Creating hibernacula for common lizards *Lacerta vivipara*, The Ham, Lowestoft, Suffolk, England

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SUMMARY

Three hibernacula were created for common lizards *Lacerta vivipara* in an area set aside for a suburban nature conservation area in the town of Lowestoft, eastern England. Six months later in the spring following construction, lizards were present in small numbers around each hibernaculum. The lizards apparently preferred to use natural gaps for entry rather than the entrance pipes provided.

BACKGROUND

Prior to partial clearance for a road development, an area of grassland and gorse *Ulex europaeus* dominated scrub was identified as supporting a small population of common or viviparous lizards *Lacerta* (*Zootoca*) *vivipara*. One core area comprising an old man-made bank constructed of large blocks of hard core and rubble which had become partly vegetated over, appeared especially favoured by lizards and was undoubtedly used as a hibernation site. The bank however lay within the new road line and was therefore going to be completely destroyed but the remaining area of grass and scrub was to be retained and a nature conservation area created. As part of this process it was decided to create three new hibernation sites (hibernacula) within the conservation area and to translocate lizards the short distance to these from the bank and other habitat lying within the road line.

ACTION

Location: The area of grass and scrub know as 'The Ham' (situated in Lowestoft, Suffolk, eastern England) supporting common lizards, covered an area of about 3 ha, about one fifth of which has now been lost to a road development (South Lowestoft Relief Road). In September 2004 prior to commencement of road building, areas open to the sun (one with some gorse cover immediately along side, and two in grassland with low scrub cover within 5 m) were selected for construction of three hibernacula, situated between 60-120 m from an existing man-made bank favoured by lizards. It had been hoped to construct the hibernacula earlier in the summer but for logistical reasons this was not possible. The work was undertaken by The Landscape Partnership in association with Breheny Civil Engineering and funded by Suffolk County Council. The design approximately followed that of Stebbings (2000). It made use of some locally sourced material to keep construction costs down - this had the added benefit of also being more environmentally friendly.

Hibernacula construction: Construction of the hibernacula took place over three days, 20-22 September 2004. The work team consisted of one man operating a mini digger, one driving a dumper truck and two to three people undertaking manual work. On 20 September, three approximately 20 m long east-west running ditches (therefore with a long south-facing axis to catch the sun) 1 m deep and 1.5 m broad (with approximately 70º sloping edges) were dug and the turf and soil heaped up along side. Each ditch was lined with two approx. 19 m lengths of standard land-drain (plastic piping approx. 15 cm in diameter) with additional narrow slits cut cross ways with a bow saw (about 15 slits per 19 m length of pipe, 5-10 cm long by <5 mm wide) to further aid drainage. Left over 'off cuts' were used which were obtained free of charge by the contractors, Breheny Civil Engineering. Old bricks were then laid by hand between and

along the edges of the pipes which where then covered with 25 mm diameter gravel (a total of 2 tonnes used) to a depth of about 5 cm. More rubble present on and adjacent to the site was transported using a dumper truck and tipped into the trenches, carefully at first to ensure the drainage pipe was not crushed. Grass (mixed with some coarser vegetation) cuttings scythed/strimmed on site a week or so earlier was admixed with the rubble and placed by hand in larger hollows and gaps.

When the rubble was approaching ground level, at intervals of about 2 m or so on each side of the ditch, 1-1.25 m lengths of 5 cm diameter plastic corrugated electrical conduit pipe were laid with one end leading into the hibernaculum and the other at the edge to act as entrance holes. These were laid at about a 10-20º slope in order that they were not too steep for animals to get out.

Old logs and branches (also obtained on site) were then laid (long axis facing inwards to the centre of the hibernaculum) around the periphery of each. More hardcore (including some irregular concrete slabs up to 1 m in length) extracted from the original bank, and vegetation cuttings were added to form a low mound. At the end of the day, as the area was popular with local dog walkers etc., each hibernaculum was marked off with hazard tape (red and white plastic tape) to ensure that members of the public did not stray inadvertently on to them. The following day further logs were laid and the soil dug from the trenches was mixed with grass/vegetation cuttings and heaped onto the mounds. The soil was packed down quite firmly and the mounds contoured using the digger bucket, whilst ensuring that many small access gaps, especially around ground level, were left for lizards to enter. The turfs were then re-laid on the hibernacula and also used to conceal any protruding entrance pipes. By the end of day 2 (21 September), two of the three hibernacula were completed and on the third day the last had been completed, and final contouring and finishing off undertaken.

As an after thought, a 10 cm galavanised nail was driven vertically through the front of each entrance pipe into the ground to form a single 'bar' thus restricting access to predators such as weasel *Mustela nivalis* and brown rat *Rattus norvegicus* (although other 'natural' holes were present which they would still be able to enter) whilst still allowing plenty of space for lizards to enter.

Costs: Hire will vary from about £60-£100 for a mini 1.5 or 3 ton digger (2004/05 prices), which could build one or may be two large (20 m long) hibernacula in a day (provided that construction materials are on site). Costs would be more than double if an operator were required and/or a larger machine used. The cost of the pipe is around £10-£20 per hibernacula but if off-cuts are used then these may be obtainable free of charge. An all-in price might be somewhere between £60 - £200 per hibernacula depending on the site and how much material is locally available.

Translocation of lizards: The weather in the autumn of 2004 was fortunately mostly warm and sunny with lizards active well into mid-October. Six days after completion of the hibernacula the old man-made bank was slowly demolished and the habitat where the new road was to be built was made unsuitable for lizards - vegetation was cut (first down to about 10 cm tall then to almost ground level) with strimmers and raked off and then rubble and other material which might be used as refugia was removed using a mini-digger and dumper truck. Any lizards observed during this process were caught by hand and released on one of the hibernacula. The main method of lizard location and capture however, was through the use of corrugated iron sheets or 'tins' (approx. 60 cm x 1 m) and roofing felt mats (50 x 50 cm) which attract reptiles as they provide excellent basking sites (animals bask under and on top of them). These (in total about 20) had been laid out 1 – 4 months earlier (thus allowing plenty of time for the lizards to locate them) in the vicinity of the road line. Several had 'resident' lizards using them. By carefully lifting the tins or mats most lizards could be caught by hand relatively easily and carried over immediately to one of the hibernacula and released. Care was taken to handle captives gently so that they did not shed their tail. No lizard lost its tail during this procedure. Translocation was undertaken in the autumn of 2004 and spring 2005.

CONSEQUENCES

Use of the hibernacula: About 70 lizards were caught in total in autumn 2004 (22 September to beginning of October) and spring 2005 (the first of 2005 caught on 18 March) and released around the hibernacula. Observations undertaken from March 2005 onwards have revealed that each of the hibernacula has a number of resident common lizards and it is normally fairly easy to spot

one or two if weather conditions are reasonable. Both adult and immature lizards have been observed basking on them. It is not known if these were the lizards that were translocated or whether these are individuals that were already present in the area. Either way the hibernacula are being used by at least some lizards and it is hoped that with time numbers using them will build-up. Small numbers of common frogs *Rana temporaria* have also been observed using the hibernacula as refugia.

Hibernacula design: It is not known if the entrance pipes were really of any use as no lizards have been seen using them. Their value probably depends upon the way a hibernaculum is built. The three on The Ham included much coarse hardcore and lots of wood which has resulted in a 'natural finish', and many gaps and crevices which the lizards always seem to choose over the entrance pipes.

Overall it is considered that entrance pipes are unnecessary if hibernacula are well designed and built so that there are lots of small 'natural' entrance points.

As of summer 2005, the hibernacula are surviving well, have become well vegetated and have created interesting landscape features within the conservation area.

REFERENCES

Stebbings R. (2000) Reptile hibernacula - providing a winter refuge. *Enact*, English Nature (England), 8, 2, 4-7.