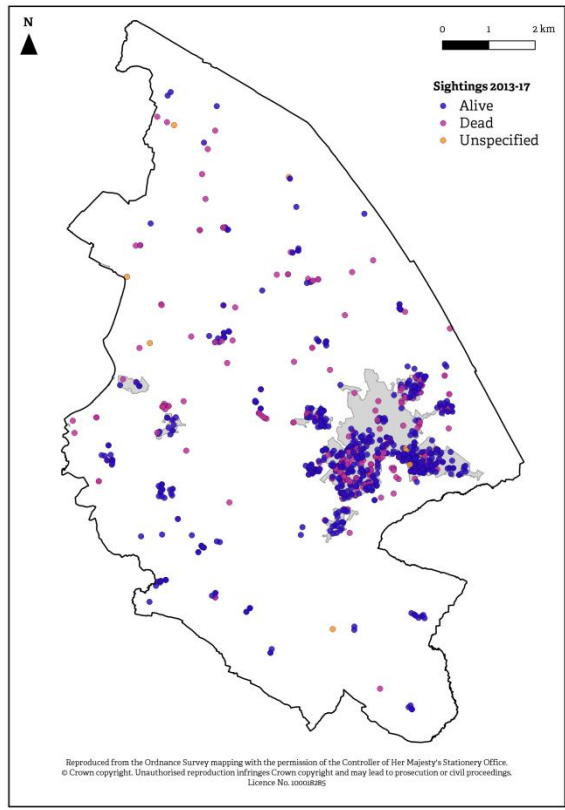


Figure 10. Distribution of dead and live hedgehog sightings within Rugby borough, with urban areas shown in grey, from 2013-17 (above) and 2018 (below).

Once again, sightings reports for Rugby are disproportionately high, representing 55% of vice county sightings (consistent with 54% in 2017). This could simply reflect high levels of engagement throughout the HIA project, combined with partnership work encouraging reports with RBC. However, on-the-ground broad scale engagement across the borough has been decreased significantly in 2018 and no new sightings posters have been put up. Although frequency data is lacking, this could potentially indicate high numbers of hedgehogs in Rugby, particularly since it is a recurring pattern over several years.

As can be seen in both Figures 9 and 10, the patterns of sightings are highly consistent in 2018 with previous sightings collected between 2013 and 2017. They seem to be further concentrated within urban areas, perhaps reflecting the national trend of hedgehogs being more heavily in decline in rural areas and faring better in urban 'refuges' (see the State of Britain's Hedgehogs 2018 report).

2.2. Footprint Tunnel Surveys

Hedgehogs were recorded in 2 out of 15 (13%) Solihull Metropolitan Borough Council (SMBC) green spaces during 2018 (see Table 2). Elmdon Coppice which recorded hedgehog presence in both 2015 and 2016 did not during 2017 or 2018, whilst Meriden Park showed the reverse pattern. Only one site, Babbs Mill Park, has consistently revealed hedgehog presence across all four years of surveying. Most positive footprint tunnel survey results across green space in Solihull appear to be clustered in the north of the borough.

SMBC Greenspace	Hedgehog Presence			
	2015	2016	2017	2018
Babbs Mill Park	✓	✓	✓	✓
Cole Bank Park	✓	✓	✓	N/A
Dorridge Park	×	×	×	×
Elmdon Heath	×	×	×	×
Elmdon Coppice	✓	✓	×	×
Elmdon Park	×	×	×	×
Hillfield Park	×	×	×	×
Knowle Park	×	×	×	×
Lanchester Park	×	×	×	×
Langley Hall Park	N/A	×	✓	×
Malvern and Brueton Park	✓	✓	✓	×
Meriden Park	×	×	✓	✓
Olton Jubilee Park	N/A	×	×	×
Shirley Park	×	×	×	×
Tudor Grange Park	×	×	×	×
Wychwood	N/A	×	×	×

Table 2. Hedgehog presence in SMBC managed green spaces, established using footprint tunnel surveys from 2015-2018.

Hedgehogs were recorded in 3 out of 16 (19%) RBC green spaces during 2018 (see Table 3), the same amount as in 2017. Both Burnside and Cornwallis Road Open Space, which recorded hedgehog presence in 2017, did not during 2018. However, Rokeby Open Space, Pantolf Place and Bilton Pavilions were positive for hedgehog footprints. These sites are highly urbanised, surrounded by roads and nearby residential gardens. It is surprising that other well-connected sites with seemingly 'better' habitat have not indicated hedgehog presence. However, again this reflects a national pattern of hedgehogs preferring garden habitat and being found more and more in urbanised spaces.

RBC Greenspace	Hedgehog Presence		
	2016	2017	2018
Ashlawn Cutting	x	x	x
Dewar Grove	✓	x	x
Linnell Road LNR	N/A	x	x
Whinfield Cemetery extension	x	x	x
Burnside	x	✓	x
Rokeby Open Space	✓	x	✓
Centenary Park	N/A	x	x
Newbold Paddock	N/A	x	x
Boughton Road	N/A	x	x
Pantolf Place	N/A	✓	✓
Avon Mill Recreation Ground	N/A	x	x
Yates Avenue	N/A	x	x
Bilton Pavilions	N/A	x	✓
Addison Road Recreation Ground	N/A	x	x
Cornwallis Road Open Space	N/A	✓	x
Hillmorton Recreation Ground	N/A	x	x

Table 3. Hedgehog presence in RBC managed green spaces, established using footprint tunnel surveys from 2016-2018.



Figure 11. A demonstration of how to set a footprint tunnel to a group of students. Copyright Warwickshire Wildlife Trust.

As recorded in previous years, it is possible that high levels of disturbance by people and animals on public green space sites could decrease the effectiveness of the footprint tunnel method, as could the fragmented nature of urban habitats and ability for hedgehogs to access them. The method also only captures a 'snapshot' in time: hedgehogs may be using the space at other times of year and the method is difficult when considering that 20% of hedgehogs are thought to be nomadic. No one survey method should ideally be used in isolation, so torchlight surveys were also conducted on focal areas of green space.

2.3. Torchlight Surveys

Torchlight surveys were undertaken in 2018 with the help of volunteers following Poulton & Reeve's (2010) methodology. Surveys took place in May and September, particularly active and numerous times of year for hedgehogs. Survey equipment was bought using additional funds provided by the Naturesave Trust. With a low abundance of hedgehogs seen across Solihull and Rugby during torchlight surveys in previous years, and colleagues elsewhere in the country reporting greater success later in the evening, surveys in 2018 began later in the evening and ran throughout the night. Transects were walked, illuminating open and marginal areas using MT14 Led Lenser 1000 lumen handheld torches, 1 million candle power Cluson Clubman lamps and a handheld Seek Thermal RevealXR FastFrame camera.

In May, four areas were surveyed in Solihull and Rugby, two in each borough, each for two nights. Areas were chosen based on geographic interest, with connected areas of focal green space. There were 12 hedgehog sightings in Coombe Country Park, Rugby and 15 in Castle Bromwich Hall Gardens, Solihull and surrounding residential areas. Previous torchlight surveys for these sites sometimes yielded negative results, despite regular sightings reported, droppings seen and footprints found in tunnels, likely because torchlight surveys had finished too early.

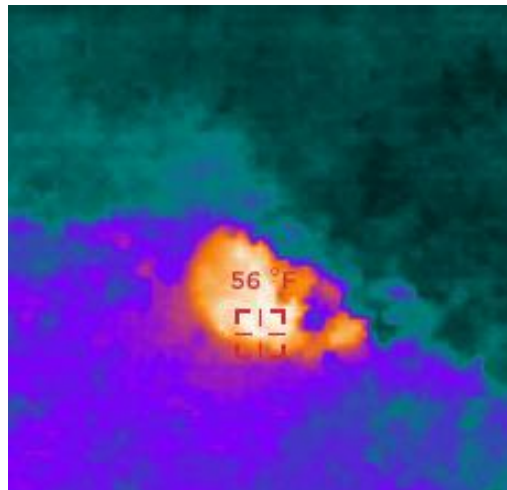


Figure 12. Hedgehog foraging along a hedge, spotted using a thermal imaging camera during May surveying. Copyright Warwickshire Wildlife Trust.

However, there was only one hedgehog sighting in Ashlawn Cutting and surrounding Hillmorton, Rugby and none in Olton, Solihull, both areas with connected tracts of green space. A handful of hedgehog sightings had previously been reported in Olton, however they did not seem to be using the cricket pitch, park or golf course during surveys. It could be that that they were missed in dense vegetation, although this seems unlikely over 2 nights and in some very open areas. They may have been using the areas at different times of the evening or even year, or they may not be using these areas at all for some reason. Hedgehogs had also been reported and signs found along Ashlawn Cutting but even more so, there were many reported sightings in the surrounding residential areas. It might be that the gardens are very well connected in these areas and that the hedgehogs were simply in the back gardens where we could not see them.

Moving forward, Castle Bromwich Hall Gardens and Coombe Country Park were made into 'Hedgehogs Hubs', where surveying will be concentrated and events focussed. These sites have been working in partnership throughout the project, with staff and volunteers involved in

hedgehog surveying and events, and it is envisaged that they will be hedgehog conservation focal areas into the future. Focal parts of the sites where hedgehogs were most frequently encountered were chosen for future torchlight surveys. In Solihull this formed a 197, 079 m² area comprising the entirety of Castle Bromwich Hall Gardens (formal gardens, several ponds, an orchard and some scrubby areas) as well as an adjacent area of mixed scrub, grassland and woodland owned by Birmingham City Council. Hedgehogs were generally found foraging amongst flowerbeds, by hedges and in the orchard, and some were caught in the throes of courting.



Figure 13. Favoured foraging sites at Castle Bromwich Hall Gardens amongst flowerbeds (left) and in the orchard (right). Copyright Tara Higgs.

In Rugby, a focal area of 281, 701 m² in Coombe Country Park was selected, comprising a formal driveway lined with veteran trees, scrubby car park areas, amenity grassland, formal gardens, woodland and a formal hedgerow. Hedgehogs were generally found foraging at the base of old trees and in scrubby areas surrounding the car parks.



Figure 14. Favoured foraging sites at Coombe Country Park amongst old trees. Copyright Deborah Wright.

In September, these Hedgehog Hubs were surveyed, each for 3 nights. Following training from Dr Nigel Reeve and Lucy Bearman-Brown, Senior Hedgehog Officer Dr Deborah Wright obtained a licence from Natural England to mark the hedgehogs found. Marking equipment was bought using additional funds provided by the D'Oyly Carte Charitable Trust. When hedgehogs were encountered, they were measured, weighed, sexed, given a health check and marked using numbered heat shrink plastic tubes before being released back to where they were found. The

tubes were initially soldered on but then glued over 5 spines on the crown of the head as this seemed to be more long-lasting. As hedgehog spines are made of a keratin protein similar to human hair, this will not have hurt the hedgehogs.



Figure 15. A captured hedgehog being given a health check before the spines are marked with numbered tubes. Copyright Warwickshire Wildlife Trust.

Across the two sites, 14 hedgehogs were encountered and 13 were marked with plastic shrink tubes. Five hedgehogs were found at Castle Bromwich Gardens and 8 at Coombe Country Park. Eight of the hedgehogs captured were adults, 4 were subadults and 2 were juveniles. Nine of the hedgehogs were seen more than once across nights. None of the hedgehogs showed obvious signs of recent injury and 7 of the hedgehogs had an ectoparasite loading of fleas and/or ticks but this was largely very minimal and within “normal” bounds. One hedgehog had a high parasite load and combined with other welfare concerns, the decision was taken to take him to a partnership rehabilitation centre, where he was treated for lungworm and fed before being released back where he was found several weeks later.

Numbers were slightly lower than expected in Castle Bromwich given previous surveys. Three dead hedgehogs had been found on the site within recent months and it was suspected that the prolonged summer drought may have had an impact. Only adult hedgehogs were found, perhaps indicating that breeding had largely been unsuccessful that year, potentially with lactating mothers struggling to produce enough milk. One hedgehog was thought to be pregnant and so was released without markers, however this was very late in the year and it seems unlikely the young would survive the winter. Recommendations were given to the site to use as few chemicals as possible to increase prey availability. The site has also made habitat improvements, such as creating dead wood areas, a new bug hotel and installing hedgehog houses.

The numbers found at Coombe Country Park were more expected, however 2 (unmarked) were found dead on the car park entrances/exits around the survey period. Hedgehog crossing area signs are now going to be put in these areas to raise awareness and hopefully reduce roadkill. Recommendations were also given to the site to avoid chemical use and keep the grass long around large veteran trees, a favoured foraging area for most of the hedgehogs found, likely because of high invertebrate diversity and abundance.



Figure 16. Habitat improvements at Castle Bromwich Hall Gardens. Copyright Tara Higgs.

Marking hedgehogs in this way will enable us to monitor these two hub populations over following years, gaining useful insights into their behaviours, habitat use and, ultimately, survival. Next May, torchlight surveys will be underway once more and there will be a year's overview of the mark and recapture work. Two videos were also made of the surveys, one by the Senior Hedgehog Officer and the other by a professional wildlife videographer Simon Watts, both of which have been uploaded to the project website and social media pages, raising awareness of the project and the work that is being done.



Figure 17. A still from a video following the marking of hedgehogs at hedgehog hubs in September, 2018. Copyright Simon Watts.

No.	Site		Date	Time	Distance seen (m)	Circumference (cm)	Weight (g)	Age	Sex	Habitat	Behaviour
01	Coombe	Tagged	12/09	22:45	5	53	798	Adult	Female	GRS	FO
		Recaptured #1	18/09	01:45	5		862			WO	ST
02	Coombe	Tagged	12/09	23:28	15	51	966	Adult	Female	GRS	ST
		Recaptured #1	18/09	00:46	10		952			GRS;BS;WO	FO
03	Coombe	Tagged	13/09	00:11	10	45	554	Subadult	Female	GRS;BS;WO	ST
		Recaptured #1	17/09	23:50	15		574			GRS	ST
		Recaptured #2	19/09	22:37	10		568			BS	FO
		Recaptured #3	24/09	23:47	12		573			GRS	FO
04	Coombe	Tagged	13/09	00:41	8	47	562	Subadult	Female	WO	SL
		Recaptured #1	18/09	02:58	18		628			GRS	FO
05	Coombe	Tagged	13/09	01:30	0	46	587	Subadult	Male	GRS	ST
		Recaptured #1	19/09	23:20	8		620			WO	FO
06	Coombe	Tagged	13/09	02:50	17.5	46	574	Subadult	Female	GRS	ST
		Recaptured #1	17/09	22:27	5		545			GRS	ST
07	Coombe	Tagged	13/09	03:57	6	49	781	Adult	Female	GRT	ST
08	Castle Bromwich	Tagged	13/09	22:54	2	50	723	Adult	Female	PSM	ST
		Recaptured #1	18/09	23:23	6		764			PSM;RP	ST
		Recaptured #2	28/09	22:25	10		808			PSM	ST
09	Coombe	Tagged	18/09	02:14	2	37	290	Juvenile	Male	RP;GRT	FO
		Recaptured #1	25/09	01:37	5		318			WO	FO
10	Castle Bromwich	Tagged	18/09	21:39	8	52	781	Adult	Male	PSM	FO
		Recaptured #1	28/09	22:00	5		803			PSM	ST
11	Castle Bromwich	Tagged	18/09	22:20	6	52	853	Adult	Male	GRS	FO
		Recaptured #1	28/09	22:50	5		830			GRS	ST
		Released	18/10			54	1199				
13	Coombe	Tagged	24/09	22:39	4	37	345	Juvenile	Female	GRS	FO
15	Castle Bromwich	Tagged	28/09	23:41	6	46	754	Adult	Female	OR	ST

Table 4. Hedgehogs captured and marked during September 2018 Torchlight Surveys. Habitat codes: GRS Grass < 10cm tall; GRT Grass - cut > 10 cm tall; PSM Planted shrubberies/flower beds; RP Recent plant-colonised disturbed site; WO Woodland floor; BS Bare soil; OR Other. Behaviour codes: FO Foraging; SL Slow locomotion; ST Stationary.

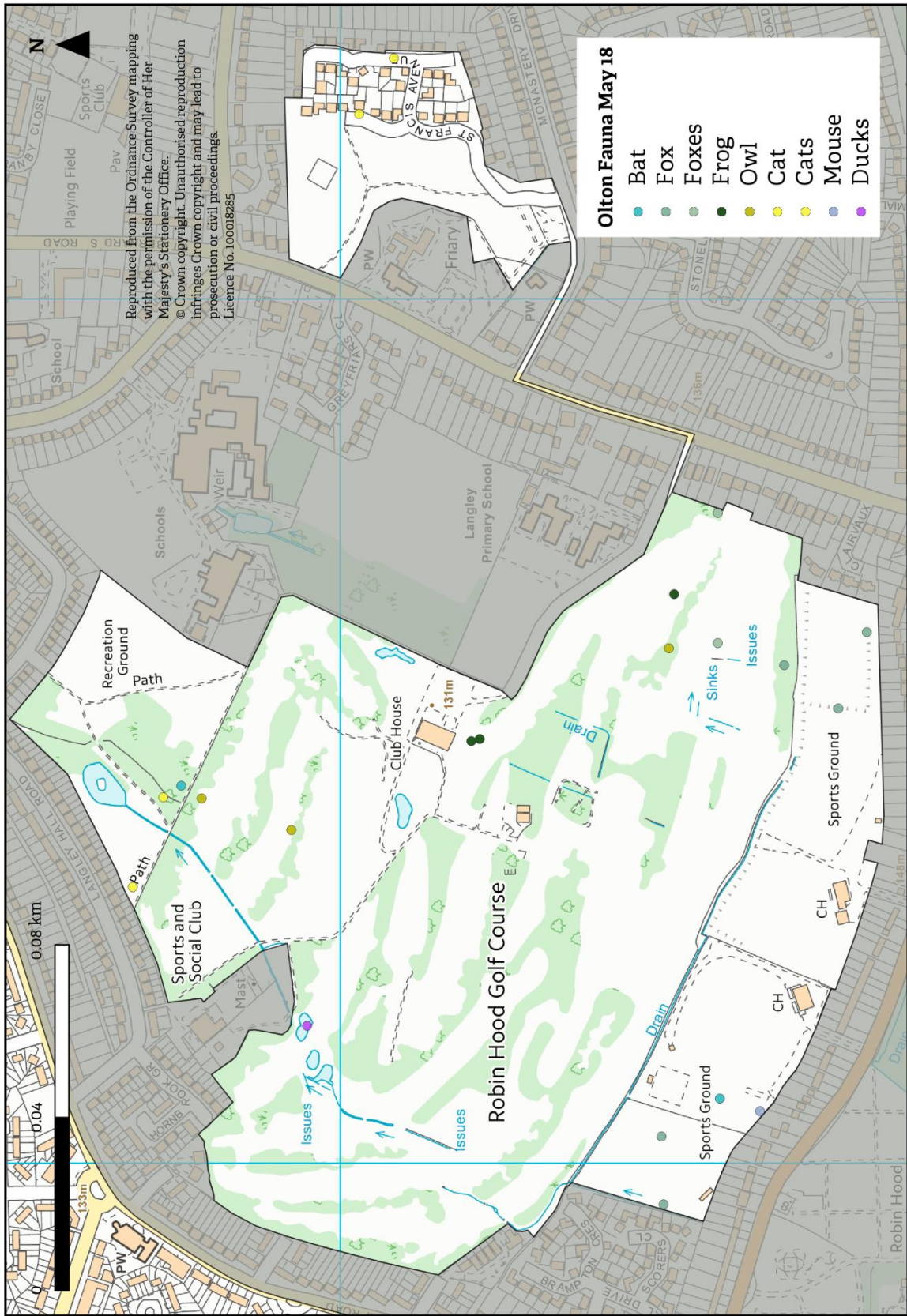


Figure 18. Torchlight survey results for Olton, Solihull, May 2018. Copyright Warwickshire Wildlife Trust.

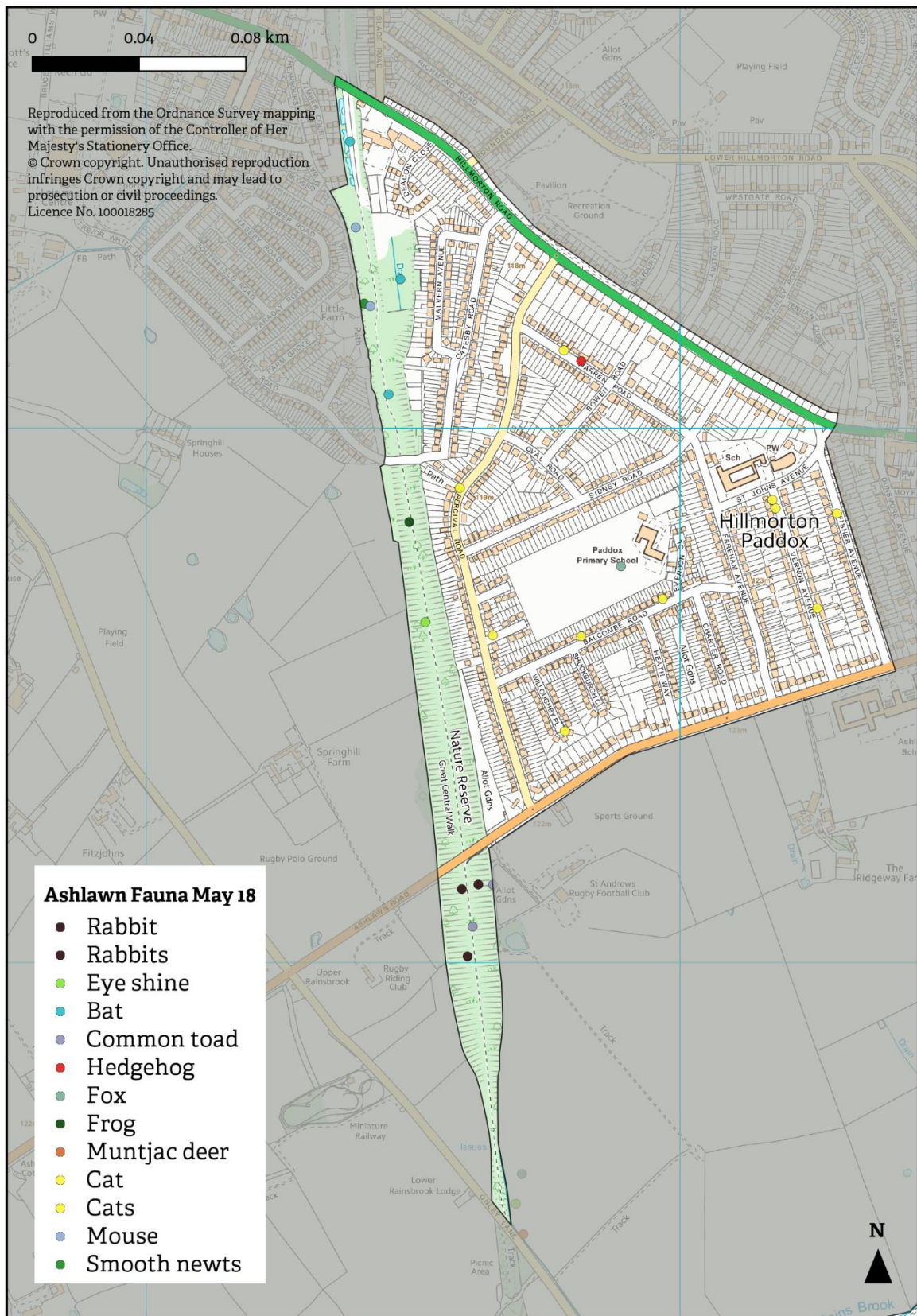


Figure 19. Torchlight survey results for Ashlawn and Hillmorton, Rugby, May 2018. Copyright Warwickshire Wildlife Trust.

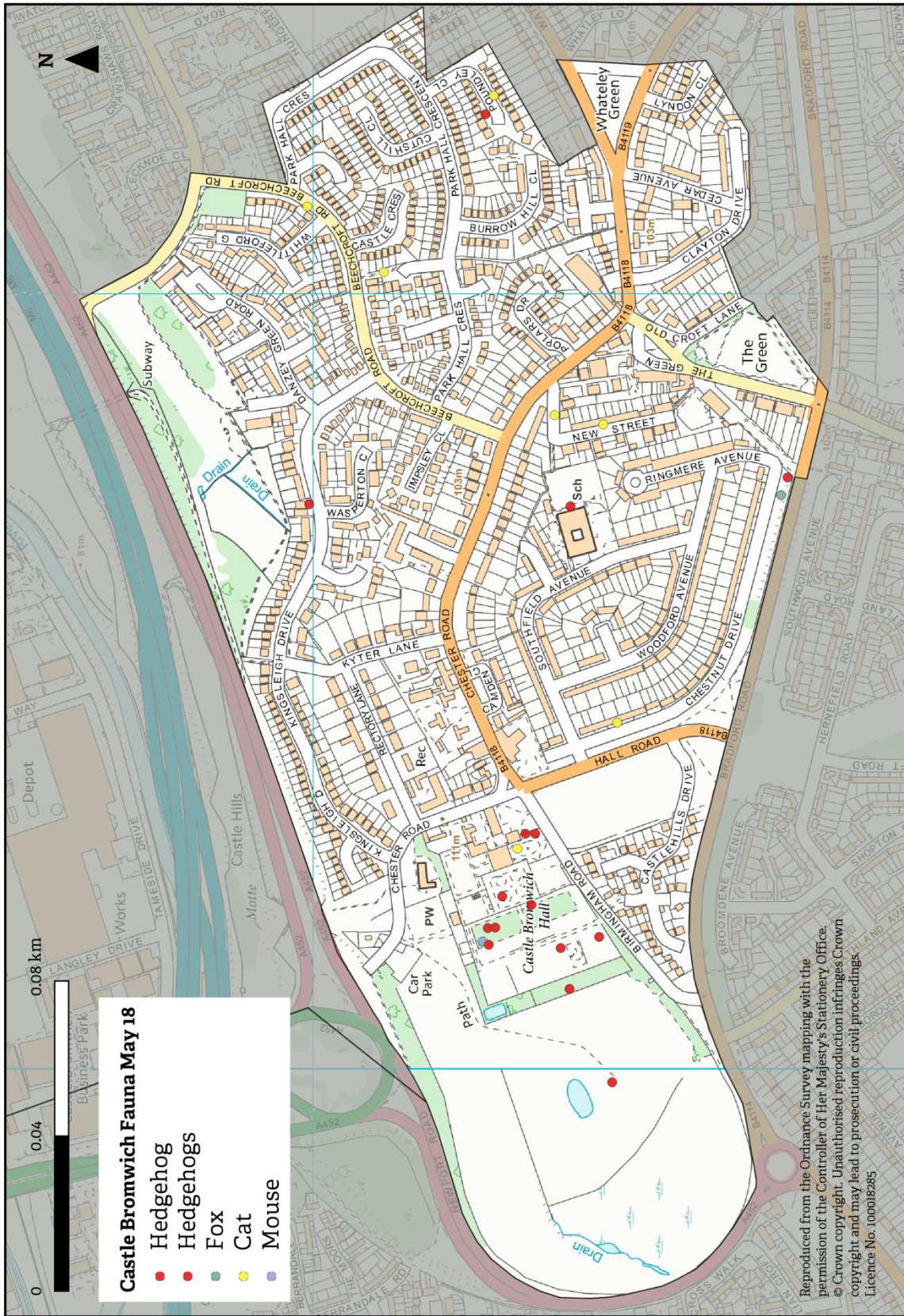


Figure 20. Torchlight survey results for Castle Bromwich, Solihull, May 2018. Copyright Warwickshire Wildlife Trust.

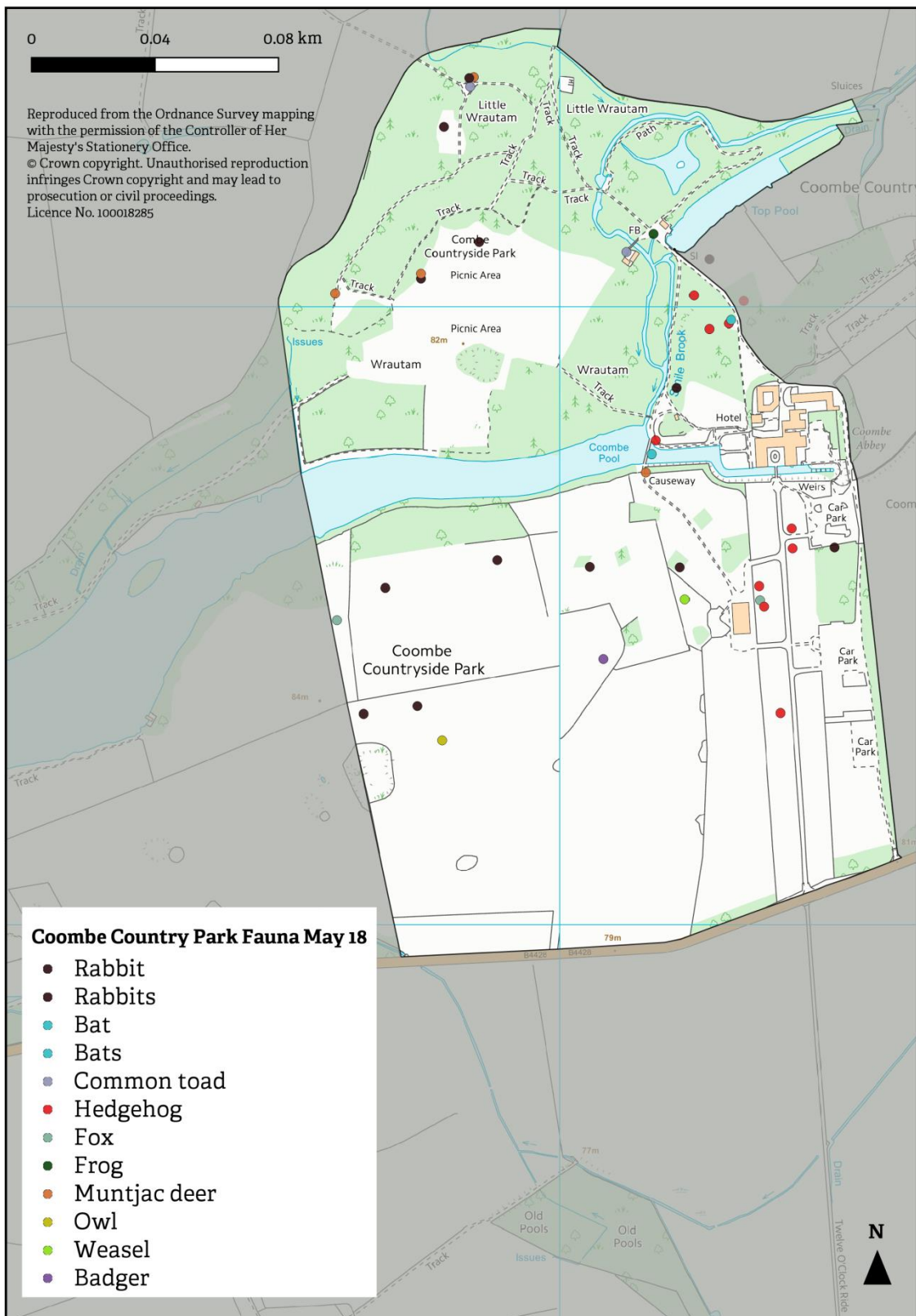


Figure 21. Torchlight survey results for Coombe Country Park, Rugby, May 2018. Copyright Warwickshire Wildlife Trust.

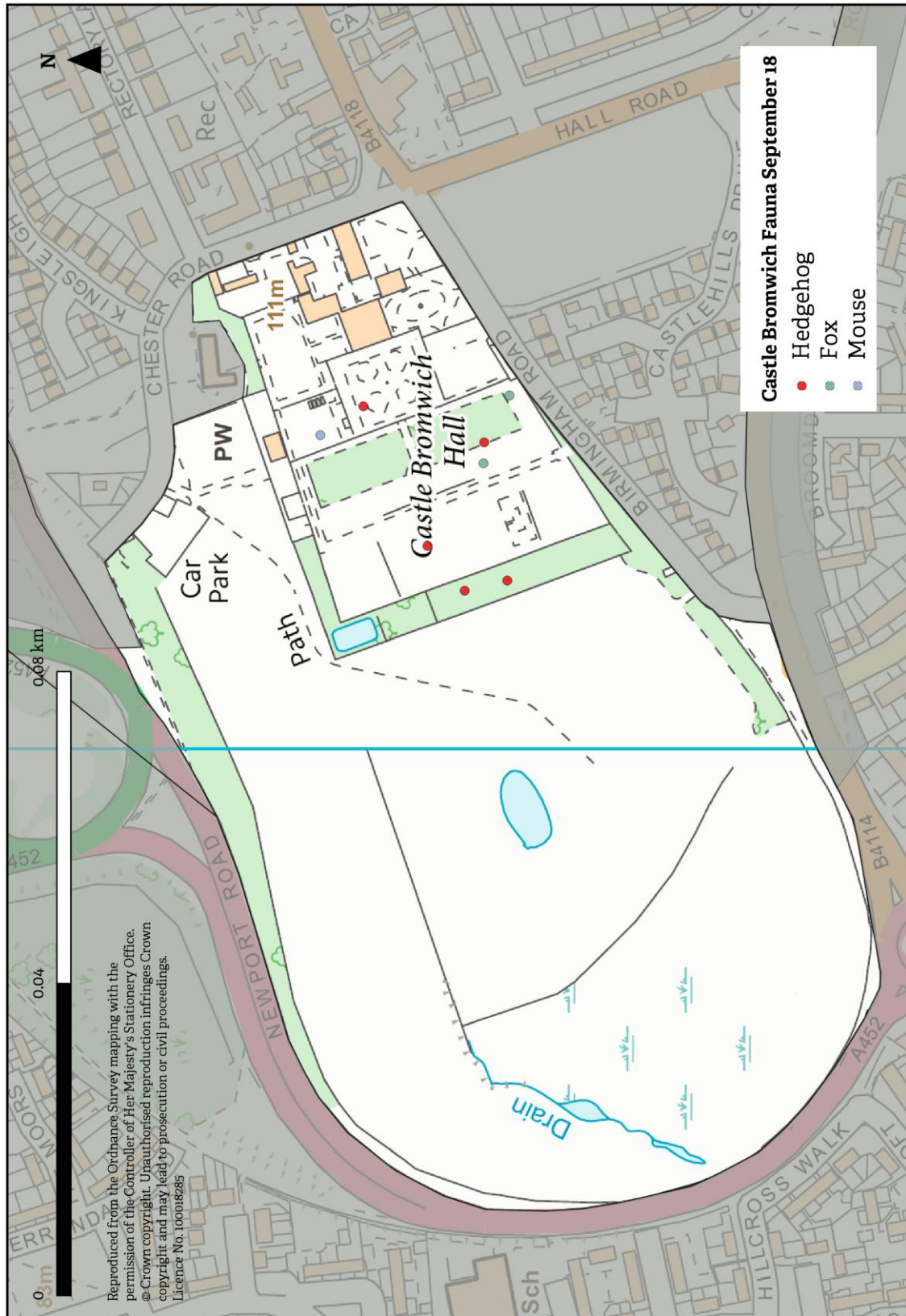


Figure 22. Torchlight survey results for Castle Bromwich, Solihull, September 2018. Hedgehogs are only shown when encountered for the first time. Copyright Warwickshire Wildlife Trust

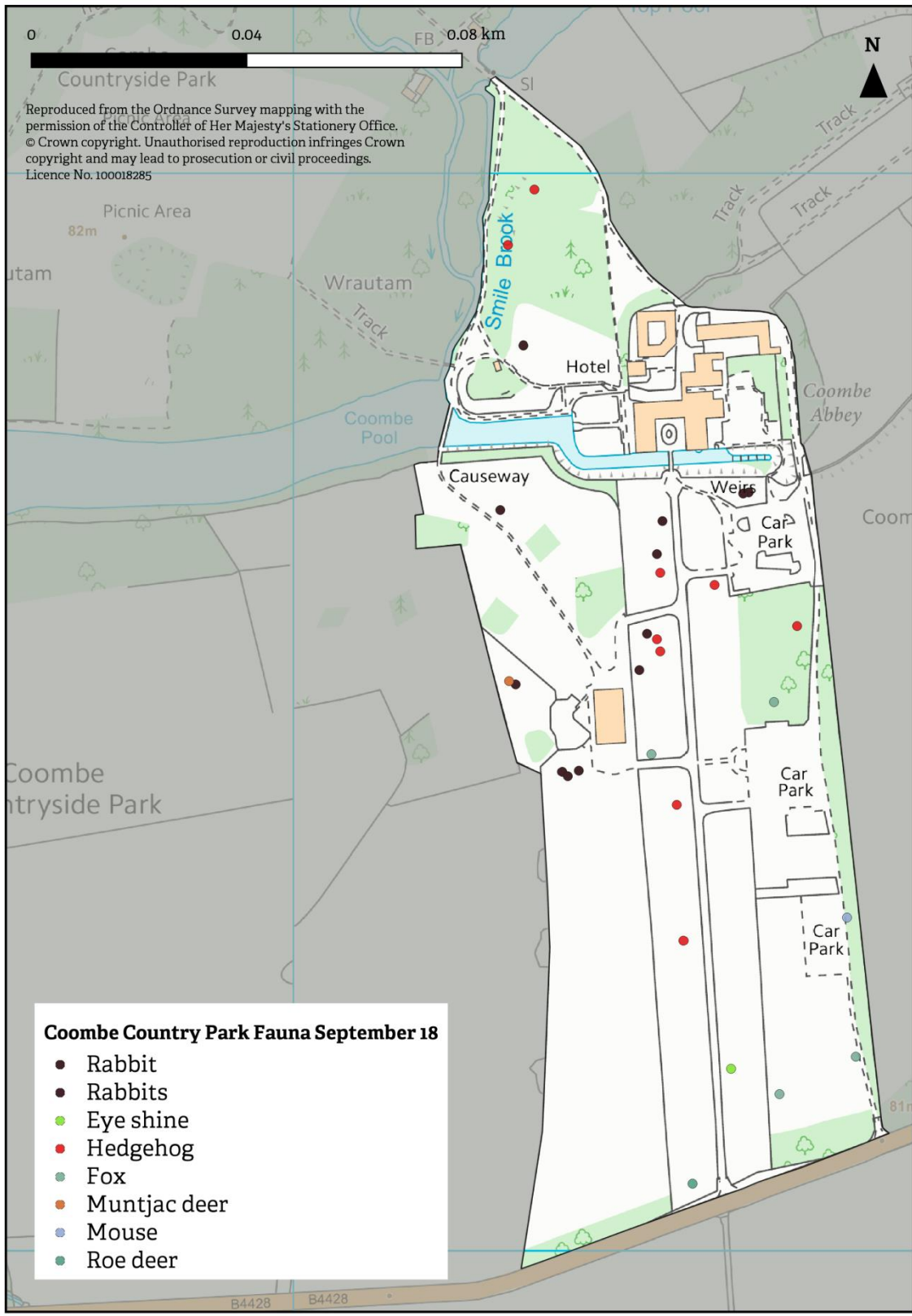


Figure 23. Torchlight survey results for Coombe Country Park, Rugby, September 2018. Hedgehogs are only shown when encountered for the first time. Copyright Warwickshire Wildlife Trust.

2.4. Allotment Survey

During 2018, allotment holders across the HIAs were asked to take part in a short survey regarding hedgehogs seen/not seen in the previous year. Known lead contacts were emailed and asked to distribute the Survey Monkey online link to their members, the online link was publicised through social media and the project website as well as through Warwickshire Wildlife Trust, posters were placed at all main known allotment sites, and allotment holders were directly engaged with onsite. A sample of 60 responses was obtained across 25 different sites.

98% of respondents had had an allotment onsite for more than one year but 75% said they had never seen a hedgehog there. However, 17% of respondents said they had seen a hedgehog in their allotment in 2017. The majority had seen only one or two, only one at any one time, and they had been seen alive. 12% had seen signs of hedgehogs; either footprints, dropping or nests.

Over half (53%) of respondents who were willing to give information on chemical use, said that they used chemicals (Figure 24). The majority of allotment holders were reticent about providing information about which chemicals they used and the frequency, however, the Hedgehog Officers engaged them in a dialogue about chemicals and ways to garden without them. Allotment holders were signposted towards, or provided with, the BHPS “Gardening with hedgehogs” leaflet and the newly designed HIA “Hedgehog-Friendly Gardening Pack”.

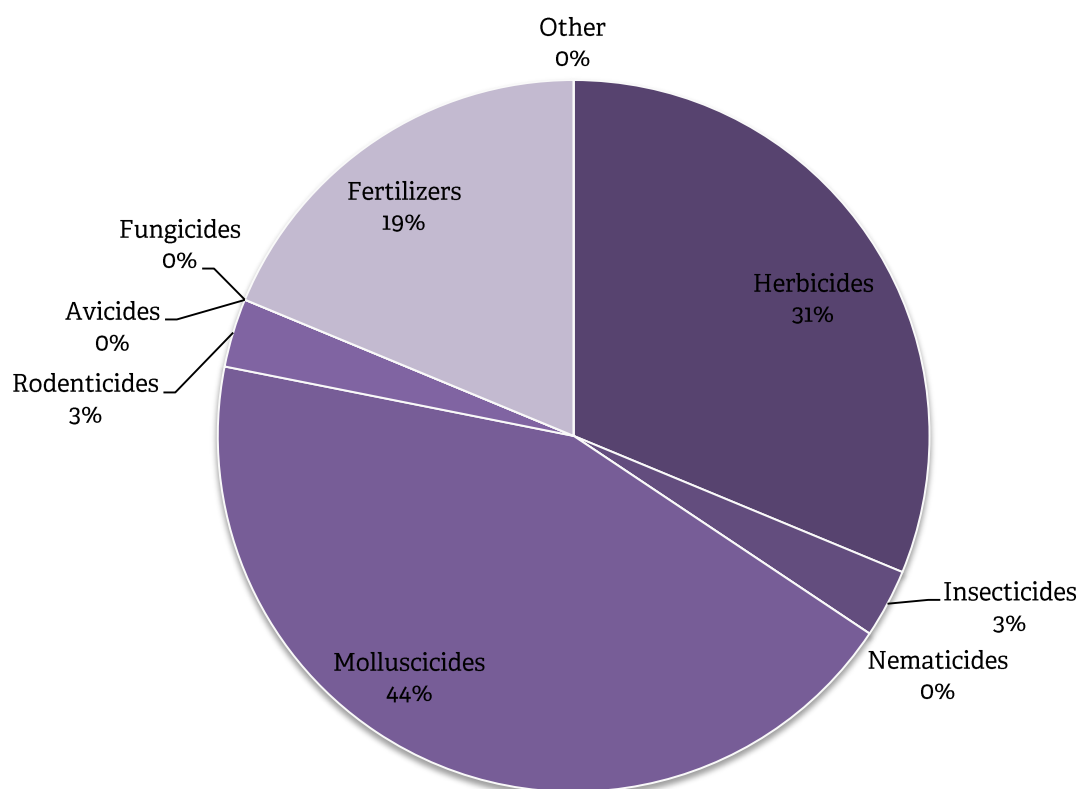


Figure 24. Percentages of types of chemicals used by allotment holders who responded that they used chemicals on their plot.

When directly engaged, respondents often provided considerably more information. Most said that they used weedkillers at certain times of year and some said they used slug pellets. Encouragingly, some said that they has switched to using organic slug pellets e.g. ferric phosphate after being made aware of the dangers to wildlife of using metaldehyde. However,

several noted the cost implications of this and the fact that traditional slug pellets were being used more widely across the allotments. Multiple sites had an employed pest trapper and so personal rodenticide use was deemed unnecessary, which was a positive finding, given secondary poisoning concerns. Many allotment holders said that felt strongly about gardening organically and used muck, compost and nets rather than chemicals.

It is possible that hedgehogs were using sites but had simply not been seen, given their nocturnal nature. Some allotment holders appeared knowledgeable about signs of hedgehogs but others were not and may not have recognised nests and droppings. It is likely that usage is linked to the surrounding habitat matrix as well as access, with some allotments being more isolated than others and also some being completely bounded by metal fencing to stop rabbits and badgers. Intensive footprint tunnel surveys of allotment sites would provide more robust presence/absence data, although many allotment holders expressed concern that the bait may attract other unwelcome visitors. Torchlight surveys that incorporate allotments could be very revealing, and are underway as part of other hedgehogs projects e.g. in Suffolk.

3. Habitat Improvement

3.1. Public Green Space

Work continued with schools in 2018, with habitat improvement encouragement. This remained difficult, with a high turnover of school staff and concerns about future habitat management halting progress within school grounds. Some schools proved receptive, installing hedgehog houses and bug hotels. Brownsover Community School planted a hedge in the school grounds in November following a visit from the Senior Hedgehog Officer. Children were also provided with information and leaflets when the schools were visited to take home to encourage habitat improvement in gardens.

Greater success was achieved with local authorities. In 2017, Rugby Borough Council made management changes to 11 acres of land over 5 green space sites as part of a trial. This involved planting areas with trees and reducing the regularity of grass cutting of some areas to once per year from 11 times. These management changes increased nesting habitat and resources, considered to be a significant limiting factor for hedgehog populations. The success of the trial and lack of public complaint encouraged RBC to expand the changes to a further 18 acres across 7 other locations in 2018. Further success in 2018 meant that RBC is now looking to continue and expand the longer grass trials to other large green spaces with the potential to create permanent interpretation and project legacy. Habitat work is also planned in early 2019 with SMBC.

The main emphasis in 2018 habitat work was to train volunteers to continue improving green space into the future. Following the hedgelaying course in November, a hedge maintenance session was held in December for volunteers and additional hedgelaying days are planned for early 2019.



Figure 25. Increased areas of longer grass at Boughton Road, Rugby ranging from 2016 (upper left) to 2017 (upper right) to 2018 (lower middle). Copyright Deborah Wright.

3.2. Policy

Local Plans set out local planning policies, identifying how land is used and determining the type and location of development in the future. Solihull's current Local Plan was adopted by SMBC in December 2013, covering the period up to 2028. However, the plan is now under review following a legal challenge in 2015 and changes due to HS2. A new submission draft is now due to be published in summer 2019. Recommendations for mitigation relating to Local Biodiversity Action Plan species, such as hedgehogs, are currently included and the biodiversity policy highlights the importance of a green infrastructure network.

Rugby's Local Plan is under examination with a current public draft covering up to 2031. A statement encouraging maintenance and/or enhancement of connectivity and biodiversity of residential and non-designated green space is currently included in the main body of the text.

Neighbourhood Plans sit beneath the overarching legislation of the Local Plan and give communities a greater say over the type, location, size, pace and design of development within their designated Neighbourhood Area. Within Solihull borough there are now eight designated Neighbourhood Areas (NAs): Cheswick Green, Meriden, Dickens Heath, Knowle, Dorridge and Bentley Heath, Hampton-in-Arden, Hockley Heath, Balsall and Berkswell. No Neighbourhood Plans have yet been adopted apart from Hampton-in-Arden, which was finalised before the hedgehog work on Neighbourhood Plans began. The Knowle, Dorridge and Bentley Heath Plan is

ready for referendum and a statement is currently included under Policy NE2: Habitats and Biodiversity of the submission draft regarding the inclusion of permeable barriers, native species hedgerows and grassy margins for creatures such as hedgehogs. All other Neighbourhood Planning Authorities (NPAs) have been contacted with advice and guidance and provided with suggested wording for hedgehog specific inclusions as well as a PDF version of the hedgehog neighbourhood planning leaflet developed in 2017.

Within Rugby, there are now nine designated NAs: Coton Forward, Wolston, Brandon and Bretford, Wolvey, Brinklow, Ryton-on-Dunsmore, Willoughby, Dunchurch and Grandborough. No Neighbourhood Plans have yet been adopted apart from Coton Forward, which was finalised before the hedgehog work on Neighbourhood Plans began. Three of the NAs have produced plans, which include statements regarding the importance of hedgerows, connectivity and green corridors, and two of which include statements regarding the inclusion of hedgehog holes in new developments. All other NPAs have been contacted with advice and guidance for their upcoming draft plans.

3.3. Development

Development sites provide an opportunity to maintain and improve hedgehog habitat on a landscape scale, particularly when the site comprises degraded agricultural land that has the potential for habitat net gain for hedgehogs. Significant development projects and housing allocations are set to occur in Solihull and Rugby within the next 20 years and influencing development could provide project legacy into the future.

The Senior Hedgehog Officer is currently working on a set of hedgehog planning guidelines for developers alongside the national Hedgehog Street project. At present, the Officer comments on relevant planning applications within the HIAs, tailoring responses to each case, using sightings information, emphasising local policy and potentially mapping hedgehog fence holes. However, although this approach has proven successful (see Table 5), it is only possible for developments within the project areas and is unsustainable in the long-term without a dedicated Hedgehog Officer. The intention is that the new guidance will provide clear and simple advice on what to do before, during and after the build, which can be rolled out nationally.

Eight further development sites across Coventry, Warwickshire and Solihull in 2018 became set to include hedgehog holes, four of which are in Rugby and two in Solihull. Additional ecological consultancies such as GS Ecology and FPCR Environment and Design are now suggesting hedgehog holes in ecological reports. Our suggestions have not included hedgehog houses, until the full results of the collaborative Hedgehog Housing Census have been released and there is an evidence base for using them as mitigation and/or enhancement purposes.

Development Site	Area	Planned inclusions
Hampton-in-Arden	Solihull	Informative in decision notice regarding hedgehog houses and fence holes for 9 dwellings.
Hampton-in-Arden	Solihull	Hedgehog Holes for 45 dwellings and raised gates; Some planned fences and walls to be replaced with hedgerows. Secured by condition.
Cawston extension	Rugby	Hedgehog Holes for 40 out of 250 dwellings. Secured by condition.
Cawston extension	Rugby	Hedgehog Holes for 2 out of 15

		dwellings.
Houlton	Rugby	Hedgehog Holes for all 253 dwellings.
Overslade	Rugby	Hedgehog Holes for all 5 dwellings. Secured by condition.
Westwood Heath	Coventry	Hedgehog Holes for up to 425 dwellings.
Spon Lane	Coventry	Hedgehog Holes for all 56 dwellings.

Table 5. Developments planning hedgehog-friendly inclusions in 2018 across Coventry, Warwickshire and Solihull.

4. Conclusions

Tangible progress was made in 2018 for the Solihull and Rugby HIAs. As well as over 2500 people being directly engaged in hedgehog conservation, the emphasis of the project moved away from broad engagement to a more focused legacy based approach. A core team of *Warwickshire Hedgehog Helper* volunteers was trained to continue hedgehog conservation beyond the length of the project, and survey work conducted across key hedgehog hub sites, with a marking programme set up to monitor hedgehog populations. Habitat improvements continued across green spaces and higher level work is improving the advice and guidance available to the developers. There was targeted dissemination, centred on sharing information with other projects and learning from the HIAs, and the website was set up as a sharing platform with a variety of free resources.

With the project due to end in summer 2019, the focus will now be on ensuring the transition of the volunteer group, maintaining the marking programme, producing remaining resources and learning documents for the website and disseminating the final project results. Hedgehog conservation in Warwickshire is set to continue into the future.