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## From Icon of Empire to National Emblem: New Evidence for the Fallow Deer of Barbuda

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### ABSTRACT

Barbuda and Antigua's national animal is the fallow deer, *Dama dama dama*, a species native to the eastern Mediterranean that has been transported around the world by people during the last 8000 years. The timing and circumstances by which fallow deer came to be established on Barbuda are currently uncertain but, by examining documentary, osteological and genetic evidence, this paper will consider the validity of existing theories. It will review the dynamics of human–*Dama* relationships from the 1500s AD to the present day and consider how the meaning attached to this species has changed through time: from a symbol of colonial authority and dominance, to a 'walking larder' after the slave emancipation of 1834, and now an important part of the island's economy and cultural heritage that requires careful management.

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Barbuda; fallow deer; DNA; zooarchaeology

### Introduction

According to Wilson and Reeder (2005) the Cervidae in the Caribbean are today restricted to three species: fallow deer *Dama dama dama* (Linnaeus 1758), brocket deer *Mazama americana* (Rafinesque 1817), and white-tailed deer *Odocoileus virginianus* (Zimmermann 1780). The *Mazama americana* and *Odocoileus virginianus* occur naturally only on Trinidad, due to Pleistocene connection with mainland South America (Wing 1962). The Red brocket deer (*M. americana*) is also archaeologically present on Tobago (Steadman and Jones 2006). Recent Cytogenetic and mtDNA studies of *Mazama* demonstrate considerable karyotype and molecular diversity in these species and highlight their evolutionary history (Duarte, González, and Maldonado 2008; Giovas, *in press*).

The fallow deer is native to the eastern Mediterranean from where it has gradually been taken around the world, for varying reasons, by people. The species was introduced into nearly all countries of Europe, South Africa, Australia, New Zealand, USA, Canada, Argentina, Chile, Peru, and Uruguay, as well as islands in the Fijian group, and the Lesser Antilles. Today the fallow deer is the national animal of Barbuda and Antigua, so synonymous with the islands it is represented on their coat of arms (Figure 1(b); McComas 2013, 126). Two varieties of fallow deer – the common and the black (Figure 1(c,d)) – currently inhabit Barbuda and the presence of these pelage variants dates back

to at least 1800s, since Charles Darwin collected and preserved one black and two common skins during his visit to the island. These skins are now curated by London's Natural History Museum (Masseti 2011, 127).

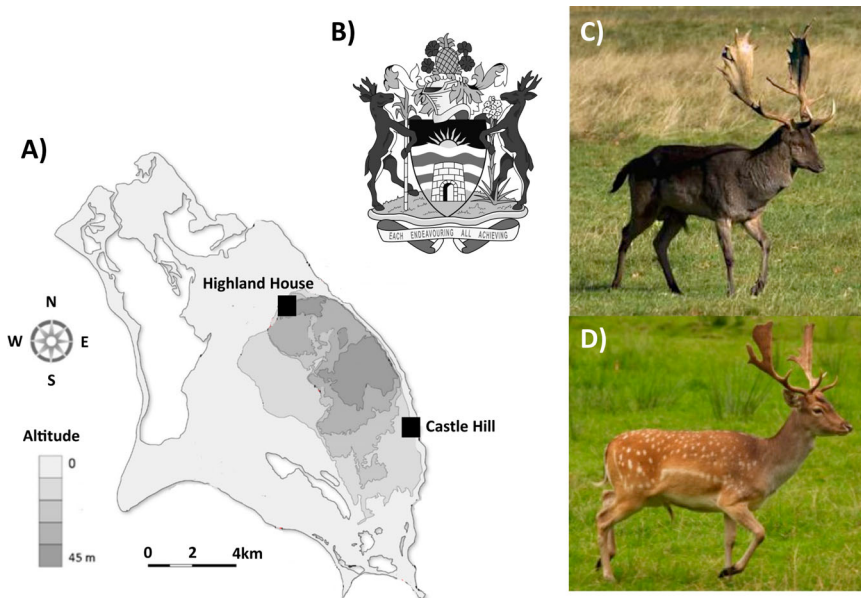
Sustainable fallow deer management, which seeks to strike a balance between biodiversity and over-grazing (as fallow deer populations can expand rapidly causing environmental damage) is an important element of Barbuda's ecotourism. For instance, on average, 120 deer are culled each year by paying sports hunters (McComas 2013, 127). However, to date, there has been no official survey documenting the fallow deer population on the island (e.g. age, sex, geographic distribution, numbers). Our field observations over the past decade indicate that local people hunt, without permits, from vehicles, on foot, horseback with or without hunting dogs. While there is a local understanding of optimal hunting periods, this is not respected by all and poaching is widespread. Ongoing ethno-historical work focusing on bone material of hunted deer on sites like Castle Hill (Baker et al. 2015; Perdikaris et al. 2013) along with additional material collected over the last 2 years provide the best source of evidence available from which to consider the sustainability of Barbuda's herd.

Considering the significance of fallow deer to Barbuda's natural environment, culture and economy, astonishingly little is known about when, how, and most importantly why this species was introduced to

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**Figure 1.** (a) Barbuda location map, (b) coat of arms, (c) black-coat *D. d. dama*, (d) common-coat *D. d. dama*. Source: (a) Dr. Rebecca Boger, EES, Brooklyn College CUNY, (b) [https://en.wikipedia.org/wiki/Coat\\_of\\_arms\\_of\\_Antigua\\_and\\_Barbuda](https://en.wikipedia.org/wiki/Coat_of_arms_of_Antigua_and_Barbuda) (c/d) Sandrine Grouard.

the island. In fact, there is no recent literature from any part of the Caribbean addressing the British introduction of *Dama dama* to the region. Tourism and academic literature frequently state that fallow deer were introduced ‘a long time ago’, ‘probably from England’, ‘probably in the eighteenth century’ (Aspinall and Dash 1954; McComas 2013, 126). Even Chapman and Chapman’s volume *Fallow Deer*, widely acknowledged as the most comprehensive survey of the species, repeats the idea that they were ‘probably... imported sometime between 1700 and 1772’ (1975, 65). Masseti’s (2011) review of the historical evidence suggests that the introduction may have been earlier, in the seventeenth century, which has been suggested by archaeologists working on Barbuda (Watters and Nicholson 1982) but less attention is given to the motivation for this introduction. We believe that it is possible to do better than this – and that we should do better – to try and understand the social and cultural history of a species that symbolises this island nation.

There are reasons, beyond national pride, to examine the natural and cultural history of Barbuda’s fallow deer. As a non-native animal, whose arrival is due entirely to people, fallow deer can be seen as a proxy for human migration and trade (Sykes 2014, 91–96). However, their distribution reflects not only physical but also ideological diaspora. The long-distance transportation and establishment of a viable fallow deer population is no easy task and the decision to do so clearly reflects strong ideological motivations that deserve further consideration. It is for this reason that the *Dama* International project examines the timing and circumstances of the fallow deer’s diffusion, using a combination of archaeological, zooarchaeological and scientific techniques (genetics and isotope analyses).

Up to now, *Dama* International’s work has focused on the fallow deer’s European diffusion and our results suggest that there were two major episodes of translocation. The first coincided with the expansion of the Roman Empire, which occurred between 27 BC and AD 480 (Madgwick et al. 2013; Miller et al. 2016; Sykes et al. 2011) although many of the populations translocated and established during this period became extinct within a few hundred years, including those introduced to the islands of Britain (Sykes and Putman 2014) and Mallorca (Valenzuela et al. 2016). The second wave of diffusion charted the rise and reach of the Byzantine (fourth–fifteenth century AD) and Norman (tenth–twelfth century AD) Empires (Sykes et al. 2016; Beglane et al., in prep).

While these European data may seem far removed from the Caribbean, the deeper history of the fallow deer reveals some patterns of relevance for considering their later history, the third wave of diffusion that took fallow deer to all corners of the globe as a result of British colonialism. It is interesting to note that the periods in which fallow deer spread across Europe are characterised by imperialism and were accompanied by the existence of elite hunting cultures (Sykes and Putman 2014). When viewed from an anthropological perspective, these coincidences in hunting, fallow deer diffusion and imperialism are telling. Hunting is, across cultures, a social and political performance that is frequently tied to concepts of land ownership (Sykes 2014, 52; Sykes and Putman 2014). Hunting is often used to symbolise territorial possession and to legitimise the rule of conquering peoples, particularly by limiting hunting rights to the colonial elite. The importation of ‘exotic’ animals from other parts of the Empire is also important, serving as an icon of colonial dominance (Sykes et al. 2006).

For these reasons, the fallow deer of Barbuda are a legitimate focus for research with the potential to provide high quality information for a range of disciplines including archaeology, history and ecology, since the introduction of a new species can have a considerable impact on native ecosystems (Hobbs 2000; Lambert and Rotherham 2011). While there has been an increasing body of Caribbean zooarchaeological data on animal introductions, biogeography, and human-ecodynamics (Giovas, LeFebvre, and Fitzpatrick 2012, 2016), most of the narratives address the Amerindian horizon (Giovas, LeFebvre, and Fitzpatrick 2012; Grouard 2001, 2003, 2010, 2011; Steadman et al. 2014; Wing 2001), pre-anthropogenic horizons or focus exclusively on herpetofauna (Bochaton et al. 2015, 2016; Pregill, Steadman, and Watters 1994). There is clearly a need for zooarchaeological data that are both qualitatively and quantitatively substantial for the colonial period in order to understand the history and management of fallow deer.

In this article, we expand our 2015 paper presented at the International Association of Caribbean Archaeology meetings. Our preliminary research focused on finding the genetic connections between the originating populations and the present day fallow deer in Barbuda (Baker et al. 2015). This present study integrates new genetic and osteologically based demographic data with recent ongoing ethno-historical work at the site of Castle Hill on Barbuda. By presenting these data within the framework of *Dama* international's results our aim is to offer a deeper-time perspective on the cultural history of the fallow deer in Barbuda but also to contextualise the island's modern *Dama*-human relationship and its implications for the sustainability of the population.

## Materials and Methods

To gain an understanding of the fallow deer's arrival times on Barbuda, we conducted a survey of the available historical literature for the island, extracting references to deer in general and to fallow deer in particular. To complement this survey, a small collection of modern fallow deer skeletal remains was analysed to inform on Barbudan *Dama* morphology and hunting strategies. These modern materials were collected, by members of the Barbuda Historical Ecology Project (BHEP), from the site of Castle Hill in south-eastern Barbuda. This rock shelter is used several times a year by local people as an encampment for their 'Living from the Land' celebrations that involve hunting, feasting and socialising (Perdikaris et al. 2013). The BHEP collected the bones from every feasting/hunting event that took place over a 4-year period. Additional modern fallow deer bone was collected over the last 2 years and this cumulative data is reflected in this paper. Measurements of these remains were taken according to the

standards of Von den Driesch (1976) and mandibular dental ageing was undertaken using the system set out by Bowen et al. (2016).

Four of the bones (from four separate individuals) were sampled for DNA analysis, conducted following the methods presented in Sykes et al. (2016). All four Barbudan samples were successful at the stage of PCR and were sequenced by DBS genomics at the University of Durham. Precautions associated with handling DNA from bone specimens were taken during every stage of the above process and followed standard ancient DNA protocols. The relationship amongst the Barbuda individuals was examined alongside medieval and modern European samples ( $n = 127$ ) by constructing a median joining network using the program NETWORK 4.5 (Bandelt, Forster, and Rohlf 1999).

## When Were Fallow Deer Introduced to Barbuda?

That the circumstances surrounding the arrival of the fallow deer are unclear is understandable; even in the early nineteenth century the identification of deer established on Caribbean islands was the subject of considerable debate. For instance, in his 1831 volume, the natural historian Philip Henry Gosse devotes considerable attention to ascertaining the species of feral deer on Jamaica. After extensive sleuthing, Gosse concluded that rather than being 'Mexican deer' (as they were so called) they were in fact fallow deer imported from Europe (Gosse 1831: 438). By 1898 Hill was well aware of the species' identity, noting that 'Hundreds of English fallow deer are found' (Hill 1898) a statement that Masseti (2011, 127) suggests confirms the British origins of the population. As both Jamaica and Barbuda were part of the British Colonial Empire, this is a logical assumption.

Some indication of population size at this time is provided by Wellington Greener (1885), who estimated that there were approximately 3000 fallow deer on Barbuda, which, according to Darwin (1856–1858–reprinted 1987: 287), lived feral on the island. This figure is identical to the estimated population a century earlier in 1784, also recorded as 3000 (Kras 1997: 16). Given that Barbuda is approximately 62<sup>2</sup> miles, equating to a stocking density of *c.*48 deer per mile, it is perhaps unsurprising that fallow deer were considered to be a 'pest' as early as 1779 because of their propensity to strip vegetation (Codrington 1779–1782). If these stock figures are to be believed, they indicate a considerable growth in population in the four decades from 1740, when just 1000 head of deer are recorded (Etherington 2002, 64).

In Barbados, Sloane (1707) noted, 'I saw also the New-England deer [white-tail deer] in a small enclosure by the church which seemed the same in everything as our fallow deer'. Our suspicion is that rather



than being *similar* to fallow deer, these animals *were* fallow deer. If this is correct, it seems probable that fallow deer were initially more widespread within the Caribbean than they are today and that, in order for Barbuda's population to have reached *c.* 1000 by 1740, they were presumably introduced considerably earlier than this date.

The fact that there is a reference to deer, possibly fallow deer, on Barbados in 1707 is interesting given that Barbados was home to Christopher Codrington I and his sons (John and Christopher Codrington II) who were granted the first lease on Barbuda in 1684 (Murray 2001, 66). Perhaps most importantly, Christopher Codrington III was also born in Barbados in 1668 but was schooled at Oxford University, near the family estate of Dodington Park, before returning to the Caribbean in 1705, just 2 years before Sloane spotted deer in a 'small enclosure' on the island. One possibility is that Christopher Codrington III brought fallow deer with him when he returned from Dodington. However, it is equally feasible that they were introduced soon after the Codrington's received the lease to the island in 1684. When Sir William Codrington commissioned the construction of Highland House as his future retirement property (Figure 1) he specifically mentions 'I designe a house one time or other – so pray pserve all y deere feasants & Partridges & suffer none to be killed on any ptence wtever, nor no gentlem' to go there shooting' (Letter Book 1720–1721, D1610 C3). This suggested that both deer and pheasants were an integral part of the estate design, with the intention that shooting by gentlemen would be practiced.

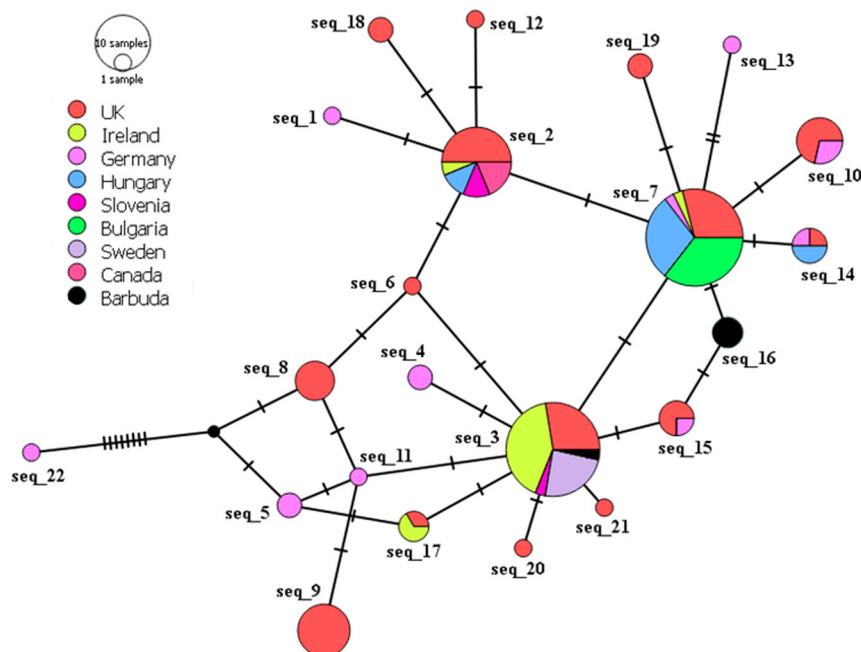
## From Where Were Fallow Deer Introduced?

The circumstantial evidence certainly tempts the interpretation that Barbuda's fallow deer were imported from England but additional genetic evidence can be recovered. Figure 2 shows the preliminary results of the analyses, whereby the Barbudan deer are shown on a genetic network along with all modern and medieval European DNA samples ( $n = 127$ ) using 704 base pairs of the mitochondrial DNA control region.

This network represents 22 unique sequences (haplotypes). Three of the four Barbudan samples share the same sequence (haplotype 16), while one shares haplotype 3 with samples from Ireland, UK, Slovenia and Sweden. The network shows that the Barbudan haplotypes are zero and two mutational steps from other northern European haplotypes. Although four samples provide only low resolution, the genetic results are clearly consistent with an introduction to Barbuda from a north European or British source population. It is possible that by obtaining further samples from Barbuda and modern Europe (in particular Britain) further resolution to country of origin could be achieved, though the network structure reflects the likely founder expansion events associated with the translocation history of this species, and so shared haplotypes do not necessarily imply recent shared ancestry.

A northern European origin is also, to some extent, suggested by the osteometrics.

This is particularly true for the data relating to the ankle bone (astragalus) whose size and shape is well known to correlate with body size and conformation



**Figure 2.** Median joining network of relationships among eleventh century AD to modern European and Barbudan mitochondrial haplotypes where each circle represents a unique haplotype and the size of the circle indicates relative frequency of the haplotype. Twenty-two haplotypes (based on 704 base pairs) are represented.

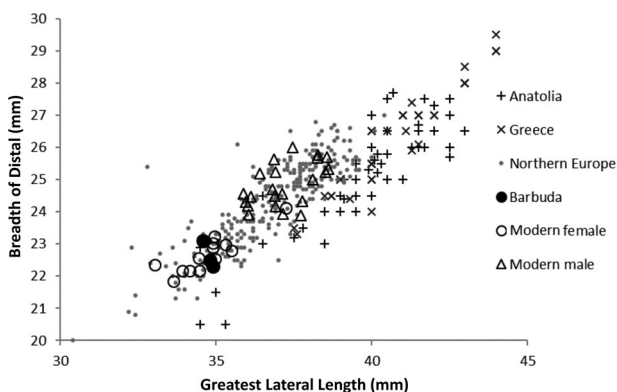
but also, in the case of fallow deer, demonstrates ecomorphic variation (Sykes, Carden, and Harris 2013). As Figure 3 shows, bones from the 'native' fallow deer populations from Anatolia and Greece are comparatively long and thin, whereas the bones of translocated deer of northern Europe are comparatively short and fat. At present the reason for this variation is still unclear but Figure 3 confirms that the Barbudan population is consistent with the animals from northern Europe, rather than those from Anatolia or Greece.

More surprising is that the ankle bones of the Barbudan deer demonstrate no evidence of the 'island effect'. Given that Barbuda is small and contains no natural predators of fallow deer, we would expect the deer to have exhibited a size change after their introduction but this does not appear to be the case. This is perhaps due to small sample size ( $n = 3$ ), although the metrics for other foot bones which are available in greater numbers (e.g. the metatarsals and metacarpals shown in Figure 4(a,b)) suggest that the Barbudan deer are of similar size to those from modern Britain, albeit a little less robust, having comparatively reduced smallest diameter (SD) measurements.

Current archaeological surveys on Barbuda have not yet identified deeply stratified historical middens that would provide both faunal material and other environmental indicators to elucidate the people-animal-landscape interactions both at contact and into the colonial period but the survey is ongoing. Our results are consistent with the idea that fallow deer were introduced to Barbuda in the late seventeenth, or very early eighteenth, century from England. If this is accepted, the more important question is: why?

### Why Translocate Fallow Deer?

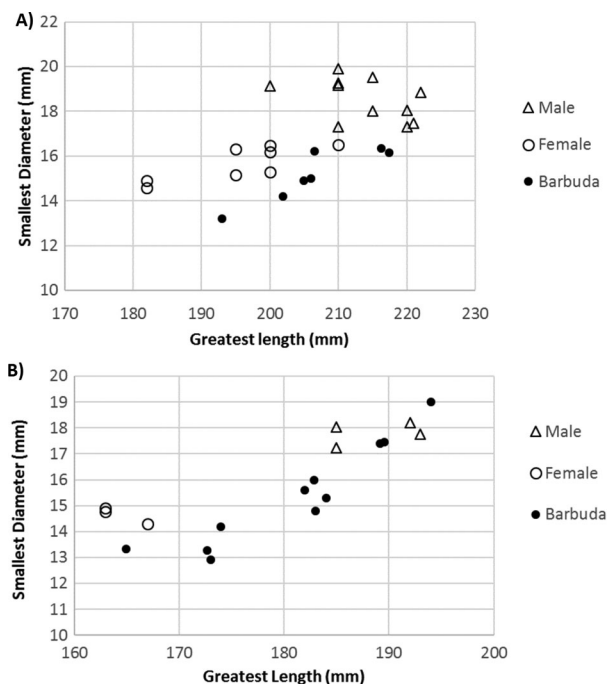
It is generally assumed that fallow deer were imported to the Caribbean as a source of game. However, studies have highlighted that exotic animals are seldom transported merely as sources of food (e.g. Sykes 2014). Furthermore, if fallow deer were considered a meat source,



**Figure 3.** Plot of astragalus measurements – breadth of distal against Greatest Lateral Length – for archaeological and modern fallow deer from Europe and Barbuda.

this does not adequately account for the effort, logistics and legislation that surrounded their importation and establishment. If meat/game was the sole concern, it would have been far more logical to import the White-tail deer, *Odocoileus virginianus*, from closer proximity. As it stands, the fallow deer imported from northern Europe would have undergone a 6000 km journey by sea which would have taken 2–3 months. To find the rationale for this decision, it is necessary to travel England to the Codrington's home estate, Dodington Park, Gloucestershire.

The Codrington family is thought to have settled in Gloucestershire shortly after the Norman Conquest, and by the 1560s they had established the family seat at Dodington Park. Fallow deer had been established in England for about 500 years and their populations were booming due to the fashion for emparkment, which saw the establishment of thousands deer parks across the country (Rackham 1986; Sykes et al. 2016). Estate owners derived considerable social benefits from deer, be it through hosting a park-based hunt or through the distribution of venison, which was gifted as a symbol of aristocratic largesse (Birrell 1992; Sykes 2007). Zooarchaeological studies of later medieval and early modern estates demonstrate that fallow deer played a significant role in the aristocratic diet; however, the majority of these animals were old when they were culled (see Figure 5), suggesting that the deer were valued as much in life, for their aesthetics, as they were in death (Fletcher 2011; Sykes et al. 2016). The aesthetic importance of fallow deer is demonstrated by artists of the post-medieval and early modern periods, including J.M. Turner, whom



**Figure 4.** Plot of (a) metatarsal and (b) metacarpal measurements – breadth of distal (Bd) against Greatest Length (GL) – for fallow deer of known sex and Barbuda.



**Figure 5.** Comparison of dental ageing data for Roman sites on Mallorca, Medieval sites from Britain and Modern Barbuda (class of Ages: AB up to 2 months; C 4–5 months; D 5–12 months; E 13–20 months; F 20–33 months; G 33–54 months; H 44–147 months; I 61–183 months; J 118–189 months).

incorporated fallow deer into landscape painting (Ward et al., in prep.).

Park landscapes containing fallow deer symbolised the English elite's mastery of their estate and of the natural world (Thomas 1983). It is our suggestion that it was for these ideological reasons – that parks and fallow deer represented order and control, civilisation over wilderness – that such efforts were made to establish them in the English colonies in the Caribbean. Following this logic, fallow deer were likely introduced to Barbuda by someone who valued the deer as an integral component of a well-appointed estate. Certainly both Christopher Codrington III and his son William Codrington I would have viewed Dodington Park in this way. It was described in 1728 as 'pretty enough, the setting romantic, covered with woody hills stumbling upon one another and the garden makes a lovely valley between them with some mounts and waterfalls' (Pope, quoted by Harding and Lambert 1994) and with its firmly-established deer management practices, the Codringtons would have considered it a primary example of what an estate should be. But these personal motivations must also be set against the wider cultural attitudes of the time.

During the mid-eighteenth century, there was a dramatic rise in the interest in the introduction of non-native species to new regions in the four-corners of the British Empire. At the head of this movement

was Joseph Banks who held the position of President of the Royal Society and saw the introduction of new species as a means to end world hunger – that through biotic exchange, inhabitants of different countries would be able to have a steady supply of new resources, protecting them from the 'dreadful effects of hurricanes and droughts' (Chambers 2000, 89). In this way, the spread of fallow deer, and other biota, around the British Empire formed part of collectively perceived 'spiritual duty' to both dominate and provide for those whose lands were brought under imperial control (Ritvo 2010).

### Changing Human–Deer Relationships on Barbuda

In the period 1779–1782, Sir William Codrington II hired the naturalist Henri De Ponthieu to collect native plants from Barbuda and send them to Joseph Banks, based at Kew Gardens. De Ponthieu was also to introduce new plants and animals to the island. William Codrington II's interest in botany rendered fallow deer a perceived threat to his natural and 'botanical experiments' (Codrington 1779–1782). Nevertheless, he did not seek to eradicate the populations; indeed, hunting rights to these iconic animals were closely guarded, as they had been in England (Manning 1993). Historical accounts relating to Barbuda (particularly those dating between 1761 and 1790) record repeated complaints from the Codringtons, and others, that their deer were being poached by Barbudan slaves (Murray 2001, 271) and by hunting parties of young men that would cut timber, and take fish, turtles, livestock and deer (Tweedy 1981). In fact, such was the protection and control of the island that permission needed to visit Barbuda. Whilst fallow deer were considered a pest because they stripped land of vegetation (Codrington 1779–1782; Kras 1997, 16), restrictions over hunting rights remained in force: the idea that the deer might be poached appeared to be worse than their presence as a potential threat to the island's vegetation. (e.g. R. Jarritt, cited by Murray 2001, 329).

Across cultures, poaching is seldom undertaken simply as a mechanism for acquiring protein. Like hunting, poaching is a social and political statement – it is about personal empowerment acquired by subverting the establishment (Manning 1993; Sykes 2007). It can be no coincidence, therefore, that some of the most intensive periods of poaching occurred during periods of slave rebellion and uprising on Barbuda (see Murray 2001). Contrary to English traditions, whereby hunting rights and land ownership were restricted to the elite, the Barbudan slaves had a very different attitude, perceiving both the deer and land as no-one's, and therefore everyone's, property. These traditional cultural attitudes and practices towards land have been codified in the Barbuda Land



Act of 2007. This sense of common possession prompted one overseer to write to the Codrington family out of frustration ‘they acknowledge no Master, and believe the Island belongs to themselves’ (R. Jarritt 1823; quoted in Lowenthal and Clarke 1977, 524). Barbudan slaves were emancipated in 1834 and gradually, over the last two centuries, the fallow deer has been transformed from symbol of colonial dominance to national emblem. However, the heritage embodied by the fallow deer is reflected by the fact that, even today, men still say they are going out to ‘poach’ rather than to ‘hunt’ (McComas 2013, 126).

The significance of fallow deer ‘poaching’ to the Barbudan population is reflected today in their ‘Living from the Land’ celebrations in which they play an important role (Perdikaris et al. 2013). The Barbuda Historical Ecology Project was able to collect mandibles from 104 individuals that were culled and consumed during these festivities that took place over a 4-year period. Dental ageing data from this sample are of interest, especially when considered against the archaeological evidence for other populations of fallow deer that were introduced to islands, notably those from Roman Mallorca and medieval Britain (Figure 5).

The two archaeological populations demonstrate an emphasis on the hunting of older individuals, a strategy that helps to maintain viable populations, especially if adult males are targeted, as was the case for Britain (Sykes et al. 2016). On Mallorca, deer hunting appears to have focused on adult females, which had the effect of rapidly reducing population size and may be the reason why this Roman population became extinct within a few hundred years of its establishment (Valenzuela et al. 2016). For Barbuda, the metrical data (Figures 3 and 4) indicate an even balance between male and female exploitation; however, an exceptionally high percentage (53%) of animals recovered from the Castle Hill site are under the age of 20 months. That 35% of these animals are less than 12 months of age suggests little regard for herd sustainability.

Broader archaeological evidence highlights the problem of over-exploitation with regards to island *D. d. dama* populations: to the Mallorcan extinction can be added the collapse of the fallow deer populations in Roman Britain, in Cyprus, Crete and on many of the other smaller Aegean islands (Valenzuela et al. 2016). These demonstrate extirpation events can happen, have happened repeatedly in the past, and will likely happen again in the absence of sustainable management practices – they serve as a useful deep-time warning for those responsible for managing Barbuda’s fallow deer.

## Conclusions

We hope that this paper has highlighted the potential of examining fallow deer as a source of cultural data

with the capacity to highlight human–deer interactions (which reflect human–human interactions) and provide new insights concerning Barbuda’s heritage.

Our synthesis of historical evidence pertaining to Barbudan deer, together with an osteometric and genetic study based on modern *D. d. dama*, recovered from local ‘Living from the Land’ hunting/feasting celebrations, has provided new results. These are consistent with the idea that fallow deer were imported to the Caribbean from England in the late seventeenth or early eighteenth century, most probably by the Codrington family. The rationale for the transatlantic transportation and establishment of fallow deer in the can be found in the context of post-medieval English estates, where the management of deer within manicured park landscapes was seen as a statement of mastery over the natural world. It was this belief in human, more specifically English aristocratic, dominion that prompted the export of the fallow deer-park package across the British Empire.

This ideologically inspired translocation of fallow deer followed earlier, similarly motivated, expansions of the species’ range: the first resulting from Roman imperialism, the second associated with the spread of the Byzantine and Norman Empires. Not all of these ancient translocations were successful and many archaeological populations became locally extinct within a few centuries. Given the cultural and economic significance of fallow deer to the Barbudan nation, it would be a devastating loss if the island’s population met the same fate. We therefore encourage greater attention be given to the archaeological representation and modern conservation of this species on the grounds of its significance to Barbudan heritage.

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