



## RESEARCH REPORT

### REASONS FOR DECLINE OF THE HEDGEHOG – January 2021

#### Background

Hedgehogs are rapidly declining and are now officially classed as vulnerable to extinction. Brackley Hogwatch is a registered charity set up to investigate the decline, educate the public of their findings and ultimately help contribute to the survival of the species.

#### SUMMARY

Reasons for the decline in hedgehogs already commonly identified include suggestions such as loss of habitat, predation by badgers, and road casualties. Whilst these issues all clearly exist, and play a part, we do not believe them to be the primary reason. Our local research has shown repeatedly and consistently over many years that the reason for their decline is juvenile sickness.

Brackley Hogwatch monitor the local hedgehogs each year and have consistently found a high rate of sickness in juvenile hedgehogs, which are often unable to survive their first year. We believe that juvenile sickness is a major reason for decline, that is currently being overlooked.

#### PRIMARY REASONS FOR DECLINE

##### Sickness

Many hedgehogs get sick with parasites, in particular lungworm (typically *Crenosoma* and/or *Capillaria*) which can cause both respiratory problems and weight loss. A young hedgehog with lungworm will often become very thin and emaciated without the body fat that is needed to survive hibernation. They will most likely have chronic diarrhoea and vomiting.

Whilst an adult can tolerate parasites, a juvenile may struggle to survive. Sick hedgehogs will often suffer with other secondary issues such as tick infestations and bacterial infections, thus reducing their chances further.

##### Hedgehogs too small to survive the Winter

Often referred to as 'autumn juveniles', these are often *thought to be* late litters, however it has been demonstrated through our research that many of these small hedgehogs are mature and are actually offspring from the litters earlier in the year that have just failed to put on weight.

This is a fact that we have determined through two separate observations:

- Firstly, sick hedgehogs that have been rescued in the winter are often found to have been microchipped earlier in the year, so whilst appearing very small they are known not to be autumn litters.
- Secondly, alongside our vet we have carried out a study of their ages using x-rays. A hedgehog's age can be estimated through x-rays by looking at growth plate closure - for further details see article by John Taylor MRCVS (*Note 1*).

These juvenile hedgehogs are in fact unable to put on weight, due to their heavy parasite burden. They are not dying simply because they are young, and there is not enough time to fatten up before hibernation, but they are dying because they are sick.



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#### High juvenile mortality rate

In summary, if most juveniles are not surviving and not reaching breeding age then that is quite clearly going to lead to a decline in numbers of adult hedgehogs in future generations.

#### The life cycle is broken

Due to the high juvenile mortality rate adult hedgehogs that come to the end of natural their lifecycle are not being replaced with a sufficient number of juveniles to continue replenishment at their historic rates.

Each year research by Brackley Hogwatch has repeatedly shown that juveniles micro-chipped in the summer show up as small underweight sick hedgehogs in the winter months.

By rescuing and releasing these juveniles once fit enough to survive, we are able to grow rather than shrink the adult population. While this will help to reduce the decline in the short term, it is not however a cure as we still need to address the root of the problem.

#### 2020 WINTER RESEARCH IN BRACKLEY AREA

Every winter in Brackley and the surrounding villages, an awareness campaign is carried out, and the local community report all hedgehogs that they see. The hedgehogs are then examined at the location where they are found. Those found to be healthy are microchipped on site and set free immediately. Sick hedgehogs (those that are very thin, dehydrated or presenting other health issues, such as injuries or excess ticks) are admitted to the Hogwatch hospital. A faecal sample is taken and checked under the microscope for heavy internal parasite burden, before treating with the appropriate medicines or care as necessary.

Once fit and well, and conditions are suitable, the hedgehogs are released back where they were found with micro-chips fitted, so they can continue to be monitored.

The below table shows a summary of the hedgehogs that were reported in the winter period of October to December 2020.

Brackley Hogwatch				
No of sick hedgehogs found in period October - December 2020				
	Total Reported	No. Sick	No. Survived*	Survival rate
Brackley	99	84	55	65%
Croughton	11	10	4	40%
Greatworth	12	10	7	70%
Halse	3	2	2	100%
Helmdon	6	5	5	100%
Hinton in the Hedges	19	13	10	77%
Marston St Lawrence	9	6	4	67%
Other villages **	7	7	4	57%
	<b>166</b>	<b>137</b>	<b>91</b>	<b>66%</b>
*Survived - successfully undergone course of medication and improved. Hibernating or still under observation at time of report. 28/01/21				
**Other villages - Evenley, Farthinghoe, Mixbury Syresham, Turweston				



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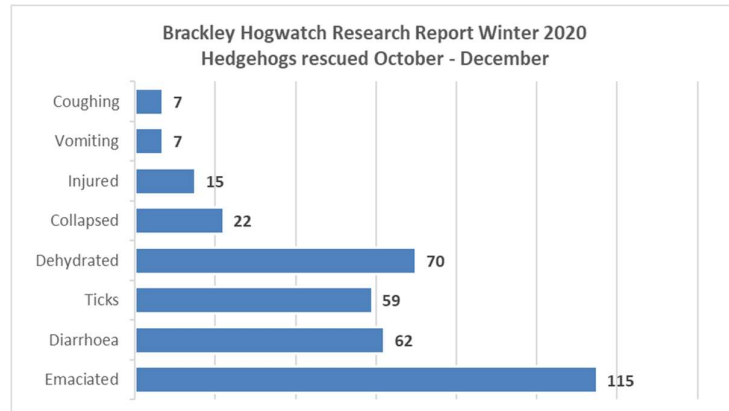
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Of the 166 hedgehogs reported in the three month period, 29 were found to be healthy. 137 were admitted to the Hogwatch hospital, the vast majority of them were very thin and dehydrated, a few with other injuries.

#### Symptoms observed at time of examination

83% of the 137 sick hedgehogs rescued were found to be very thin/emaciated at the time of rescue. Over 50% were recorded to have chronic dehydration.

Many of them were subsequently observed to have diarrhoea and sometimes vomiting. They typically had very poor appetite, and unable to gain weight.



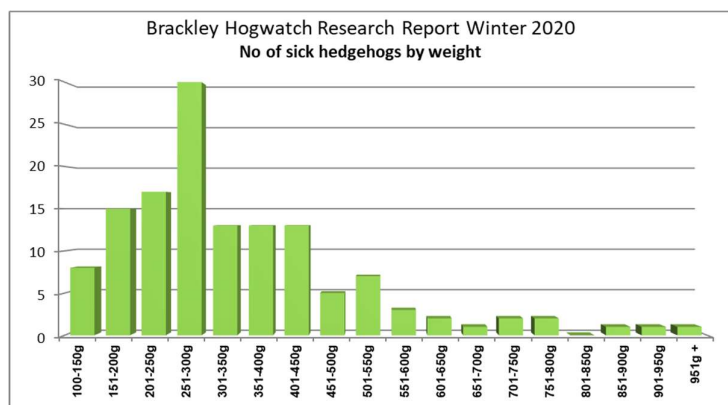
Of those admitted, two thirds were able to be treated and saved.

Without intervention and medicines the sick hedgehogs would have died, and typically in other areas the vast majority would have gone unreported.

#### The issue of under reporting

Before any monitoring and awareness campaigns took place in Brackley, all these sick juvenile hedgehogs went unnoticed and unreported. In 2011 only 2 sick hedgehogs were rescued in Brackley. Each winter thereafter, from 2012 to 2020 between 75 and 155 hedgehogs have been rescued in the Brackley area during the October-December period, with the highest figure of 155 arising as the direct result of a targeted leaflet campaign. The more awareness that can be raised the more hedgehogs will be found. Without an awareness campaign the majority of sick hedgehogs will not get reported.

#### Size and weight of the sick hedgehogs



Almost all the sick hedgehogs found in this period are juveniles.

85% of the sick hedgehogs rescued this winter were under 500g, with more than half of them being under 300g.

The hedgehogs presented were typically small, dehydrated and very thin, and typically more mature than their size may at first indicate.



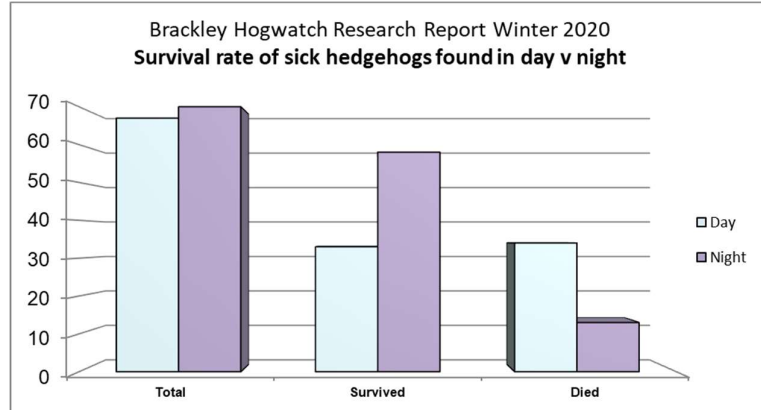
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#### Finding the sick juvenile hedgehogs before it is too late

Whilst an equal proportion of hedgehogs rescued were found in the daytime or at night over 82% of the night-time hedgehogs went on to survive, compared to 49% of the daytime ones.

Daytime hedgehogs show a significantly lower survival rate, suggesting they may already be much sicker when they emerge for help.



#### Micro-chipping and record keeping

The Hogwatch hospital have admitted a total of 1805 hedgehogs over the last 9 years, of which 1058 have been successfully released.

Brackley Hogwatch have microchipped 814 hedgehogs over the last 5 years. This enables us to monitor their progress, know their ages and histories. Future sightings are recorded. We have a substantial database of information collected about our local hedgehog colony.

This significant volume of hedgehog records represents a huge wealth of observation and experience. As such similar consistent data is available for previous years, showing the high level of juvenile sickness and the high juvenile mortality rate in particular.

#### ACTIONS REQUIRED

##### Undertake similar research projects in other towns and communities

It is the proactive approach of monitoring and examining the local hedgehogs, with the support of the local community, that enables us to find and rescue so many, and as such Brackley has been able to build up a colony of adult hedgehogs, and now has a thriving hedgehog population whilst many other towns are reporting a decline.

In Brackley we have found that by searching for sick juveniles in need of rescue, then releasing them back to the population once healthy the numbers can be protected. Once released as adults they can tolerate the parasites because their immune strength is greater and they don't need rescue again.

It is highly likely the same findings could be replicated in many areas, and their hedgehog numbers could also be boosted as a result.

We wish to carry out this research on a wider scale, in other areas, in order to investigate the number of sick hedgehogs that currently go unreported.



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We believe that most sick hedgehogs in other towns are not currently being rescued, and will seek to demonstrate this through our future projects.

#### **Encourage winter reporting and examination of hedgehogs found both day and night**

Some people are already aware that a hedgehog found in the daytime is likely to be sick, but we have found that if they are also monitored and examined at night during the critical winter period many more sick ones can be found. If a hedgehog resorts to coming out in the day, it will most likely have already been sick for a long time.

Examining the hedgehogs at night enables us to highlight just how many are getting sick and the scale of the problem with internal parasites. Sadly, they often look healthy to the untrained eye, which means that most do not get rescued.

**Brackley Hogwatch have established the scale of the problem in Brackley and now wish to broaden their campaign to other areas in order to see if this level of juvenile sickness is occurring elsewhere.**

We would like to assist others to monitor their hedgehog populations in the same way, and hopefully bring these findings regarding juvenile mortality to the attention of the professionals.

#### **FURTHER RESEARCH REQUIRED**

Ultimately further research will be needed into the reasons that so many juveniles are getting sick. This has been demonstrated to be the case in Brackley for the last nine years.

Declining numbers have been observed nationally for at least the last twenty years. We know that this level of juvenile sickness was not happening in Brackley 20 years ago – so what has changed?

More research needs to be undertaken on the increased level and nature of the parasites. For example, previous research in Brackley found that 20% of the slugs carried *Crenosoma* – is this a factor?

We hope that when the scientific community are able to acknowledge and observe for themselves that the juvenile mortality is at the root of the decline that they will then wish to assist and fund projects to enable further research to establish if this is also happening in other areas, and if so why, and what can be done to rectify the situation?

We need to raise awareness of our findings, so that they can be further investigated in order to find ways to prevent the further decline of the hedgehog.

For further information or if you would like to help with future projects please contact Andrew Jackson on 07528 119416 or 07976 704415

*Note 1 <https://www.mansionhillvets.co.uk/2018/05/10/hedgehog-awareness-week-may-6th-12th-2018/>*