



An Observation of Brachydactyly in the European Common Toad (*Bufo bufo* L. 1758)

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The European Common Toad (*Bufo bufo*) is a robust, small, green-brownish toad, widespread across its native range of Europe (Inns 2009). The species is sexually dimorphic, with the female, attaining lengths of 70 to 90 mm, growing larger than the males which reach 60 to 75 mm (Inns 2009). Male European Common Toads are easy to identify in the breeding season as they develop dark rough nuptial pads on their thumbs, used in amplexus. In addition, the males also develop strong forearms to help wrestle other males and to hold onto females (Inns 2009).

In the United Kingdom, typically during mid to late February and the end of March, volunteers help to move amphibians off busy roads towards their breeding ponds. The aim is for volunteers to save as many migrating amphibians as possible, while also engaging in citizen science. These toad patrols have been operating since the 1980s, and help to prevent the deaths of thousands of amphibians annually (Cattell 2015).

At 1908 h on 10 March 2022, during a toad patrol in Litcham, Norfolk, UK (52.732259 °N, 0.782873 °E; WGS84), a male European Common Toad was observed with a very clear limb deformity (Fig. 1). The right hind foot was noticeably deformed, with the toad possessing the full leg and reduced toes. The toad looked healthy regardless of this, and although walking a little slower than the other toads, was still active and mobile. The leg was not misshapen nor had a loss of muscle tone. This deformity was later identified as brachydactyly using Meteyer (2000), despite the lack of radiographs.

Brachydactyly has previously been observed in Perez’s Frog (*Pelophylax perezii*) from the Serra da Estrela Natural Park in Portugal with a 2.2% incidence rate in 2014 (Laurentino et al. 2016). Outside of Europe, brachydactyly has also been recorded in the Granular Toad (*Rhinella granulosa*) from the Caatinga of Brazil (Correia et al. 2018), the Cane Toad (*R. marina*) from the Eastern Amazon, Brazil (Pedroso-Santos et al. 2020), Saharan Frog (*P. saharicus*) and Mediterranean Painted Frog (*Discoglossus pictus*) in the Lebna Dam, Tunisia

(Hassine et al. 2011). These examples show that brachydactyly affects a number of different amphibian species globally.

The causes of limb abnormalities in bufonids (and other amphibians) are most frequently correlated with a multitude of human activities such as agriculture, contaminated soil, or contaminated bodies of water (Bowerman et al. 2010). Aside from these, malformations may also be caused due to the presence of parasites or failed predation attempts (Bowerman et al. 2010). Other causal factors of limb malformations in anurans include inbreeding, ultraviolet radiation, regenera-

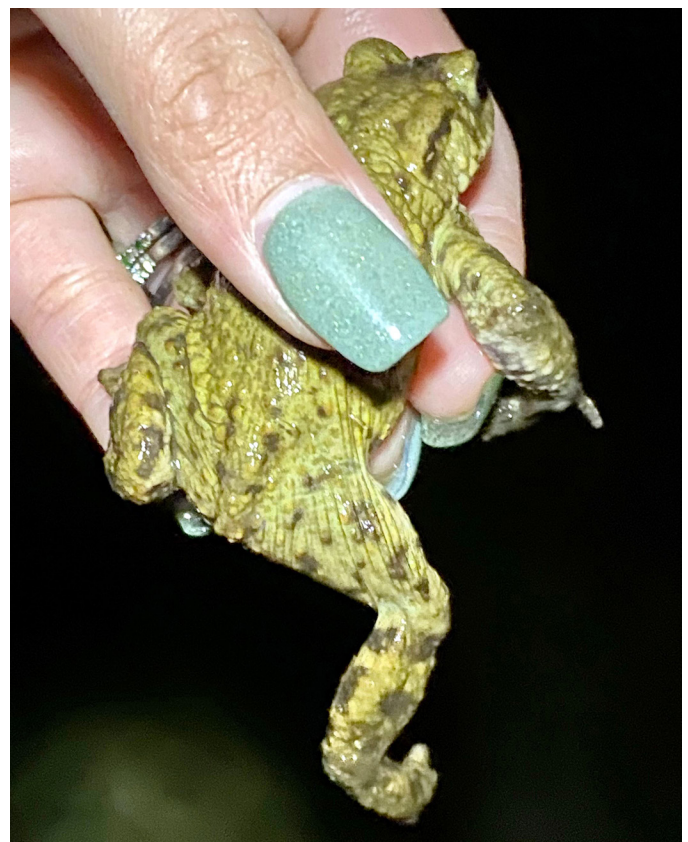


Fig. 1. A male European Common Toad (*Bufo bufo*) with brachydactyly of the right hind foot. Photograph by Lana J. Deaton.

tion following trauma, and infective pathogens (Ballengee and Sessions 2009).

This observation is the first recorded case of brachydactyly in *B. bufo* from the UK. The causal factors of brachydactyly in other species can be quite varied. Given that only a single toad from a relatively large and established population was affected, it is unlikely to be genetic in nature, or due to the presence of disease. The parasites that also cause such deformities, like the trematode *Ribeiroia ondatrae* (Johnson et al. 2001), are yet to be recorded in the UK, and thus are ruled out as a cause here. This points to trauma being the probable cause of the brachydactyly reported herein, although environmental pollutants cannot be ruled out. Further research is needed to determine the causes of brachydactyly in *B. bufo* in the UK.

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