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New evidence for the establishment and management of the European fallow deer (*Dama dama dama*) in Roman Britain

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ABSTRACT

The semi-domestic status of the European fallow deer (*Dama dama dama*) renders its ancient biogeography a reflection of human activity with the potential to provide important insights into the movement, trade patterns and ideology of past societies. Given this potential, fallow deer have received surprisingly little attention from scientists within the fields of archaeology, biology and zoology. Here we present new AMS radiocarbon dates, stable carbon and nitrogen isotope data and genetic evidence (the first ancient DNA sequences for the species) resulting from the analysis of a set of remains recovered from the Roman settlement at Monkton on the Isle of Thanet, Kent, UK. By viewing our results against the very limited available comparative data, this paper provides new information for the establishment and management of fallow deer in Britain. We argue that much more could be achieved with even a slight increase in sample sizes and a plea is made for greater research into this culturally significant species.

1. Introduction

Of all the World's deer, the distribution of the European fallow deer (*Dama dama dama*) has been most influenced by humans, who have transported the species from its restricted glacial refuge in the eastern Mediterranean (possibly just Turkey), across Europe, Africa, America and Australasia (see Chapman and Chapman, 1975; Putman, 1988, 22; Masseti, 1996). Studies of archaeological artefacts, iconography and the remains of the animals themselves suggest that translocations began early, with fallow deer being introduced to Rhodes during the Neolithic period (Masseti et al., 2006). By the Bronze Age they were established across many of the Aegean islands and on mainland Greece (Yannouli and Trantalidou, 1999), apparently arriving in Italy and Sicily by the Roman period (Mackinnon, 2004; Wilson, 1990).

The dispersal of fallow deer to northern Europe is less well understood. Most of the current academic literature attributes their movement to the Normans (e.g. Yalden, 1999; Langbein and Chapman, 2003; Sykes, 2007) but there is growing zooarchaeological evidence to suggest that the Romans also undertook widespread transportation and management of fallow deer: *Dama* remains have been recovered from Roman period sites in Portugal (Davis and Mackinnon, 2009), Switzerland (Schmid, 1965), France (Lepetz and Yvinec, 2002) the Netherlands (Prummel, 1975) and Britain (Sykes, 2004). These remains are, however, rather rare and there are often questions over their identification and dating. Even where remains are definitely from fallow deer of Roman date there exists the possibility that they represent traded body parts rather than animals that lived and died in the local area (Sykes, 2004, 2010a). The application of strontium isotope analysis to AMS-dated *Dama* teeth has been used profitably in this respect to demonstrate that live fallow deer were imported to, and bred at, Fishbourne Roman Palace in southern England, the purported residence of the client king *Togidubnus* (Sykes et al., 2006). However, proof that a herd was managed at such a uniquely luxurious site, where exotic goods were common, cannot be taken as evidence that the species was endemic in Roman Britain. To make such claims would require far more data but because few researchers recognise the cultural significance and interpretative potential of fallow deer, their archaeological remains, when identified, are seldom submitted for scientific analysis.

This paper is intended as an initial step towards redressing the situation and advancing our understanding of the ancient

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biogeography of fallow deer. It presents the results from a series of studies – AMS radiocarbon dating, stable isotope analysis, osteometrics and genetics – undertaken on a set of *Dama* specimens identified in the assemblage from the Roman settlement at Monkton on the Isle of Thanet, UK (see Fig. 1 and Bendrey, 2003). Here these results are viewed against the available evidence for Roman Europe but, as this work is pioneering, sample sizes are inevitably small and there are few comparative data available, particularly for the stable isotope and genetic analyses. Whilst our data are currently limited, our intention is that this study will form an important foundation upon which future scientific research into the ancient biogeography of fallow deer can be built.

2. Methods

2.1. Zooarchaeological representation and osteometrics

The Monkton fallow deer specimens were originally identified and analysed by Bendrey (2003) who highlighted their significance and, after reviewing the scarce evidence for *Dama* remains in Roman Europe, proposed two hypotheses to account for their presence: that the fallow deer bones represented imported body parts (joints of preserved venison and raw materials), or that they derived from animals that were introduced to controlled parks in the area. Without further evidence neither hypothesis could be validated or disproved.

Between 2007 and 2008, we developed a database containing all available published and grey literature zooarchaeological records (presence/absence, skeletal representation and metrics) for fallow deer from Europe and Anatolia (Mesolithic to Post-medieval): the database can now be accessed on-line at www.nottingham.ac.uk/~aczzoo/deer_bone/. Analysis of the database demonstrated that the Monkton *Dama* assemblage is one of the largest as yet recovered from Roman Europe and that, if the specimens were indeed Roman and their metrical data were combined with those from other contemporary sites, it might be possible to understand better the strategies by which the species was managed.

The metrical dataset for Roman period fallow deer is small, particularly when the data are split by skeletal element and measurement type. In recognition that these data could be made more meaningful if viewed against a baseline derived from modern animals of known age and sex, skeletal elements from 227 fallow deer (119 male and 108 female) from the Phoenix Park, Dublin, Ireland herd were measured following the standards of von den Driesch (1976): the raw data are presented in Carden et al. (in preparation). These modern data facilitate comparison with the archaeological measurements but they also offer the opportunity to calculate log ratios, the methods and benefits of which are discussed in detail elsewhere (e.g. Davis, 1996; Albarella, 2002; Thomas, 2005). In brief, these studies have shown that post-cranial measurements taken along the same skeletal plane (lengths, widths or depths) are highly correlated. If archaeological measurements are converted into logarithms in base 10, using values derived

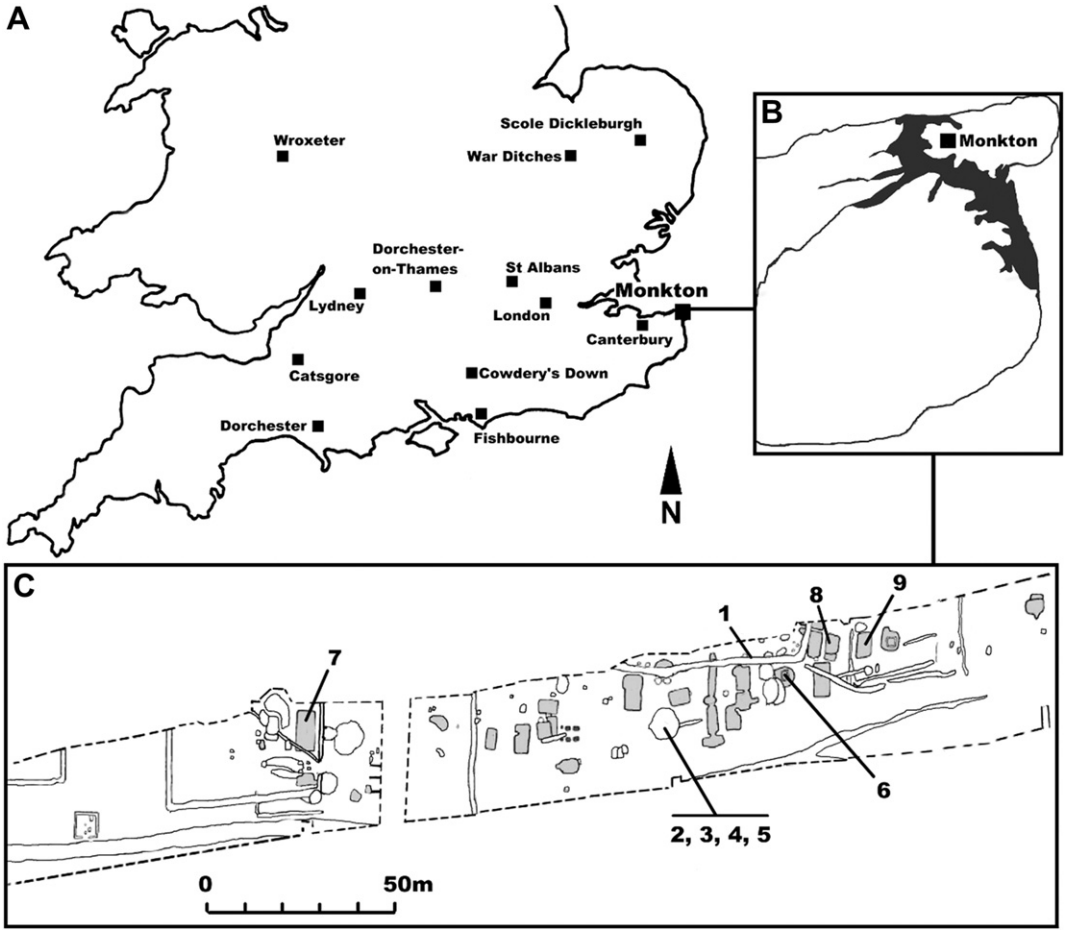

Fig. 1. Maps showing A) the distribution of the Romano-British fallow deer remains mentioned in Table 2; B) the location of the Monkton site on the Isle of Thanet as it was during the Roman period (after Detsicas, 1987); C) the distribution of the *Dama* remains on the Monkton excavation (after Bennett et al., 2008).