

## Heath style LED strip moth trap

I wanted to make a set of traps that were lightweight and easy to use on survey sites. The idea, based something I found on-line (<https://richardbeckerphotography.co.uk/led-moth-trap/>), was to use a strip of UV LED lights wrapped around a plastic pipe and suspended over a bucket.

Almost everything was purchased from Amazon and in bulk as I was making ten traps, but it should be a lot easier if you're just using one in the garden.

### Components

Buckets: 10 litre plastic with lids

Funnels: Plastic with 17cm intake

Wire: 2-core extension cable for LED strip lights

Connectors: 12V 5A male and female connectors & 52mm crocodile clips

Lights: 5m 300 LED UV black light 12V 24W

Pipe: 32mm waste pipe with end caps

### Sundries

Pb solder, rosin, heat shrink

### Assembly

1. Cut a hole in the bucket lid so the funnel just fits. The lip of the funnel should hold it in place.
2. Cut off the neck of the funnel to create a small entrance hole for the trap. Mine are 5cm but I haven't tested to find an optimum size that maximises capture and minimises escapes.





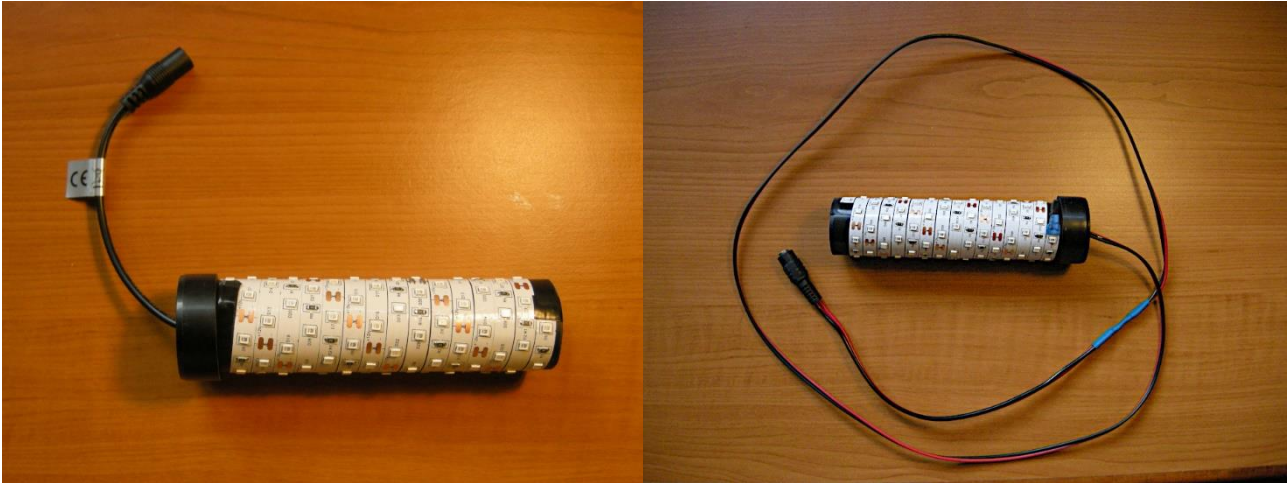
For the light: LED strips must be used in units of 3 LEDs. The strips I bought were 300 LEDs long. The first strip I cut into five sections for use on 22mm diameter water pipe (because I already had some of that), the others I cut into three sections for use on 32mm diameter pipe (that I bought from B&Q).

3. Cut a section of pipe; I used 14cm lengths for the 22mm pipe and 15cm lengths for the 32mm pipe.
4. A small hole is drilled through the side of the pipe, close to one end, for the wire. As there is a female 12V connector already attached to one end of LED strip a slightly larger hole (6.5mm) was used so the strip could be fed through rather than the wire.



5. A similar hole is drilled through the middle of the end cap (for the 22mm pipe I used Pepsi bottle tops for the end caps). The reason for feeding the wire through like this is because I wanted to be able to hang the light from the bucket handle, and for it to hang **as vertically as possible** using the cable.

6. The two ends of the 300 LED strip already have wires for connection but any sections you cut from the middle will need to have wires soldered. You can buy clip connectors, but you'll still need to solder connections to those, so I didn't bother with clips.
7. All new connections were covered with heat shrink.
8. For ease of deployment in the field, and because I hoped to use Li-ion batteries, I have used 12V connectors.
9. Roughen the outer surface of the pipe and stick on the LED strip. Feed the cable through the pipe and the end cap and glue the end cap in place. For the 22mm pipe the 300 LED strip was cut into five sections and for the 32mm pipe into three sections.



### Usage

It turns out the cheap Li-ion batteries I got from China aren't much use. They won't power a 60 LED strip for more than about 4 hours. I would say they are more like 1.2Ah not the 6.8Ah as advertised. Anyway, I have several Yuasa 12V 7Ah Pb-acid batteries that will power 300 LEDs overnight with ease. I'm not sure what the wattage of each unit it but for the 60 LED strip I'd say about 5W is correct and around 8W for the 90 LED strip.

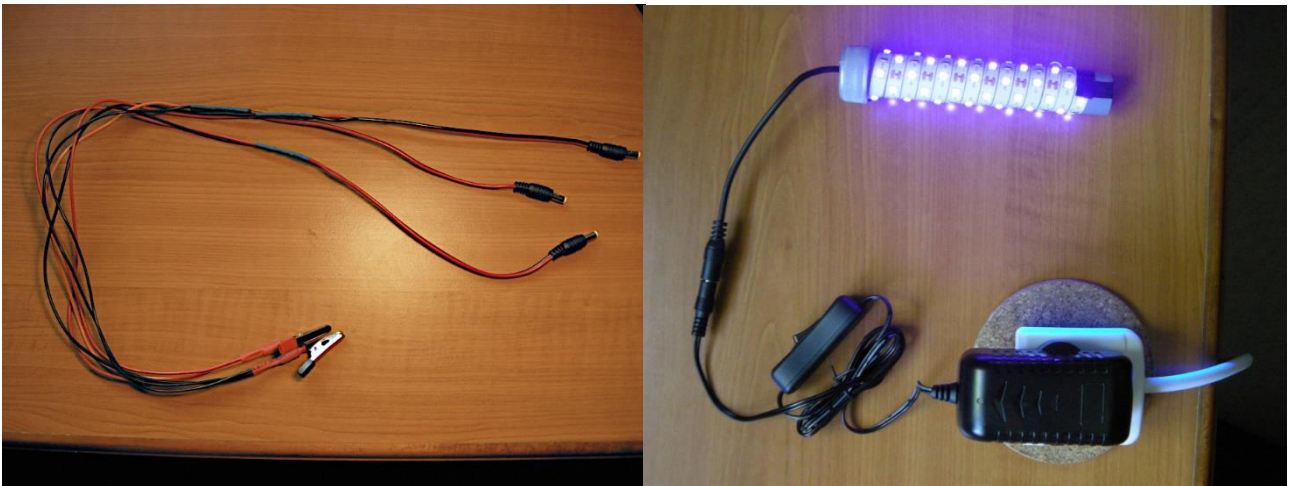


Li-ion battery

Pb-acid battery

I prepared a lead with crocodile clips to attach to the Yuasa terminals and splitting into three 12V male connectors. That way I can power three of these traps from a single battery. I then prepared

two 25m extension cables from the 2-core cable and with m-f connectors, so one trap can be sited near the battery and two others 25m away in different directions.



It seems to work well. Certainly, the results so far are promising. Last Saturday night I ran ten of the traps at Haseley Manor for the Bioblitz and several had more than 100 moths in or around the trap. There is clearly no need for flight interception vanes as the traps work perfectly well without. I suspect they won't be as effective as a traditional mercury vapour lamp in the winter months but in summer when there are lots of moths around they work fine.



Of course you don't have to use batteries if you're planning to trap in your garden. The LED strip comes with a switched supply and 12V transformer so can be run from the mains. I haven't tried it, but you could easily wrap the whole of a 300 LED strip around something suitable.



Here's one in use during a moth survey for the Forestry Commission at Parkhurst Forest.