

# The Common Midwife Toad *Alytes obstetricans* in Norfolk

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## Summary

The Common Midwife Toad *Alytes obstetricans* has been reported from a small number of populations within Norfolk, although others may also occur. In this report we summarise our current understanding of this non-native species within the county, as well as what research is required in the future to better understand the distribution of *A. obstetricans* within Norfolk, and their impacts on native species of amphibians.

## Introduction

The Common Midwife Toad *Alytes obstetricans* is a small non-native species of amphibian (Fig. 1), which is present in isolated populations throughout Great Britain (Beebee & Griffiths, 2000). Midwife Toads get their name from the unusual parental care exhibited by the males, carrying strings of fertilised eggs around their hind legs until they are ready to hatch, at which point the male takes them to a pond to release the tadpoles (Böll & Linsenmair, 1998). From here, they undergo the usual development and metamorphosis that amphibians are known for. The mating of *A. obstetricans* takes place on land, which means that they can persist in areas lacking large ponds as the adults are wholly terrestrial, which are usually needed to support our native amphibian species (Shimbov & Allain, 2021).

When introduced in urban areas with a lack of ponds, *A. obstetricans* males may deposit their eggs in smaller artificial water bodies, such as flower pot saucers or trays (Shimbov & Allain, 2021). The clutch sizes of midwife toads are much smaller than our native anuran species, comprising approximately 40 eggs, with Common Frogs *Rana temporaria* and Common Toads



**Figure 1. A male Common Midwife Toad from the Cambridge population carrying a clutch of eggs, indicating how these toads get their name. Steven Allain**

*Bufo bufo* laying thousands at a time (Beebee & Griffiths, 2000). This reduced clutch size may explain how the tadpoles of *A. obstetricans* are able to survive in such seemingly unfavourable bodies of water, such as those described above, due to the reduction in intraspecific competition. Midwife Toads breed later in the year than our native amphibians, and for a longer period of time, with multiple cohorts of tadpoles being present in breeding ponds at once (Speybroeck *et al.*, 2016).

The known introduced populations of *A. obstetricans* throughout Great Britain tend to comprise only a couple of dozen individuals, most of which are limited to the back gardens of private residences (Goodman *et al.*, 2022). It would appear that most of these occur as a result of accidental introductions, although this is currently being investigated at the national level. New populations of *A. obstetricans* are often discovered when the distinctive beeping calls of the males are heard, which has been likened to a smoke alarm with a dying battery, or like the call

of the Scops Owl (Mason, 2022). The males typically call between May and September, during warm, wet nights, although they may call during the day too, and outside of this period (Speybroeck *et al.*, 2016). It is through the playback of these calls that has allowed researchers to monitor populations of Midwife Toads (Allain & Goodman, 2017).

Research has also focussed on whether these introduced populations pose a threat to our native amphibians as a disease vector of *Batrachochytrium dendrobatidis* and *B. salamandrivorans*. Both of these diseases have the ability to infect Midwife Toads, and cause infection in native amphibians (Allain & Duffus, 2019). In the case of *B. salamandrivorans*, Midwife Toads may act as an intermediary host, before later infecting newts and salamanders (Stegen *et al.*, 2017). So far, the limited sampling that has been completed shows that *A. obstetricans* is not a reservoir of infectious diseases that could be spread to native species (Allain & Goodman, 2018; Goodman *et al.*, 2023). More widespread testing is needed to ensure that this is the case across the country.

A number of new *A. obstetricans* populations have been identified in recent years, including in neighbouring Cambridgeshire (Allain & Goodman, 2019). Midwife Toads are known to be present in Norfolk too, with reported populations in the north of the county (Chapman, 2020; Mason, 2022). Despite this, their true distribution was not known and so this research project aimed to determine how many populations of *A. obstetricans* occur in Norfolk, and more importantly where they occur.

## Methods

The available distribution data for *A. obstetricans* within Norfolk was gathered from the Norfolk Biodiversity Information Service (NBIS) via a data request, and the National Biodiversity Network (NBN) Atlas (<https://nbnatlas.org/>), to determine how many records of the species occurred within Norfolk. These distribution records were then collated, indicating potential locations where *A. obstetricans* may occur within the county. Using this information, opportunistic surveys were conducted at some of these locations at suitable evenings to determine the presence of *A. obstetricans*, by listening for calling males during the breeding season (May through to September).

## Results

The data search from NBIS only yielded a single record from West Runton from 2010. To our knowledge, this is the oldest record of midwife toads in Norfolk. We cannot be certain how long *A. obstetricans* have been present within the county, however, they likely inhabited Norfolk for a few years prior to this 2010 record prior to identification, especially if at low abundances, or sexually immature life stages. The NBN Atlas yielded three appropriate records, one from Aylmerton, West Runton, and Beeston Regis respectively (Table 1).

The opportunistic surveys that were conducted confirmed the presence of *A. obstetricans* in two of the locations that were identified through the record search. In some cases, the number of males heard calling were quite substantial (Table 2).

**Table 1. A summary of the data collected by our data searches, investigating the presence of the Common Midwife Toad in Norfolk.**

Location	Grid reference	Date	Source	Abundance
West Runton	TG1742	14/05/2010	NBIS	Unknown
Aylmerton	TG18123975	10/05/2014	NBN Atlas	1
West Runton	TG18554162	27/07/2016	NBN Atlas	5
Beeston Regis	TG16884189	12/08/2020	NBN Atlas	Unknown

**Table 2. The results of our opportunistic surveys for the Common Midwife Toad in North Norfolk.**

Location	Grid reference	Date	Abundance
Beeston Regis	TG174419	13/08/2018	40
Beeston Regis	TG174419	03/06/2020	Unknown
Beeston Regis	TG174419	08/05/2021	24
West Runton	TG176428	01/08/2021	1
Beeston Regis	TG174419	03/06/2022	8
West Runton	TG176428	30/06/2022	1

Due to the fact that the *A. obstetricans* populations in Norfolk (like elsewhere) occur within the gardens of private residences, we were unable to conduct any surveys within Aylmerton, for the time being. The three confirmed populations are geographically close to one another (Fig. 2), with the potential for other sub-populations in the area. Additionally, we also received reports of another potential population of *A. obstetricans* in Sprowston (including photos), with the last individual seen in mid-2016 in a private garden, where tadpoles were also observed in the garden's pond. Unfortunately, due to the ill health of the homeowner, we have not been able to confirm whether this population still persists.



**Figure 2. A map of Norfolk indicating the geographic location of the three known populations of Common Midwife Toads *Alytes obstetricans* within Norfolk (circles), and the location of a potential population (diamond).**

## Discussion

Through the completion of our data search and the subsequent surveys, we

can conclude that *A. obstetricans* is still present and breeding in north Norfolk. Three populations have been identified, and given the short distance between each of these, it is likely that each originated from a single introduction event with natural dispersal between them, forming a large metapopulation in north Norfolk. If human intervention has aided in their spread, this assistance is likely to have been minimal. *Alytes obstetricans* have a limited dispersal ability compared to other amphibians (Caballero-Díaz *et al.*, 2022), reducing the likelihood that they are likely to spread beyond their current range without anthropogenic movement. Further surveys are needed to confirm the presence of *A. obstetricans* within Sprowston, but also their range within Norfolk as a whole. Given the secretive nature of the species, their electronic-like call, and the low human population density of Norfolk, it is likely that other populations still await discovery.

The populations we have identified fit comfortably within the range of those previously recorded by other Norfolk naturalists (Chapman, 2020; Mason, 2022), however neither provided any estimates of abundance. The number of *A. obstetricans* present within each of these is likely to be considerably higher than that we have reported above. Our survey method of listening for calling males during the breeding season biases the data against females, and those life stages which do not vocalise. Due to the lack of permission to access some of the gardens where *A.*

*obstetricans* were heard calling, we were unable to determine how many larvae, juveniles, and females were present within each of these populations/sub-populations.

As has been completed elsewhere, once the right licence and access permissions have been sought, the Norfolk Midwife Toad populations should be swabbed for the presence of the pathogenic chytrid fungi (Goodman *et al.*, 2023). Considering the longevity of the populations, and the fact that *A. obstetricans* are highly susceptible to *B. dendrobatidis* (Allain & Duffus, 2019), the Norfolk populations are likely to be disease-free. Without adequate testing and further surveillance however, this assumption cannot be made, as their introduction pathway is not currently known. These permissions will also allow researchers to further investigate both the structure and size of each population.

DNA samples have been taken from captive toads originating from the West Runton population in order to determine how the populations of *A. obstetricans* in Norfolk relate to those throughout the rest of Great Britain, and to determine where within their natural distribution these toads originated. These samples are yet to be analysed and their provenance is still yet to be established.

## Acknowledgements

We would like to thank Paul Baker for carrying out the opportunistic surveys at Beeston Regis, and the cooperation of the residents at West Runton. We thank John Baker for helping to collect swab samples from the captive toads

## References

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. 2018. The absence of the amphibian chytrid fungi in the common midwife toad (*Alytes obstetricans*) from an introduced population in Cambridge, UK. *Herpetology Notes*, 11: 451-454.

Allain, S.J.R. & Duffus, A.L.J. 2019. Emerging

infectious disease threats to European herpetofauna. *Herpetological Journal*, 29(4): 189-206.

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*. HarperCollins: London.

Böll, S. & Linsenmair, K.E. 1998. Size-dependent male reproductive success and size-assortative mating in the midwife toad *Alytes obstetricans*. *Amphibia-Reptilia*, 19(1): 75-89.

Caballero-Díaz, C., Sánchez-Montes, G., Gómez, I., Díaz-Zúñiga, A. & Martínez-Solano, Í. 2022. Artificial water bodies as amphibian breeding sites: the case of the common midwife toad (*Alytes obstetricans*) in central Spain. *Amphibia-Reptilia*, 43(4): 395-406.

Chapman, C. 2020. Midwife Toads (*Alytes obstetricans*) in North Norfolk. *The Norfolk Natterjack*, 151: 18.

Goodman, M.J., Clemens, D.J., Rose, L.G. & Allain, S.J.R. 2022. Limb malformations in introduced populations of midwife toad *Alytes obstetricans* in Great Britain. *Herpetological Bulletin*, 161: 31-33.

Goodman, M.J., Clemens, D.J., Shimbov, M.I. & Allain, S.J.R. 2023. No amphibian chytrid fungus *Batrachochytrium dendrobatidis* detected in four introduced populations of the midwife toad *Alytes obstetricans* in eastern England. *Herpetological Bulletin*, 165: 1-4.

Mason, C. 2022. Strange Voices in Roman Camp. *The Pied Flyer*, 22(7): 27.

Shimbov, M. I. & Allain, S. J. R. 2021. Male common midwife toad *Alytes obstetricans* depositing eggs in a flowerpot saucer in a suburban garden? *Herpetological Bulletin*, 157: 38-39.

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.

Stegen, G., Pasmans, F., Schmidt, B.R., Rouffaer, L.O., Van Praet, S., Schaub, M., Canessa, S., Laudelout, A., Kinet, T., Adriaensen, C., Haesebrouck, F., Bert, W., Bossuyt, F. & Martel, A. 2017. Drivers of salamander extirpation mediated by *Batrachochytrium salamandrivorans*. *Nature*, 544: 353-356.

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