

Male common midwife toad *Alytes obstetricans* depositing eggs in a flowerpot saucer in a suburban garden?

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The common midwife toad (*Alytes obstetricans*) is a small and stocky anuran, reaching a maximum length of 5.5 cm (Speybroeck et al., 2016). Midwife toads are well known for the behaviour that gives them their name, the parental care observed in males of carrying the eggs on their hind legs until they mature, which takes up to 32 days (Márquez, 1992). On average females lay about 42 eggs and males are able to carry multiple clutches simultaneously (Márquez, 1996), from different females and of varying stages of maturity (Raxworthy, 1990). Márquez (1996) regards males with less than 62 eggs to have only mated once, whereas males with 82 eggs or more can be considered to have mated with two or more females. *Alytes obstetricans* are widespread in Western Europe and extend as far north as northern France (Speybroeck et al., 2016). In 2017, 15 introduced populations were known to exist within Great Britain although due to their secretive nature there are likely more awaiting discovery (Allain & Goodman, 2017). New populations of *A. obstetricans* are still being discovered, such as the one in St. Neots, Cambridgeshire in 2018 (Allain & Goodman, 2019), and since then, a further dozen populations have been identified (unpublished data). The Cambridge population that this note concerns has been monitored since 2015.

Adult males are known to search their local environment for permanent aquatic habitats to deposit their eggs before the tadpoles are ready to hatch. Such habitats may include, but are not limited to, garden ponds, slow-moving rivers and occasionally gravel or clay pits. Permanent water bodies are said to be preferred as the tadpoles often over winter in water (Van der Meijden, 2010). We have previously found the tadpoles of *A. obstetricans* in a small number of garden ponds, which have been the focus of our ongoing study in order to establish where male *A. obstetricans* deposit their eggs. On the evening of 27th August 2020, while surveying an *A. obstetricans* population in an urban area of central Cambridge, an unusual observation was made. Instead of finding tadpoles in a pond, we discovered two tadpoles of quite different sizes (i.e. asynchronous development) in water contained by a ceramic flowerpot saucer (Fig. 1) at a location where midwife toads had been encountered in neighbouring gardens previously. The difference in size may indicate that the tadpoles are from different egg clutches and were therefore collected from different females. No further observations were made on these tadpoles, so it is not



Figure 1. One of the two common midwife toad (*Alytes obstetricans*) tadpoles developing within the ceramic saucer of a flowerpot in an urban garden in central Cambridge, England

known if they metamorphosed successfully. The tadpoles in the flowerpot saucer were identified as those of a midwife toad based on their size (being greater in size than those of common frog or common toads), visual characteristics (such as the dark mottled tail), and the time of year as midwife toads are the only known anuran in Cambridge to have tadpoles that would be present in water bodies in late August.

Since 2015, more than 40 surveys have been carried out in residential gardens of Cambridge in the area where *A. obstetricans* are known to occur but this is the first time that we have discovered tadpoles in such a small and temporary water source. There appear to be two potential hypotheses to explain this observation, either a male toad deposited the eggs in the saucer or two eggs were carried there 'accidentally', perhaps by a predator. Potential predators include domestic cats, foxes, hedgehogs and corvid birds which on finding a male toad looking for water to deposit its eggs may attempt to eat it. When that happens there is the small possibility that the eggs (from a single or multiple females), which are embedded in an elastic strand, may get trapped in the jaws, bill, feet etc.. As the predator was in a garden with limited access to water, after eating the toad it may have taken a drink from the convenient saucer of water.

REFERENCES

A few eggs may then have become deposited in the water in a manner very similar to the purposeful deposit of a male toad. If instead a male toad did actually deposit eggs in the saucer then this raises the question of whether males are capable of separating the accumulated multi-female egg strands into even smaller numbers prior to get deposition in available/suitable environments or whether all eggs were deposited in the saucer at once, and that only two tadpoles remained following cannibalism and/or competition with their conspecifics? Interestingly, the fact that two tadpoles of different sizes were observed is perhaps the tell-tale sign of eggs from a male midwife toad carrying an egg load derived from more than one female.

Most introduced midwife toad populations in Britain are restricted to private residential gardens or urban areas (Beebee & Griffiths, 2000); including the population where this observation took place. It has been reasonable to assume that permanent bodies of water such as garden ponds would be needed for the deposition and maturation of tadpoles until metamorphosis is complete. The observation that midwife toads may be able to exploit temporary water bodies such a saucer, suggests their adaptability to a suburban environment but also their ability to persist despite the lack of larger water bodies. Whilst the tadpoles observed were not seen to have metamorphosed, during previous surveys other recent metamorphs have been found sheltering within crevices in gardens that lack ponds. It is reasonable to assume that these individuals may also have been deposited in small temporary water bodies, such as flowerpot saucers. This would help to explain their observed persistence, and strong association, with urban and suburban environments in Britain.

ACKNOWLEDGEMENTS

We'd like to thank the residents of Cambridge for their continued support with this ongoing project, and for allowing us access to their gardens to survey for the presence of midwife toads. We'd also like to thank the CPARG volunteers that have assisted us with the monitoring of midwife toads within Cambridge.

- Allain, S.J.R. & Goodman, M.J. (2017). Using call playbacks to investigate a population of non-native midwife toads *Alytes obstetricans* (Laurenti, 1768) in Cambridge, UK. *Herpetological Bulletin* 140: 28-30.
- Allain, S.J.R. & Goodman, M.J. (2019). New records of midwife toads (*Alytes obstetricans*) in Cambridgeshire. *Nature in Cambridgeshire* 61: 69-70.
- Beebee, T.J.C. & Griffiths, R.A. (2000). *Amphibians and Reptiles. A Natural History of the British Herpetofauna*. London: HarperCollins. 270 pp.
- Márquez, R. (1992). Terrestrial paternal care and short breeding seasons: reproductive phenology of the midwife toads *Alytes obstetricans* and *A. cisternasii*. *Ecography* 15: 279–288.
- Márquez, R. (1996). Egg mass and size of tadpoles at hatching in the midwife toads. *Alytes obstetricans* and *Alytes cisternasii*: implications for female choice. *Copeia* 1995: 824-831.
- Raxworthy, C.J. (1990). Non-random mating by size in the midwife toad *Alytes obstetricans*: Bigger males carry more eggs. *Amphibia-Reptilia* 11: 247-252.
- Speybroeck, J., Beukema, W., Bok, B. & Van Der Voort, J. (2016). *Field Guide to the Amphibians and Reptiles of Britain and Europe*. London, Bloomsbury Publishing. 432 pp.
- Van der Meijden, A. (2010). *Alytes obstetricans* (Online). AmphibiaWeb. http://amphibiaweb.org/cgi/amphib_query?where-genus=Alytes&where-species=obstetricans. (Accessed April 2021)

Accepted: May 2021