Records of terrapins (Emydidae & Kinosternidae: Testudines) in Tunbridge Wells, Kent

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Introduction

Freshwater turtles are not native to Great Britain; however, several species have been added to Britain's herpetofaunal assemblage in recent times, owing to the trade in pet reptiles (Langton *et al*., 2011). During the mid-1990s, terrapins, especially the red-eared slider (*Trachemys scripta elegans*), were popular pets, with high demand due in part to the 'Teenage Mutant Ninja Turtle' craze (Beebee & Griffiths, 2000). Unfortunately, a large number of these animals have since been released into water bodies, for numerous reasons, including the animals growing too large for their owners to easily care for them, or owners becoming bored with their pet. They are extremely long-lived, surviving for up to 40 years or more (Cathrine & Monir, 2022). These animals are now a conspicuous addition to many ponds and lakes across Great Britain and Ireland, often being spotted basking on banks and other rigid structures.

Previous research has identified that feral terrapins are far more numerous within the environment across Great Britain than previously suspected (Allain, 2019). Research has yet to fully determine the ecological impacts of non-native terrapins in freshwater habitats. Little is known, for instance, about whether introduced terrapins or turtles predate any native vertebrate species, and what the impacts of these interactions are. Our knowledge is also lacking regarding the extent to which their physiology allows them to cope with different types of freshwater habitats in Great Britain, which may help to explain the longevity of some individuals. To our present knowledge, introduced terrapins cannot successfully breed in Great Britain, due to the climate being colder than in their native range (Beebee & Griffiths, 2000). However, this could change as our climate warms in the coming century.

Very little data exists regarding the presence of introduced terrapins in Kent, with 31 records currently held by the Kent Reptile and Amphibian Group (Fig. 1). Until now, few surveys have been conducted to investigate the occurrence of feral terrapins in and around the High Weald. Allain (2019) noted that metropolitan areas were more likely to have populations of feral terrapins, compared to rural locations. Therefore, this project aimed to undertake surveys in Tunbridge Wells, given its size and prominence as a settlement within the High Weald. Tunbridge

Wells also has a number of both artificial and natural water bodies close to residential areas, which are likely candidates for areas where unwanted pets may have been released.

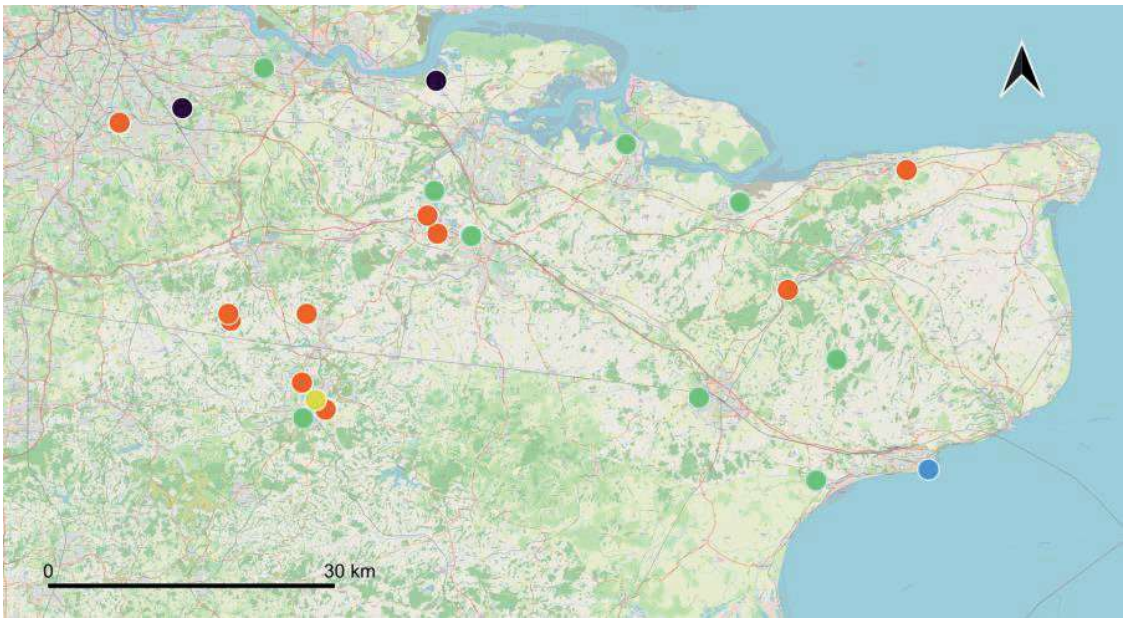

FIGURE 1. A map indicating where in Kent previous observations of feral terrapins and sea turtles have been recorded. Key: green circles = red-eared slider (*Trachemys scripta elegans*), black circles = European pond terrapin (*Emys orbicularis*), yellow circles = snapping turtle (*Chelydra serpentina*), blue circles = leatherback turtle (*Dermochelys coriacea*), and orange circules = unknown terrapin species. We would like to thank Lee Brady for supplying the data used in this figure.

Methods

Large artificial water bodies (ponds or man-made lakes) within Tunbridge Wells and its nearby villages, were identified as being potential homes to feral terrapins. These water bodies were assumed to be generally suited to terrapins based on their size, and environmental complexity. Visual encounter surveys were conducted on favourable days (with air temperatures above 15˚C) during the mid-spring and summer, with the aim of observing terrapins basking on banks or among vegetation, or swimming within each body of water. Terrapins were searched for using binoculars in order to aid in detection. Where possible, photographs of each

terrapin were taken using a Pentax K-50 and identified following Langton *et al.* (2011).

Results

FIGURE 2. A map indicating where in Tunbridge Wells we have successfully identified the presence of feral terrapins (orange diamonds), through the use of visual encounter surveys.

TABLE 1. A summary of the feral terrapins we observed across Tunbridge Wells throughout 2021 and 2022, with their location and species indicated.

Date	**Location**	**Grid reference**	**Species**	**Scientific name**	**Abund-ance**
04/04/ 2021	Brighton Lake	TQ5771138565	Common musk turtle	*Sternotherus odoratus*	1
05/04/ 2021	Brighton Lake	TQ5771138565	Common musk turtle	*Sternotherus odoratus*	1
18/04/ 2021	Grosvenor & Hilbert Park - Wetland Lake	TQ5917740752	Red-eared slider	*Trachemys scripta elegans*	1
20/04/	Dunorlan Park	TQ6000139450	Red-eared slider	*Trachemys*	1

2021	- Boating Lake			*scripta elegans*	
20/04/2021	Dunorlan Park - Boating Lake	TQ6000139450	Yellow-bellied slider	*Trachemys scripta scripta*	2
20/04/2021	Brighton Lake	TQ5771138565	Common musk turtle	*Sternotherus odoratus*	1
15/03/2022	Grosvenor & Hilbert Park - Wetland Lake	TQ5917740752	Red-eared slider	*Trachemys scripta elegans*	1
03/04/2022	Brighton Lake	TQ5771138565	Common musk turtle	*Sternotherus odoratus*	1

A total of 21 surveys were conducted across the spring and summer of 2021 and 2022, with 13 surveys undertaken across four water bodies in Tunbridge Wells (Sherwood Lake, Dunorlan Park, Brighton Lake, and Grosvenor & Hilbert Park), with an additional eight surveys conducted at water bodies elsewhere around Tonbridge and the Weald: Haysden Country Park, and village ponds in Matfield, Hadlow, Horsmonden, Kilndown, Goudhurst, and Hawkhurst. The best months to complete surveys in order to detect the presence of terrapins are April and May (Allain, 2019). Of the 13 surveys conducted in Tunbridge Wells, seven of these yielded observations of terrapins (Fig. 2). None of the surveys conducted elsewhere resulted in any sightings of feral terrapins.

Discussion

It is evident from our surveys that feral terrapins are present at a number of locations within Tunbridge Wells. One of the authors has also observed, on more than one occasion, a terrapin resident in Hawkhurst village duck pond, last observed in June 2020, though the species was not confirmed at that time; we did not observe this terrapin in the above surveys. Our surveys from elsewhere around the Weald were unsuccessful in detecting terrapins, despite the fact that they are likely to be present, based on information gathered from social media, and village newsletters. Further surveys of terrapins are therefore needed around West Kent, especially in the lakes of Haysden Country Park (Tonbridge), and areas in the High Weald such as the village ponds of Goudhurst and Hawkhurst, where terrapins have previously been sighted, but not necessarily recorded (Tonbridge & Malling District Council, 2020).

Our observation of the common musk turtle (*Sternotherus odoratus*) in Brighton Lake, Tunbridge Wells, was the first recorded observation of this species outside of London (Fig. 3). Following this sighting, *S. odoratus* has now been added to the UK Species Inventory. The individual we discovered living in this man-made lake was originally encountered one evening in early April 2021, while surveying for common toads (*Bufo bufo*), as part of a national monitoring project. Other introduced species also observed in Brighton Lake while undertaking these surveys included signal crayfish (*Pacifastacus leniusculus*), pike (*Esox lucius*), and carp (*Cyprinus carpio*). This indicates that Brighton Lake has been subject to multiple introduction events, of species across numerous taxa.

FIGURE 3. The common musk turtle (*Sternotherus odoratus*) discovered in Brighton Lake in April 2021, illuminated by torchlight on a nocturnal amphibian survey, and encountered on multiple occasions since (see Table 1).

There are likely more *S. odoratus* present in Great Britain than currently recognised, because they continue to be popular in the UK's pet reptile trade (Lynn & Roberts, 2023). Moreover, when stressed, they can produce a pungent odour (a behaviour reflected in their scientific name) which their owner may grow weary of, increasing the likelihood an owner may decide to release the animal into the wild. Musk turtles are also bottom dwellers, and therefore do not readily bask as conspicuously as sliders do, making them less detectable to surveyors or members of the public. Our observations of red-eared sliders (*Trachemys scripta elegans*) at the Wetland Pond in Grosvenor & Hilbert Park (Fig. 4) are of multiple individuals, based on the size of the carapace of the terrapins encountered. This species is by far the most common of the feral terrapins present in Great Britain (Allain, 2019). Imports of red-eared sliders were banned in 1997, meaning that those that are present in our water bodies are relics from a time when they were popular pets.

FIGURE 4. One of the red-eared sliders (*Trachemys scripta elegans*) observed at Grosvenor & Hilbert Park, swimming in the Wetland Lake.

The data presented within this report demonstrates that feral populations of terrapins occur within Tunbridge Wells, and are likely present elsewhere in High Weald and across Kent. At present, these animals persist in small numbers, which may decrease their detection probability, and perhaps explains why they have

previously gone unrecorded. With the ongoing cost of living crisis, more terrapins (and other exotic amphibians and reptiles) may find themselves released into the wild, as owners may no longer be able to afford to care for them. It is therefore important for the various water bodies throughout the rest of Kent be the subject of further study, in order to provide a baseline about the presence of feral terrapins, and to determine the true extent of their presence within the region.

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