



A Case of Erythrism in the Common Frog (*Rana temporaria*)

Pete West¹ and Steven J. R. Allain²

¹Hampshire and Isle of Wight Amphibian and Reptile Group (petewest74@hotmail.com)

²Cambridgeshire and Peterborough Amphibian and Reptile Group

The Common Frog (*Rana temporaria*), the most widely distributed amphibian in Europe, exhibits considerable variation in color, which ranges from brown, green, or gray through yellow and red (Arnold and Burton 2002). Color abnormalities previously observed in Common Frogs include albinism (Eales 1933; Smallcombe 1949), melanism (Alho et al. 2010), and a xanthochromic individual (Allain and Goodman 2017). Most occurrences are of single frogs in populations of otherwise normally colored individuals.

In March 2001 (or thereabouts), PW received a call from a concerned local resident regarding a “tropical frog” that had been passed from the Marwell Zoological Park to the Hampshire and Isle of Wight Wildlife Trust. The frog had been seen in a newly created pond in a small boggy woodland along Newnham Road, Hook, Hampshire, United Kingdom (51°16'48.2"N, 00°58'13.1"W). The “tropical” frog was found to be an erythristic Common Frog (Fig. 1). The pond in which the frog was concealed was approximately 4 x 2 m and clear enough to see the individual resting at the bottom. The frog was captured, identified as a male, examined, and released into the pond where it had been found.



Fig. 1. An erythristic male Common Frog (*Rana temporaria*). All of the usual markings of Common Frogs are present but have been shifted into the red color spectrum. Photograph by Chris Pengelly.

Erythrism (from the Greek *eruthrós* meaning red) has been recorded in birds (Hudon and Mulvihill 2017), mammals (Schwarz 1927), reptiles (Maëat et al. 2016) and amphibians (Tilley 1982), and apparently is caused either by genetic or dietary means (Hudon and Mulvihill 2017). Chromatophores (pigment-containing cells) are usually grouped based on the color they reflect under white light, in this case an increased number of erythrophores that reflect red light (Matsumoto 1965). Given that the individual was uniformly red, it likely lacked other chromatophores such as melanophores and cyanophores (for more information on the structure and function of chromatophores, see Bagnara et al. 1968).

Despite the disadvantages normally associated with abnormal coloration (particularly increased susceptibility to predation; e.g., Isley 1938), this individual had reached a fair size and was likely first spotted when trying to find a mate. Beebee and Griffiths (2000) stated that in recent years orange-colored frogs have turned up frequently in southern Britain, although the cause remains unknown. Some of those frogs, such as the individual depicted herein, likely were erythristic. A growing body of evidence (e.g., Hoffman and Blouin 2000) suggests that such color irregularities are not uncommon among anurans.

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