A mobile phone based thermal imaging camera to predict nest box occupancy by Edible Dormice (*Glis glis*) and Hazel Dormice (*Muscardinus avellanarius*)

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Abstract

Infra-red thermography is a non-invasive method of measuring heat radiation from objects and has many biological applications, including the detection and monitoring of individual wild animals. Thermal cameras have also assisted in the estimation of abundance of wild animal species.

This study aimed to investigate whether the thermal signature from dormouse nestboxes, using a handheld mobile phone with a thermal camera attachment can be a useful predictor of both occupancy and numbers of present inside the nestbox.

Thermal images of 70 Edible Dormouse nestboxes before disturbance and 213 undisturbed Hazel Dormouse nestboxes were taken to predict potential box occupancy. The surface temperature (°C) of any apparent hotspot was recorded. Subsequently the number of occupants (if any) and their total mass was also recorded.

For Edible Dormice, the thermal hotspot signature (°C) showed a positive correlation with the absence (no hotspot) or numbers inside the nestbox (R^2 = 0.458) and a strong positive correlation between the thermal signature and the combined mass (g) of those dormice inside the nestbox (R^2 = 0.841).

For Hazel Dormice on 3 sites, the technique correctly predicted the presence of a small mammal in 35 nestboxes with a range of 92.5 to 100% confidence but failed to identify a torpid dormouse.

It is concluded that mobile phone based and other more expensive thermal cameras are useful for predicting nestbox occupancy and thus reduce the time taken to monitor nestboxes.

Keywords

Thermal_imaging, nestbox, hotspot, mass

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Conflicts of interest