The toads from the Cambridge population (pictured) have been found to have come from Spain, where else could the other populations be from? Photo: Steven J. R. Allain.

One or Multiple Origins of Midwife Toads in the Uk?

By Steven J. R. Allain, Rob Gandola & John W. Wilkinson

By As some of you may be aware, we've been working to closely monitor the population of midwife toads (*Alytes obstetricans*) that have been introduced to Cambridge, UK. So far this has been in the form of disease screening and trying to establish a rough population estimate (*1*). Now we aim to move into the realm of molecular data to find out where the different midwife toad populations in the UK have originated from. It has long been assumed that all British midwife toad populations have a French origin (*2*), but preliminary analysis suggests otherwise; that the Cambridge population originated from a source population in northern Spain. We will be employing a similar analysis utilized in previous studies to investigate the origins of smooth newts (*Lissotriton vulgaris*) in Australia and the Asian common toad (*Duttaphrynus melanostictus*) in Madagascar (*3,4*).

Therefore this project is very similar to the projects mentioned above, and we are just working with a very different species. However, the acquisition of our samples is entirely in the hands of volunteers, although we may have to make a few visits towards the end of the project to ensure collection from some of the more sensitive sites. Another factor that makes this project unique in terms of citizen science is that the toads mainly live in urban areas, particularly in people's gardens. Thankfully in Cambridge, we have been granted permission from the homeowners to access their gardens and, as a bonus, we've managed to get them involved too! We've expanded on this model of local involvement and taken it one step further for our national project, with interested citizen scientists being sent swabbing kits in the post with everything they need to collect samples themselves. Interestingly, some of the toads have gone full circle and have ended up back in captivity; these individuals have also been swabbed to illuminate the origins of the populations they were sourced from.

Although it may sound peculiar, even though this is a common strategy to obtain DNA, taking buccal swabs from these non-native toads will essentially allow us to conduct a phylogeographic test. This information is beneficial to us as not only can we find out where all of the different populations originated, but we can also work out how many different introductions there have been. The toads were once a favorite pet due to their unusual breeding behavior as well as a common laboratory animal so it's likely there would have been escapees or intentional releases. To help fund the project we have set up an online crowdfunding campaign which can be found here. We'd appreciate it if you could share the link with any potentially interested parties as well as taking a look at yourself. This project is possible thanks to an active collaboration between The Herpetological Society of Ireland, the Amphibian and Reptile Conservation Trust and Amphibian and Reptile Groups UK. We aim to add regular project updates on the GoFundMe fundraiser page highlighting how and where everyone's donations are helping us to answer this herpetological enigma.

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