A picture containing text, reptile, gear

Description automatically generatedA hedgehog in the grass

Description automatically generated with medium confidence

**About the project**

My wife runs a hedgehog rescue in Otley, West Yorkshire. Last year we cared for over 220 hedgehogs and this year expect that number to be close to double. The ones released into our area are microchipped; this equates to around 150 hedgehogs so far in Otley. We have chipped our releases in other areas such as Guiseley, Ilkley, Menston but for the moment Otley is our focus. If you are not local this is Leeds, West Yorkshire LS21 area in the United Kingdom.

The reason for chipping the hedgehogs is:

* To identify the ones that return to the rescue
* Identify how long hedgehogs are surviving for
* Gather statistical information for scientific research on areas such as dependency on human support feeding, frequency of use of hedgehog homes, movement habits etc and provide an access route for academic research.
* To give members of the public a way of engaging with the hedgehogs remotely promoting support and awareness of hedgehog preservation.
* Raise awareness and a revenue stream for the rescue by the sale of the feeding stations or access to the system (not sure how either will work yet) or just general donations.

**Aims of the project**

* Be open source and reasonable cost to build (ideally under £50) we want schools, scouts etc to be able to build one.
* Engaging with the users via a website showing frequency of use and by which hog.
* Be low maintenance, reasonable tough and easy to clean
* Provide a database to keep our hedgehog records on (no finder contact information for GDPR)
* Easily updated in the future (I.e., clearly documented within any files)
* Show a visit of none chipped hedgehogs via light beam or similar (open to suggestions)
* Be deployable onto existing structures and holes as well as our own units.

**Useful links that inspired the project**

<http://www.hedgehogrepublic.org/>

This is a great project, the system weighs (I’m dubious on accuracy when looking at fluctuations) the hedgehogs, records the sound, temperature, a short section of video, reads the micro chip. I think it actually weighs the hedgehog before and after eating so they know how much its eaten but it’s not displayed. The Tech link on the website used to have working links to documents relating to the project. There is a website to track the movement of the hedgehogs which is nice.

The downside to the project, each unit costs more than £750, needs a wired power supply and wired / wifi internet connection. After recently checking the majority of the units seem to be offline, reinforcing the need to fully understand the system and be maintainable.

<https://microidglobal.com/>

This is our supplier of microchips. The product we use are:

[10 Micro-ID 8mm Mini Microchip Syringe - Micro ID Ltd (microidglobal.com)](https://microidglobal.com/product/mini-microchip-1-4-x-8mm-swiss-engineered/)

https://microidglobal.com/product/nano-chips-1-25-x-7mm-pack-10/

Microchips are injected into the rear left flank of the hedgehog. (UPDATE Now using the 7mm version) these are ISO 11784 / 11785 FDX-B 134.2 khz

![Arrow

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We have a handheld halo scanner – readily available from amazon or through MicroID Global

Icon

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LoRaWAN Network

<https://www.thethingsnetwork.org/community/leeds-bradford/>

This is the LoRaWAN network covering Leeds. The LoRaWAN receiver has been installed on the White House building on Otley Chevin, this is one of 30 units installed in Leeds postcode areas. This has been installed by Leeds City Council but has been handed over to a third party.

The receiver and has more than enough coverage for the whole of Otley and neighbouring towns. There are lots of experienced people on The Things Network, and is a great resource, however it’s one of those places you need to know somewhat what you are doing or have some technical knowledge to communicate effectively. This is beyond my ability [Andy] The downside is the small amount of data that can be transmitted, this couldn’t be used to provide a photo of a video, but as a cheap transit check say for a hedgehog highway this could be very viable.

**Initial Development**

To ensure the project is feasible the initial prototype development can take any form of software and hardware. It doesn’t matter at this stage, we just need something that works, scans the hedgehog, integrates the sensors and will transmit the data and it is received and displayable in some form. From then on, we can look at developing it into something that is more refined using products that are cheaper / smaller / less power dependant / rechargeable.

This approach also allows the database and user interface development to progress from an early stage.

29/10/2022 Currently we have a proof of concept using:

* A nodeMCU programmable IC
* Wifi module
* RFID Scanner <https://a.aliexpress.com/_mOu6mpE>
* Mosquitto
* NodeRed

I don’t expect this to be the final form by a long shot just something to start testing and provide data to develop the database and web interface. I like NodeRed due to the standardisation and ease of use. This project needs to run for the next 10 years+ being able to maintain and develop it ourselves is crucial to its long term success.

**Component Selection**

Open to suggestions here, but initially locally sourced products then as we home in on a solution we can start sourcing cheaper alternatives from Aliexpress etc that may take longer to procure. We don’t really have a budget as such to develop this, but if you need components let me know and I’ll procure personally.

**Locations of trackers**

Initially to generate interest and provide some level of basic information that has some scientific use I guestimate creating a grid of 16 units provided by the project in a roughly evenly distributed location. The map doesn’t reflect the area covered as I had to zoom in a lot to get the properties to show up. I would like initially the units to be spaced roughly 250m apart, there is no scientific justification on this other than hedgehogs travel up to a mile or more an evening (meandering) so this will likely capture the same hedgehog on multiple units over time. As one of the aims of this project is to encourage passive interaction with the hedgehogs, we would be offering the units for sale, or as an opensource kit for people to home build. I hope to kick starter the project on behalf of Prickly Pigs however I’m not that far ahead to think about that yet. Anyone with experience in this feel free to offer your services.

Although the initial focus is on feeding stations, I would like the system to be used on hedgehog nesting houses and hedgehog highways between gardens. The more units out there the better data we can collect.

As we have released hedgehogs throughout all of Otley and have many devoted followers and feeders of hedgehogs I would expect to have quite a few units spring up throughout the town. People who have rescued and then released back to their garden post treatment would love to know if their prickly friend is returning.

Once we have a demonstratable system the aim is to extend this system to multiple areas and offer it to other rescues.

Diagram

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**Proposed development**

There are lots of areas people can assist with, you don’t need to be an electrical wizard or programmer to make a difference. We need assistance with the web interface, inputting records, building the prototypes, promoting the service, finding sponsors etc. Let me know if you have ideas or way you can help.

Timeline

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GitHub

I’ve created a GitHub for the project but I have no idea how to use it properly, so if anyone has any spare time to show me how to set it up properly I would really appreciate it.

[thehuffinghedgehog/hedgehog-track-system (github.com)](https://github.com/thehuffinghedgehog/hedgehog-track-system/)

Thanks Andy C on behalf of Prickly Pigs Hedgehog Rescue www.pricklypigs.co.uk

This project is run on behalf of Prickly Pigs Hedgehog Rescue which retains all rights to the technology and software developed for the purpose of this project for charitable aims.