

Common wall lizards *Podarcis muralis* at a new site in England registered by a citizen science reporting tool

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The common wall lizard *Podarcis muralis* Laurenti, 1768, is a small lizard species that is widely distributed across southern and western Europe (Böhme et al., 2009). It has colonised areas outside this native range successfully, including Britain, where the Wall Lizard Project estimates 20,500 animals to be living (Langham, 2019). Here, we report an observation of *P. muralis* at Faversham, a town in south-east England. This has been identified from a sighting submitted to Froglife's Dragon Finder App, a free digital recording tool that was developed with the aim of increasing recording of amphibians and reptiles by members of the public in Great Britain and Northern Ireland.

The wall lizard sighting was submitted to a Microsoft Access database through the Dragon Finder App on 9 April 2022, as a photo of a pair of lizards basking on a brick wall (Fig. 1). These were reported using the species selection tool built into the app as viviparous lizards *Zootoca vivipara*. However, during verification by trained Froglife staff members and volunteers (using photos and distributional records), the two lizards were identified as *P. muralis*, probably an adult male and female. Through information accompanying the submission, we learned that the sighting was from a private garden of a property built three years earlier. From the location of the sighting and follow-up correspondence with the app user, it was inferred that the house is part of a larger residential development, bordered by mixed land uses (improved grassland, built-up areas and arable fields) (Kent Habitat Survey, 2012). The approximate location of the sighting was 51.309° N, 0.88° E (Fig. 2). In further correspondence with the app user, we received photographs taken in spring 2020 of a juvenile *P. muralis* basking on the same brick wall (Fig. 3). The user had observed lizards basking on the garden walls, believed to be the same population of *P. muralis*, regularly in the spring and summer since 2020.

The only other verified reports of *P. muralis* in the Faversham area come from the nearby site of Ospringe Church (location: 51.30684° N, 0.86835° E), first recorded and verified by Kent Reptile and Amphibian Group in July 2020. At the time of writing, the origin of this population had not been identified. This population is located <1 km south-west of the Faversham sighting, separated mostly by a mixture of arable fields and improved grassland (Kent Habitat Survey, 2012).

Williams (2019) notes that introduced *P. muralis* populations in Britain display a preference for dense and scattered scrub, bare ground, introduced and dry



Figure 1. A pair of *Podarcis muralis* in Faversham, submitted to the Dragon Finder App in April 2022



Figure 2. Map depicting the locations of the *Podarcis muralis* observations in Faversham (blue circle, right) and the Ospringe Church (blue star, far left) (Courtesy ESRI Satellite (ArcGIS/World Imagery))

dwarf shrub and hard cliff, but also favour anthropogenic features including roads, rail tracks, quarries and residential gardens. In fact, Williams (2019) found a lower probability of occurrence at increased distances from roads, rail tracks



Figure 3. A juvenile *Podarcis muralis* taken in 2020 at the same location as Figure 1

and buildings. Because the land-use between the Ospringe and Faversham is dominated by arable fields and improved grassland, it is unlikely that *P. muralis* would be encountered in these habitats as part of a contiguous population. However, the proximity of the two observation sites (<1 km) suggests the populations have a common origin; it seems likely that fragments of suitable habitat may have acted as ‘stepping stones’ for the dispersal of *P. muralis* (Williams, 2019). Also the similar ‘brown’ morphology observed amongst individuals in the Ospringe population (Phillips, 2020) and in Faversham (Figs. 1&3) supports a common origin. Alternatively human-mediated, or ‘jump’ dispersal could provide a possible explanation for the presence of both populations; Michaelides et al. (2015) found that 11 of 23 British *P. muralis* populations studied likely originated from non-native wild populations in England, citing deliberate, ‘secondary introductions’ as likely explanations for this. It should be noted that a plant nursery borders west of the residential area from which the sighting was reported to us; Michaelides et al. (2013) report that “some introductions (of *P. muralis*) may be mediated via the nursery trade”.

Finally, the identification of *P. muralis* at a previously unrecorded site in Faversham through the Dragon Finder App helps to showcase some of the benefits associated with citizen science projects, and particularly public species recording tools. They allow for the detection of non-native species (Howard et al., 2022) and provide data over broad geographical scales - “allowing ecologists to move from local inference to inference at the scale of species ranges and ecosystems” (Dickinson et al., 2010); particularly relevant in the context of a non-native species such as *P. muralis* as it expands its distribution and population. Of all *P. muralis* observations submitted through the Dragon Finder App from 2016–2021, we estimate that two further sightings, both in Devon, would warrant further investigation as potential unrecorded populations, highlighting this value further.

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