

# In the gardens of Norman Palermo, Sicily (twelfth century A.D.)

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## ABSTRACT

This paper is aimed at verifying the significance of the zoomorphic images represented in the 12<sup>th</sup> century picture of the *Genoard*, the “earthly paradise”, of Palermo (Sicily) contained in an illumination in the *Liber ad honorem Augusti* by Pietro da Eboli, 12<sup>th</sup> century A.D. (Berne, Burgerbibliothek, Codex 120). Based on analyses of the literary and iconographic documents and of the available osteological evidence, a tentative identification of the zoological species represented is made, in relation to the Norman cultural ambit and what can be assumed about their occurrence in mediaeval Sicily. The study of the animals depicted could enhance our understanding of the specialised — but still debated — use of the *Genoard*, while also yielding different readings from those traditionally offered by literary and architectural criticism and/or historical and artistic texts. Hence, it offers an opportunity to review the osteological material yielded by modern archaeological research conducted in Sicily, underscoring what could be considered the first appearance of certain exotic species. It also provides a cue for reflection on the faunistic rebalancing which was implemented also in other continental and insular areas of the northern Mediterranean in the period of Arab influence and/or those immediately following. Perhaps, with certain consequences that could apparently also have involved the contemporary Norman cultural world of Great Britain.

## KEY WORDS

Medieval Sicily,  
Norman Palermo,  
Islamic culture,  
exotic mammals,  
birds and reptiles,  
Islamic Spain and Portugal,  
Crete,  
Norman England,  
earthly paradise,  
*viridarium*.

## RÉSUMÉ

*Dans les jardins de la Palerme normande, Sicile (XII<sup>e</sup> siècle, apr. J.-C.)*

Le but de cet article est de montrer l'importance des figures zoomorphiques représentées dans l'image du *Genoard*, le « Paradis terrestre », à Palerme (Sicile), une enluminure contenue dans le *Liber ad honorem Augusti* de Pietro da Eboli, XII<sup>e</sup> siècle, apr. J.-C. (Berne, Burgerbibliothek, Codex 120). Basée sur les analyses des documents iconographiques et littéraires et sur les

**MOTS CLÉS**

Sicile médiévale,  
Palerme normande,  
culture islamique,  
mammifères exotiques,  
oiseaux et reptiles,  
Espagne et Portugal islamique,  
Crète,  
Angleterre normande,  
paradis terrestre,  
*viridarium*.

déterminations ostéologiques disponibles, une tentative d'identification des espèces zoologiques représentées est réalisée, en relation avec l'apport culturel des Normands et ce qui peut être considéré comme de leur fait en Sicile médiévale. L'étude des animaux dépeints pourrait améliorer notre compréhension de la singulière — mais toujours débattues — fonction du *Genoard*, en proposant une lecture différente de celles traditionnellement offertes par l'analyse littéraire et architecturale et/ou par les textes à portée historique et artistique. Par ailleurs, cet article propose une réflexion sur le rééquilibrage de la faune qui a été accompli également dans d'autres régions continentales et insulaires du nord de la Méditerranée durant la période d'influence arabe et/ou celle qui a suivi immédiatement. Peut-être, dans une certaine mesure, cet apport pourrait aussi avoir influencé le monde culturel normand contemporain de la Grande-Bretagne.

## INTRODUCTION

In the second half of the 12<sup>th</sup> century, a park for hunting and other courtly delights was created for William II, just behind the royal palace of Palermo, in the southern part of the city in front of what was later called the “Conca d’Oro”. This park was called the *Genoard*, or *Gennoardo*, a name deriving from the Arabic *gennat al-ard*, signifying “earthly paradise”. This was not a specific name, but was shared by all the Muslim gardens of delights, which were designed to resemble the paradise of the Koran. An image of the appearance of the *Genoard* has survived in a 12<sup>th</sup> century illumination illustrating *The city of Palermo in mourning for the death of William II*, contained in the *Liber ad honorem Augusti* by Pietro da Eboli (Berne, Burgerbibliothek, Codex 120 II, 98 *recto*) (Kölzer & Stähl 1994) (Fig. 1). This manuscript was written and illuminated in Palermo between 1195 and 1197 (*cf.* Siragusa 1904; Cuomo 2001), after the death of William II in 1189. It consists of an illuminated chronicle of the events that took place in the decade between 1189-1197 (Kölzer & Stähl 1994). In the miniature in which the *Genoard* appears it is set within the context of Palermo and is part of the same, entirely occupying one of the sectors into which the city was divided, corresponding approximately to the individual quarters. The *Genoard* consisted of a green area, enclosed and irrigated, considered practically a *riyād* belonging to the royal palace (*cf.* Amari 1939; Bellafiore 1996; Masseti 2006). As Zangheri (2006) also explains,

the Arab word *riyād* is used to refer to a green, private space that evokes the image of the Roman *peristyle*. It was an uncovered area, almost always surrounded by porticoes, and featured paved paths and a system of irrigation based on basins and conduits. In view of its particular position, the *Genoard* must hence have appeared a space that embodied a specialised concept of the urban park. In such parks the rarest plants originating from the East were cultivated, in line with a tradition borrowed directly from the Arab world (*cf.* Lupo 1990). Various precious and exotic plants are illustrated in the miniature, among which we can recognise a vine, other fruit trees and several palms. But the “earthly paradise” was also home to a special fauna which included ornithological and mammalian species, the presence of which within the park was motivated not only by aesthetic reasons but also practical ends connected with hunting. Based on analyses of the literary and iconographic documents and of the available osteological evidence, a tentative identification of the zoological species represented in Pietro da Eboli’s miniature is made, in relation to the Norman cultural ambit and what can be assumed about their occurrence in mediaeval Sicily. Ambiguous historical evidence compounded by misidentifications and contextual disturbance, as well as the traditional trade in skeletal and dental elements together with parts of hides, have all contributed to confuse our understanding of the mediaeval distribution and spread — natural and/or artificial — of native and exotic animals along the Mediterranean shores. The study

of the miniature, therefore, offers an opportunity for meditation on the faunistic rebalancing which was implemented also in other continental and insular areas of the northern Mediterranean in the period of Arab influence and/or those immediately following. Perhaps, with certain consequences that could apparently also have involved the contemporary Norman cultural world of Great Britain. Furthermore, the study of the zoological species depicted could enhance our understanding of the specialised — but still debated — use of the *Genoard*, while also yielding different readings from those traditionally offered by literary and architectural criticism and/or historical and artistic texts. In fact, the analysis of the iconographic elements can provide valid complementary information for the study of ancient environmental features, and enables the unequivocal recognition of the species portrayed (cf. Masseti 2001).

A recapitulation of the existing bibliography on the archaeozoology of mediaeval Sicily is an additional aim of this study.

#### FAUNA OF THE “EARTHLY PARADISE”. THE RINGED-NECKED PARAKEET

In the illumination from the *Liber ad honorem Augusti*, an exotic green bird is portrayed perching on the trunk of a palm tree. This can tentatively be identified as a ring-necked parakeet or rose-ringed parakeet, *Psittacula krameri* Scopoli, 1769, native of most of the Ethiopic and Oriental zoogeographical regions (Kinzelbach 1986; Howard & Moore 1991). The species is well established in several localities of the Western Palaearctic, beyond its natural distribution. It has been introduced by man in many areas of Europe, North Africa and the Near East (Aschenborn 1990; Perrins 1990; Hays 1995; Hagemeyer & Blair 1997). In the Western Mediterranean basin, ring-necked parakeet colonies are today recorded from Spain and the Balearic islands, the Italian peninsula, Sicily, the Aeolian islands, Croatia and the Dalmatian coast (Peres-Chiscano 1969; Spanò & Truffi 1986; Iapichino & Massa 1989; Lo Valvo *et al.* 1993). In the Eastern Mediterranean region, the species has been reported from Egypt, Israel, Jordan, Syria,



FIG. 1. — The twelfth-century illumination of the *Genoard*, the “earthly paradise”, from the *Liber ad honorem Augusti* by Pietro da Eboli (Berne, Burgerbibliothek, Codex 120).

Greece, Turkey (Long 1981; Goodman 1982; Kinzelbach 1986; Paz 1987; Hollom *et al.* 1988; Wittenberg 1988; Goodman & Meininger 1989; Bakig & Khiyami Amihorani 1992; Kasperek 1992; Evans & Douwe Dijkstra 1993; Boyla *et al.*, 1998), and several Aegean islands (Masseti 2002a).

The ring-necked parakeet is a species which has been regularly exported as a cage bird since antiquity (Spanò & Truffi 1986), and it is possible that even in Hellenistic times birds escaping from captivity became feral in the region of the Nile delta (Paz 1987). The occurrence of this bird in medieval Europe has been exhaustively documented in the works of several authors, such as Diener (1967), Ribemont (1990), Mc Munn (1999). Among the many examples of ancient artistic representation of the species we can mention the mosaics from Santa Maria Capua Vetere (southern Italy), dating



FIG. 2. — Bowl of lustre-painted ware, originating from the church of S. Andrea in Pisa, of Almohade production, dating to the first quarter of the 12<sup>th</sup> century.

to the 1<sup>st</sup> century B.C. (Archaeological Museum of Naples), those of Dafne (Antiochia, southern Turkey), from the first half of the 3<sup>rd</sup> century (Louvre, Paris), and from San Lorenzo in Panisperna (Rome), dating to the early 1<sup>st</sup> century A.D. (Museo della Centrale Montemartini) (Pernice 1938; Lassus 1938; Morricone 1963; Álvarez Martínez *et al.* 2001). A beautiful representation of the bird appears also in a detail of the mosaics from the cathedral of Monreale, in the vicinity of Palermo, dated between 1180 and 1190 A.D. (*cf.* Kitzinger 1960), almost contemporary to the *Liber ad honorem Augusti*.

#### FALCONS, PIGEONS, AND DOVES

In the Berne miniature, the images of two birds represented among the leafy fronds of the higher trees, can be tentatively identified as falcons. In fact they reveal considerable affinities with the almost contemporary decoration of a bowl of lustre-painted ware, originating from the church of S. Andrea in Pisa (Museo Nazionale of San Matteo, Pisa: inv. n. bacino 232) (Fig. 2). This is an artefact of Span-

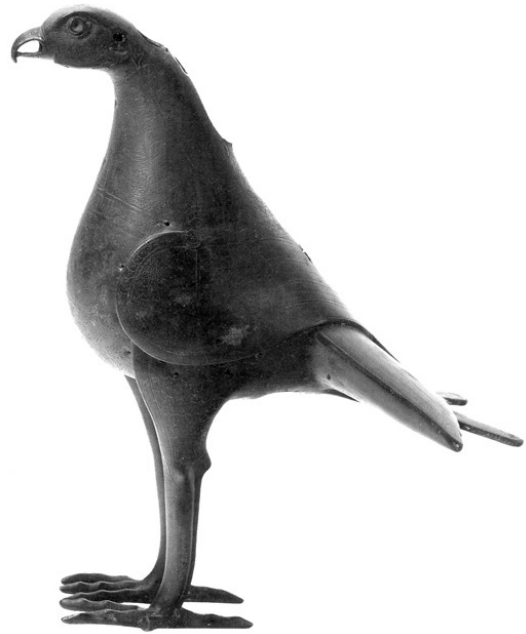


FIG. 3. — Persian bronze perfume-burner dating to the 9<sup>th</sup> century, which decorated the facade of San Frediano in Lucca.

ish production dating to the Almohade period, more specifically the first quarter of the 12<sup>th</sup> century (Gisbert 1992; Contadini 1993). The ornithological representation of the Berne illumination would therefore appear to belong to the Islamic iconographic tradition already expressed in a famous Persian bronze perfume-burner, the so-called *gallofalco*, dating to the 9<sup>th</sup> century which decorated the facade of San Frediano, in Lucca (Gabrieli & Scerrato 1979; Bernardini 1993) (Fig. 3). The falcon is the quintessential figurative symbol of both the Muslim emir and the Christian prince. In times of peace, the main activity of both was to train for war, something they did by practicing various types of hunting, among which the art of falconry, of ancient Oriental origin, surpassed all others (Masseti 2006). In Europe falconry became the prerogative of the nobility (Zeuner 1963; Cummins 1988). There are numerous texts addressing the argument, and in particular the popularity that this type of hunting enjoyed in Italy in the Middle Ages. Among these, we can mention Lupis

(1975), Van den Abeele (1994), Boccassini (2003), Malacarne (1998 and 2003). Nor should we forget that two of the most important treatises on falconry — the *Dancus Rex* and the *Guillelmus falconarius* (cf. Tilander 1963) — were written at the court of the Norman kings of Sicily. Consequently, it is logical to assume that falcons were greatly valued in the courts, and were hence frequently protected by edicts and special laws. In mediaeval Europe peregrine, *Falco peregrinus* Tunstall, 1771, and gyrfalcon, *F. rusticolus* L., 1758, were only possessed by people of the highest rank (royalty, the high nobility and high-ranking clergy), goshawk, *Accipiter gentilis* (L., 1758), and sparrow-hawk, *A. nisus* (L., 1758), both by people of high rank and by the lower nobility and rich commoners (Wood & Fyfe 1955; Lindner 1955; Prummel 1997). However, none of the artistic artefacts mentioned above features diagnostic elements such as to enable a specific attribution. A number of archive documents indicate the peregrine and the saker, *F. cherrug* J.E. Gray, 1834, among the species of falcon most sought-after for hunting at the Norman court of Sicily (Bresc 1980). Among the very rare bone remains of the genus *Falco* yielded by the archaeozoological exploration of mediaeval Sicily, are those of the hobby, *F. subbuteo* L., 1758, from the castle of Fiumedinisi (Messina), dated between the end of the 13<sup>th</sup> century and the first half of the 14<sup>th</sup> century A.D. (Villari 1988). Furthermore, bones of Accipitridae, such as the griffon vulture, *Gyps fulvus* Hablizl, 1783, and representatives of the genus *Aquila*, have been recorded from the site of Calathamet (13<sup>th</sup> century), in north-western Sicily (Sarà 2005). Probably attributable to the same taxonomic family are two isolated humeri originating from the Mediaeval levels of the site of Segesta (Di Martino 1997). An ulna of griffon vulture was also found in the 15<sup>th</sup> century archaeological contexts yielded by the exploration of Palazzo Steri, in Palermo (Lupo 2006-2007). No other remains of birds of prey have been recorded in any of the remaining scant archaeozoological studies on mediaeval Sicily, such as Bossard Beck (1984) and Bedini (1999). Similarly, in the mediaeval sites of the western Mediterranean, in the Iberian peninsula, very few osteological remains of raptors have been provided by archaeozoological research (cf. Hernandez 1993;

Hernandez Carrasquilla 1994). The main sites for the provision of these birds for the Norman palace of Palermo were the lone crags of the island of Malta, the cliffs of the Egades, Pantelleria, and Lampedusa, several promontories of the Sicilian coast and a few inland mountains (Bresc, 1980) (Fig. 4). The importance of the Maltese archipelago as a source of falcons even at the time of Frederick II is recorded in Boehmer's *regesta* (1881-1894). Several centuries later, in 1647, Giovanni Francesco Abela, archaeologist and commander of the Knights of Malta, confirmed these islands as a site that was particularly adapted to the provision of birds of prey to employ in falconry.

To return to our illumination from the *Liber ad honorem Augusti*, the evergreen tree represented at the top right of the Berne miniature conceals within its foliage the image of another bird. Here, however, the taxonomic attribution is more difficult because of the absence of iconographic diagnostic phenotypic patterns. The bird just mentioned could be tentatively identified as a representative of the taxonomic group of the Columbiformes: perhaps a feral pigeon, *Columba livia* Gmelin, 1789, characterised by a white coat colour like those represented in the decoration of the palace of Zisa (1164/65-1166), in Palermo (cf. Bellafiore 1994). Osteological fragments of Columbiformes are available from a very few Sicilian mediaeval sites. Rock doves and/or feral pigeons, wood pigeons, *Columba palumbus* L., 1758, and turtle doves, *Streptopelia turtur* (L., 1758), too have been provided by the excavation of the castle of Fiumedinisi (Villari 1988). Wood pigeons have also been reported from Calathamet (Sarà 2005), while osteological remains of rock doves have been documented at Palazzo Steri, in Palermo (Lupo 2006-2007).

#### “HUNTING” FELIDS AND DOMESTIC CATS

Among the animals represented in the miniature of the *Liber ad honorem Augusti*, we can also identify a caracal, *Caracal caracal* (Schreber 1766), the felid of Near-Eastern and African distribution which was utilised at the oriental courts, especially for



FIG. 4. — Map showing the main sites for the provision of birds of prey in mediaeval and post-Renaissance Sicily and the circum-Sicilian islands, including the Maltese archipelago, with the localisation of the sites of Castello di Fiumedinisi (Messina), Segesta (Trapani), and Calathamet (Castellammare del Golfo, Trapani) (data from Abela 1647; Bresc 1980; Villari 1998; Di Martino 1997; Sarà 2005).

hunting bird fauna (*cf.* Lydekker 1896) (Fig. 5) (Masseti 2009a). The strength and vigour of this wild cat are said by those who have witnessed it to be something marvellous. Nineteenth-century observers testify to the ability of the species to catch birds on the wing, for it has been known to steal up to a covey of francolins, or desert partridges, and at the instant of their rising to spring into the air and knock down one with each forepaw (Harting 1883). The use of caracals for hunting in

Italy as far back as the 11<sup>th</sup> century is documented by a detail in the frescoes of the church S. Angelo in Formis, Capua (Caserta) (Masseti 2009). These paintings are dated between 1072 and 1078/1087 (Ragghianti 1968; Paradiso 1998; *cf.* Causa 1965). The animal is represented in the scenic context of the “sacrifice of Noah”, apparently having just captured two cranes (Fig. 6). As far as is presently known, however, no bone remains of *C. caracal* have been provided by any of the archaeozoologi-



FIG. 5. — Caracals are medium-sized felids which were utilised at the oriental courts, especially for hunting bird fauna. Haifa, Israel (photo by Marco Masseti).



FIG. 6. — Detail of the *Thanksgiving of Noah* in the wall paintings of the eleventh-century basilica of Sant' Angelo in Formis at Capua (Caserta), southern Italy (photo by Domenico Caiazza).

cal explorations of Sicily and/or of southern Italy. The case of the caracal is, in certain respects, similar to that of the falcons. We have already noted how Sicilian archaeozoological data for the latter are scarce, not to say totally lacking. For other sections of the north-western Mediterranean too, such as the Iberian peninsula for example, there are very few mediaeval bone finds of birds of prey, considering what must have been the considerable diffusion of such birds in the *milieux* of the aristocratic courts, at least judging from the abundance of literary sources and the related iconographic documents. This illustrates how it is not always possible to document the past presence of a certain zoological species in a specific territory and/or a particular cultural context, solely on the basis of the data offered by archaeozoological research, especially when we are dealing with animals that were utilised by an *elite*, such as aristocratic falconers and hunters. Since the 13<sup>th</sup> century there is also literary and artistic evidence in continental Italy, Sicily and nearby islands for the use of another species of felid in hunting activities: the cheetah, *Acynonix jubatus* (Schreber 1766). Frederick II of Hohenstaufen (1194-1250), known as *Stupor Mundi*, must have learnt the art of hunting with this carnivore from the Sicilian Arabs as far back as the 13<sup>th</sup> century (Fig. 7). To acquire the *hunting leopards* from North Africa, the Emperor applied on more than one occasion to Paolino da Malta and to the *credenziere* of Palermo and Sicily, as illustrated by a number

of documents discovered by Boehmer (1881-1894). Later, on 12 April 1273, Charles I of Anjou also ordered his *camerario* in Malta, Roberto Caforo, to capture eight leopards *agrestes* in the usual spots and to have them transported to him, accompanied by faithful and trusted experts in order to avoid accidents (A.M. 1917). Nevertheless, it seems that the first Italian to genuinely appreciate this felid was Nicola d'Este who had the opportunity to admire its skill in hunting on the island of Cyprus in the course of a journey to Jerusalem in 1314. From this time on there are records of the presence of cheetahs above all in the courts of northern Italy, such as those of the Sforza and Visconti in Milan, as well as the Este court in Ferrara (Perosino 1958; Erba 1999), and later also in central Italy, at the Medici court of Florence (*cf.* Heikamp 1965; Masseti 1991; Masseti 2009).

Moreover, a noticeable diffusion in Sicily of the domestic cat, an animal of proven oriental origin (*cf.* Zeuner 1963; Clutton-Brock 1981; Hemmer 1990; Malek 1993; Masseti 2002b), can be traced to shortly after the year 1000, vestiges having been found in the excavations at the "A. Salinas" regional archaeological museum of Palermo, in chronological contexts referred to the second half of the 10<sup>th</sup>-early 11<sup>th</sup> century (Sarà 1997). Prior to this discovery, the oldest Sicilian finds of the domestic cat dated to the 12<sup>th</sup> century, found in a pit of the castle of Fiumedinisi (Villari 1995) and at Brucato (Bossard-Beck 1984). Both sites yielded

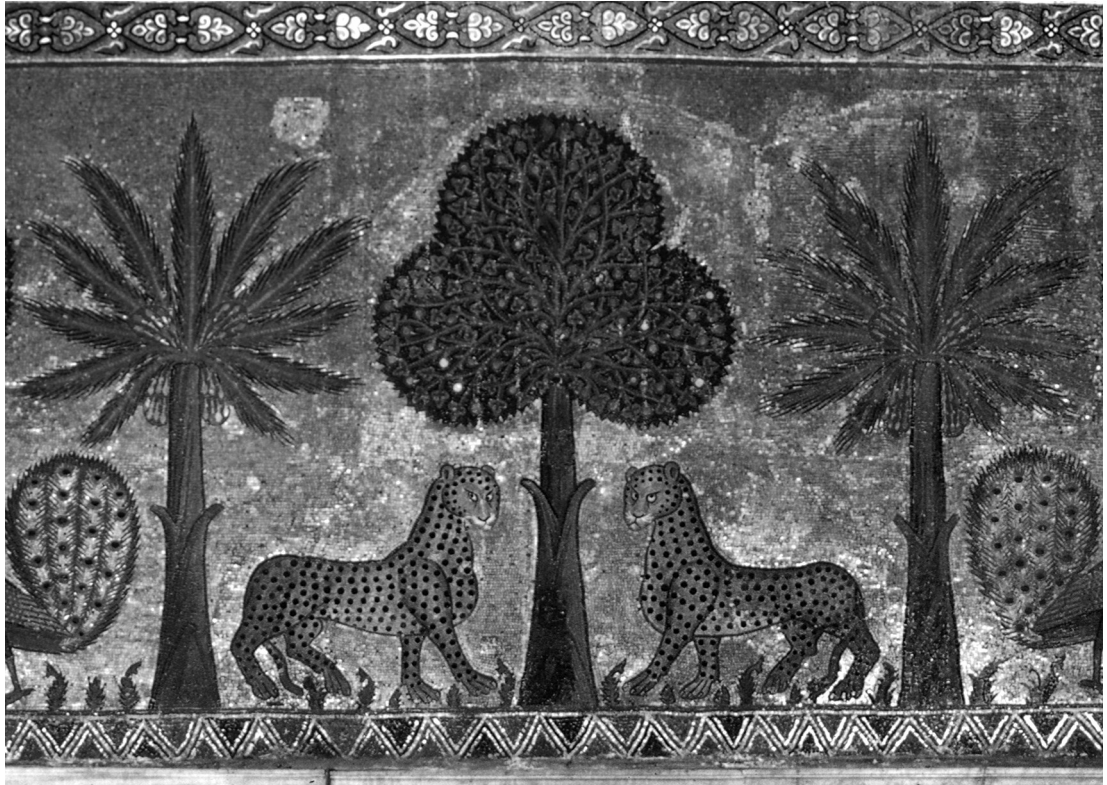


FIG. 7. — Detail of the mosaic decoration of the *Sala di Re Ruggero* in the Norman Palace of Palermo.

remains bearing butchering cutmarks and traces of burns (Villari 1995), as has also been documented from other sites in central Italy, including Rocca Ricciarda, near Arezzo (Tuscany) (end of 14<sup>th</sup> century-second half of 15<sup>th</sup> century) (Corbino 2009), and in several other sites of 14<sup>th</sup>-18<sup>th</sup> century Europe (cf. Villari 1995). In Sicily the domestic cat is also present in 13<sup>th</sup> century layers in Calathamet (Sarà 2005), but is not comprised among the fauna originating from the excavations carried out in two sites of mediaeval Palermo, Palazzo Bonagia and Palazzo Sclafani (Sarà 1997). More recently, remains of the animal were yielded by the archaeological exploration of Palazzo Steri, again in Palermo, in 14<sup>th</sup> and 15<sup>th</sup> century contexts (Lupo 2006-2007). Already known in classical antiquity (cf. Herodotus, *The Histories*, II: 66-67), and very likely already tamed in Neolithic Cyprus (Vigne *et al.* 2004), the animal made its first sporadic appearances in the

western world from at least the start of the 6<sup>th</sup> century B.C., possibly even earlier (cf. Toynbee 1973; Malek 1993; Masseti 2002b). Known in western Europe from at least the early centuries of our era, already at the end of the Roman Empire the domestic cat was present more or less everywhere. Bobis (2000) believes that its diffusion was undoubtedly favoured by the trade routes, in particular the tin road that linked the British Isles to the Mediterranean. However, the Roman army too must have represented a crucial carrier for the penetration of the animal in northern Europe, since numerous fortresses guarding the Rhine-Danube *limes* were home to cats. Nevertheless, according to the results of research carried out by MacKinnon (2004), cat bones were infrequent in most Italian Roman sites between the Republican period and late Antiquity (end of the 6<sup>th</sup> century B.C.-6<sup>th</sup> century A.D.), having been found in only 16 (approximately



20%) of the 146 rural and urban sites considered in the study. Although the presence of the domestic cat in Europe is amply documented by a range of documents dating to the early Middle Ages, prior to any Islamic influence (*cf.* Bobis 2000), it may not have become widespread until the establishment of the Arab culture, in concomitance with which the cat finally became more extensively diffused, at least in the countries of the northern Mediterranean and western Europe. In this regard, it is interesting to note that in the towns of medieval Britain too there is some evidence that the frequency of domestic cats increased in the years following the Norman conquest (O'Connor 1982 and 1992), that is, from the second half of the 11<sup>th</sup> century (*cf.* Rowley 1999; Crouch 2002). Effectively, the attempt made by Bietti *et al.* (1990) and De Grossi Mazzorin (1997) to place the appearance of the domestic cat in the West much earlier, namely around the middle of the 8<sup>th</sup> century B.C. (Early Iron Age), fails to be convincing (Masseti 2002b). In the Iberian peninsula too, the more consistent spread of the animal appears to coincide with the full affirmation of Islamic culture. Finds referred to the domestic cat have in fact been yielded by the exploration of the Spanish sites of Granada (Califal period, 10<sup>th</sup>-11<sup>th</sup> century) (Riquelme 1992), Calatrava La Vieja (Almohade period) (Morales Muñoz *et al.* 1988), Saltés (Huelva) (12<sup>th</sup>-13<sup>th</sup> century) (Lentacker & Ervynck 1999), Motril (Granada) (16<sup>th</sup>-18<sup>th</sup> century) (Riquelme Cantal 1993), and the Portuguese site of Alcáçova de Mértola (second half of the 12<sup>th</sup> century-first third of the 13<sup>th</sup> century) (Telles Antunes 1996). Nevertheless, it cannot be ruled out, as Sarà (1997) observed for Sicily, that for the Iberian and the Italian peninsulas too the absence of finds for slightly earlier historic periods may very plausibly be attributable to the lack of excavations and the absence of specific archaeozoological studies.

#### OTHER EXOTIC MAMMALS AND SOME INTRIGUING REPTILES

It is not really so surprising that living exotic carnivores had been imported into Italy and Sicily for some time. In the southern Iberian peninsula, in

fact, the period in which the *Liber ad honorem Augusti* was produced was the moment in time corresponding to the spread of the Almohad culture (12<sup>th</sup>-13<sup>th</sup> century), referred to which is the first appearance of the common genet, *Genetta genetta* (L., 1758), as clearly demonstrated by Morales (1994), through the finds of the Portuguese site of Mértola. The introduction in the Iberian peninsula of another African carnivore, the Egyptian mongoose, *Herpestes ichneumon* (L., 1758), has recently been documented by the discovery of what Riquelme-Cantal *et al.* (2008) regard as the oldest remains of mongoose in Europe. This is a skull found in the Cave of Nerja in southern Spain (Malaga), AMS dated 885 +/- 40 years BP, and thus again referable to the period of the Almoravid and Almohad dominion of Andalusia. However, that described by Riquelme-Cantal *et al.* (2008) is not the first mongoose that appeared in Europe, but rather the oldest remains of this carnivore known to date for Spain (Masseti 2009b). In effect, the oldest record of this carnivore available to date for the European territory comes from the island of Sant'Antioco, off the south-western coast of Sardinia, where an osteological fragment of the species was discovered in a Punic cistern dated to the 5<sup>th</sup>-4<sup>th</sup> century B.C. (Campanella & Wilkens 2004; Carenti & Wilkens 2006) (Fig. 8). Furthermore, geographical, cultural and zoological data provide circumstantial evidence indicating the Almohad invaders as the agents responsible for the introduction into the Balearics of another species of mammal, the Algerian hedgehog, *Atelerix algirus* (Lereboullet 1842), during the 13<sup>th</sup> century (Morales & Rofes 2007), whereas Holocene remains of reptiles, such as the Mediterranean chameleon, *Chamaeleo chamaeleon* (L., 1758), are available to explain its ancient introduction in the province of Malaga (Talavera & Sanchiz 1985). According to Pleguezuelos & Feriche (2003), the Andalusian diffusion of the latter species was already documented in the literature of the Arabian period. In fact, the Arab historian Ibn al Jatib (Loja 1313-Fez 1375), referring to the region of Almuñécar (Granada), records that "*el camaleón se asa (para consumo humano) en estas tierras*" [*in these parts the chameleon is roasted [for human consumption]*] (Molina, 1983). Historical accounts on the occurrence of this reptile



FIG. 8. — Geographical locations of the Cueva of Nerja (Malaga), in southern Spain, and of the island of Sant'Antioco, off the south-western coast of Sardinia, compared with the extant distribution of the Egyptian mongoose, *Herpestes ichneumon* (L., 1758), along the western Mediterranean shores.

are also available for Sicily (Masseti, in press). Today, chameleons are also reported from several islands of the Mediterranean, such as Malta, Samos and Cyprus, where it is likely that their occurrence is mainly due to human intervention (Corti & Lo Cascio 2002; Arnold & Ovenden 2004; Masseti, in press) (Fig. 9).

Former scholars, such as Mongitore (1743), Scasso Borrello (1798), Rafinesque Schmalz (1814), Minà Palumbo (1863), Palermo (1858), and Doderlein



FIG. 9. — Mediterranean chameleon, *Chamaeleo chamaeleon* (L., 1758), shot in the nature reserve of Ghadira, north-eastern Malta (photo by Marco Masseti).

(1871, 1872 and 1881), refer to the ancient occurrence of Nile crocodiles, *Crocodylus niloticus* Laurenti, 1768, in several rivers of Sicily. Delfino *et al.* (2007), among others, do not rule out that such introductions may have been made by the Arabs. More specifically, a naturalist of the standing of Rafinesque Schmalz (1814) noted that: “*This terrible animal native to the Nile and some other rivers of Africa and Asia had never been found in Europe: nevertheless I have certain proof that it once lived and possibly still exists in some rivers of the island: it was sighted in particular in the rivers of the southern coast, but was also found of old in the Papireto, the stream that runs beneath the city of Palermo*”. Indications of the past presence of crocodiles were also reported from the *Garaffello* (or *Garraffello*) stream — which at the time was in the environs of Palermo, but is now underground too, as a result of the urban development of the Sicilian capital — from another watercourse in the vicinity of Messina (possibly the *Alcantara?*), and from the *Amenano* river of Catania (Fig. 10). Tradition holds, moreover, that the last surviving exemplar was killed in the famous *Fonte del Ciane* of Syracuse, since when it has also been known as the *Lago del Coccodrillo* (Pratesi & Tassi 1974) (Fig. 11). The *Papireto* river in Palermo



FIG. 10. — Sicilian water bodies associated with the presence of crocodiles by authors of the past, including Mongitore (1743), Palermo (1858), Minà Palumbo (1863), Doderlein (1871, 1872 and 1881), with the localisation of Fonte del Ciane, also known as *Lago del Coccodrillo*.

was, again according to the ancient accounts, a habitat particularly adapted to the loricate. The oldest description of this river is to be found in the account of Kalbid Palermo penned by the Iraqi traveller and geographer Abû al-Qâsim Muhammad Ibn Hawqal in 973 A.D. He was in fact able to observe: "...a shallow vale covered in papyri used for writing, which I believed was only to be found in Egypt, but which they use here to make cables for the ships and those few sheets of paper required for the sultan." According to the eminent scholar of Sicilian Islam, Michele Amari (1935): "*The Egyptian plant, minister of ancient knowledge, brought possibly by the Greeks to Syracuse and by the Arabs to Palermo, grew idly there up to the sixteenth century, when the pond dried out but the name remained, and even today it is still called the Papireto*". In the full flush



FIG. 11. — Nineteenth-century idealised representation of the appearance of the river Ciane, in the vicinity of Syracuse, which is still characterised by the presence of a dense papyrus thicket. We can note the incongruous presence of several sacred ibis, *Threskiornis aethiopicus* Latham, 1790, birds that are to be found only in Africa and the Near East, which the artist chose to include to accentuate improbable similarities with the natural environment of the Nile (from Strafforello 1893).

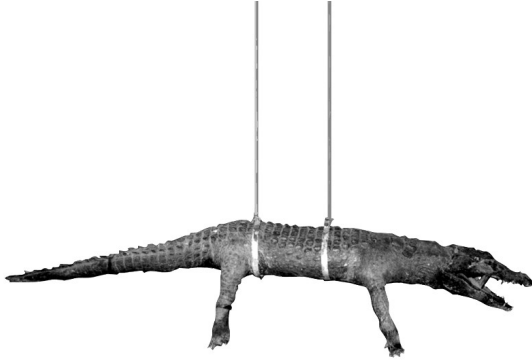


FIG. 12. — Stuffed Nile crocodile, which probably originally belonged to the Garillo pharmacy in Palermo, and then passed to the shop of a pork butcher in the “Vucciria” market. Palermo, private collection (photo by Rosario Daidone; courtesy Gruppo Editoriale Kalós, Palermo).

of the 18<sup>th</sup> century, the erudite Sicilian Antonino Mongitore (1743) was still able to refer to: “*the Crocodiles that, despite being native to the Nile, have been found on more than one occasion in the Papireto*”. It is still said that one of these reptiles died in Palermo when the church of San Procopio collapsed in the year 1726 (Quatriglio 2007). The embalmed skin of the last of the Sicilian crocodiles is reputed to have been conserved in a private collection in Palermo (Daidone 2006; Quatriglio 2007) (Fig. 12).

#### ALLOCHTHONOUS GAME-FOWLS

Scant osteological remains of adult pheasants, *Phasianus colchicus* L., 1758, figure among the human waste products dating to the 11<sup>th</sup> and the 12<sup>th</sup> centuries of the settlement of Brucato in the vicinity of Termini Imerese, north-western Sicily, (Bossard Beck 1984) (Fig. 13). However, according to Bressi (1980), the diffusion of this galliform in 12<sup>th</sup>-15<sup>th</sup> century Sicily could have been largely restricted to north-east of the island. In fact, certain ancient literary documents attest to the diffusion of the species along the slopes of Etna and in Mascali, in the surroundings of Catania, around 1185.

Moreover, the occurrence of the black francolin, *Francolinus francolinus* (L., 1766), another bird of continental Near Eastern origin (*cf.* Johnsgard 1988;



FIG. 13. — Artistic representation of an adult female of pheasant in a detail of the mosaic decoration of the basilica of Monreale, Palermo.

Masseti 2002b and 2003), is recorded in Sicily since the 13<sup>th</sup> century. In fact, as far as is presently known, the exploration of Calathamet provided the oldest Sicilian bones of the species, dating to the 13<sup>th</sup> century. The archaeozoological data in fact confirm the theories regarding the first introduction of the species on the island, which authors such as Amari (1937) and Orlando (1958) consider may have occurred following the return of the first Crusades, or alternatively have been effected by the Arabs (Amari 1937). Also according to Baldacci (1964), Pratesi (1976), and Perco (1981) following Arrigoni Degli Oddi (1929), the species may have been introduced into the island — and then to the rest of Italy and Europe — during the time of the Crusaders. Johnsgard (1988) is instead of the opinion that the historical diffusion of the species in Sicily was probably the result of early introductions by the Moors and Saracens. Apropos this Baccetti (1992), partly following Baldacci (1964), observes that in Italy and Spain, comprising the respective

islands, over the course of the centuries numerous introductions of this bird took place, and it has been possible to document for long periods of time the presence of various populations of uncertain origin. The diffusion of the black francolin, as observed by Maluquer & Travé (1961) and by Muntaner *et al.* (1983), coincides with surprising precision with the historic territory of dominion of the Catalan-Aragonese Confederation, which comprised Sicily starting from 1282 and took in even more easterly regions during the following century (*cf.* Rodríguez-Picavea Matilla 2006), thus offering ample possibilities of contact between the various areas of the Mediterranean. During this period, black francolins were frequently the subject of lively interest on the part of kings and nobles, possibly due to their value as excellent meat and prized courtly game, as we can glean from a number of literary and legal documents. In order to protect the fowl, severe legal provisions prohibited the hunting and poaching of the species. One of the oldest documents indicating the value of this bird is a letter sent by the Spanish king Peter IV of Aragon, from Sicily to the governor of Mallorca dated 26 May 1368: This letter informs on the delivering to the latter island of several individuals of pheasants and francolins “*in order that they shall breed and multiply*” (Maluquer & Travé 1961). However, evidence of the former occurrence of francolins in the Balearics, is to date restricted to a single mounted specimen without data, still preserved in the museum at Mahon (Menorca): no further mention of the introduction of this bird and no other trace of it are available (Bannerman & Bannerman 1983). The extinction of the species in Sicily must have taken place in the second half of the 19<sup>th</sup> century, more specifically in 1869, when the last individual was killed in the surroundings of Falconara (Caltanissetta) (Doderlein 1873; Arrigoni Degli Oddi 1929; Ghigi 1968; Massa 1976; Iapichino & Massa 1989; Lo Valvo *et al.* 1993). Two of the last specimens of francolin that survived in Sicily are still conserved at the Doderlein Museum of Zoology of the University of Palermo (MZUP AV 662 ♂; MZUP AV 663 ♀) with an autograph label by Pietro Doderlein (Ragusa [Dalmatia], 2 February 1805-Palermo, 25 March 1895) (Fig. 14). This recent extinction of the species in Sicily is



FIG. 14. — Two of the last specimens of black francolin, *Francolinus francolinus* (L., 1766) (the male is on the left), to have survived in Sicily, still preserved at the Doderlein Museum of Zoology of the University of Palermo (photo by Maurizio Sarà; courtesy Doderlein Museum of Zoology of the University of Palermo).

regarded as a consequence of the combined effect of hunting and land reclamation (Amari 1937; Pratesi 1976; Iapichino & Massa 1989). The fact nevertheless remains that the archaeozoological exploration of Calathamet attests that this and other game species, such as the European or common fallow deer, *Dama dama dama* (L., 1758), were already present in 13<sup>th</sup> century Sicily, where they survived up to the 19<sup>th</sup> century (Sarà 2005; *cf.* Burgio *et al.* 1998). As far as is presently known, the exploration of the latter mediaeval site also provided the oldest record for the occurrence in Sicily of the Guinea fowl, *Numida meleagris* L., 1766 (Sarà 2005), probably imported from the Levant, as referred by Frederick II in his *De arte venandi cum avibus* (*cf.* Lamblard 1975 and 2003). In the central Mediterranean, the importance of Sicily for the production of game-fowl is confirmed at least up to the end of the 15<sup>th</sup> century, as indicated, for example, in a letter from Michele Verino written prior to May 1487 (*Descriptio villae caianae...* Florence, Biblioteca Laurenziana, ms. Plut. 90 sup., 28. fol. 39r-40r: *Epistola ad Simonem Canisanium*,



FIG. 15. — Incomplete left antler of European or common fallow deer, *Dama dama dama* (L., 1758), from a pit of the medieval settlement at Vori (Crete, Greece), dated to the time of the Arab dominion of the island between the eighth and the tenth century A.D. (from Masseti 1999).

*qua Cajani rures laudes descrivit*). This document, cited by Targioni Tozzetti (1773), records the importation by Lorenzo dei Medici, for his model farm in the Cascine of Poggio a Caiano, in the vicinity of Florence, of “*phasides Aves... usque ex Sicilia*” [*birds from Phasis [...] actually from Sicily*]. Effectively *phasianus* or *fasianus* [*pheasant*] was the name used by Latin scholars of the standing of Columella (*De Re Rustica*, VIII: 8, 10), Pliny the Elder (*Naturalis Historia*: X, 67 [132]), Statius (*Silvae*, I: 6, 77) and Martial (*Epigrams*, III: 58, 16) to indicate the birds originating from eastern Asia Minor, from the region of Colchis (modern-day Georgia) at the

foot of the Caucasus Mountains, where the river *Phasis* (cf. Toynbee 1973), now called *Rion* or *Rioni* had its source.

#### FALLOW DEER, RABBITS AND CAMELS, WITH A SHORT DIGRESSION ON GAZELLES

On the other side of the Mediterranean basin, Arabs are also regarded as responsible for the temporary reintroduction of large game on the island of Crete. For the record, it was previously believed that the common fallow deer survived on this island only up to the Roman Imperial and first Byzantine periods, as attested by the discoveries at the site of Eleftherna, near Rethymnon (Trantalidou 1990; Nobis 1993) and perhaps of the Byzantine age (6th-7th century) (see Wilkens 1996). However, another finding postdates the time of the occurrence of the species to later periods. In 1980 the excavations of the early mediaeval settlement at Vori (Timbaki), in southern Crete, yielded one incomplete left antler of *D. dama*, from a pit dated to between the eighth and the 10<sup>th</sup> century A.D. (Masseti 1999). Thus, this antler (total length: 337 mm; brow tine: 154 mm; partial palm width: 69 mm) could document the occurrence of fallow deer on Crete even in the period of the Arab dominion of the island (Masseti 1999), between 824 and 961 A.D. (cf. Vallianos 1989) (Fig. 15). It cannot be excluded that this importation involved animals originating from Anatolia, which is considered as the source of the majority of the fallow deer populations founded by humans since Neolithic times (Masseti *et al.* 2008). Also in Sicily, as far as is presently known, the first certain evidence for the modern occurrence of this deer is very late, starting from the Arab-Norman period (10<sup>th</sup>-12<sup>th</sup> century) (Burgio *et al.* 1998). Other introductions of exotic zoological species appear to have occurred on Crete in the course of the Middle Ages. Belon (1555), for example, described a bird from the latter island which fits the description of a black francolin (cf. Handrinos & Akriotis 1997).

One of the most common sources of human food in mediaeval Sicily was the rabbit, *Oryctolagus cuniculus* (L., 1758). Archaeological research, car-

ried out for example in the site of Brucato (Termini Imerese, Palermo) has revealed that rabbits accounted for 40.23% of the fauna hunted by man during the 13<sup>th</sup> and the 14<sup>th</sup> centuries (Bresc 1980; Delort 1987). The abundance of the osteological finds would appear to confirm the frequency of their consumption (Beck-Bossard 1981; Bossard-Beck 1980 and 1984; Bossard Beck & Maccari-Poisson 1984). Thanks to the income from the *Venatio cuniculorum*, diverse accounts of which have been preserved, we can confirm that the rabbits also abounded in many other places in Sicily. Bones of rabbits have been reported, for example, from the mediaeval Sicilian sites of Segesta (Di Martino 1997), Palermo (11<sup>th</sup>-14<sup>th</sup> century) (Sarà 1997), Entella (first half of 13<sup>th</sup> century) (Bedini 1999), and Calalthemet (13<sup>th</sup> century) (Sarà 2005), but the data collected by Bresc (1980) triggered by an analysis of the literary documents available further supplement the information on the diffusion of the species between the 12<sup>th</sup> and the 15<sup>th</sup> centuries, while also showing it to have been much more extensive (Fig. 16). The mediaeval occurrence of rabbits has also been documented from the islands of Lampedusa and Malta (cf. Masseti & Zava 2002b). In Brucato the rabbits appear to have been hunted (Bossard-Beck 1984), but we do not know whether, more generally, these were wild or already domesticated animals. In any case the rabbit is undoubtedly a species that was introduced into Sicily, since it is completely extraneous to the post-glacial faunistic horizons of the island (cf. Flux 1994; Masseti & De Marinis 2008). This species is in fact regarded as a Holocene endemic of the Iberian peninsula (Rogers *et al.* 1994; Callou 2003; Kaetzke *et al.* 2003; cf. García & Bellido 1967). Its artificial spread resulted from exchanges between human societies from prehistory up to the Middle Ages (Callou 2004). The earliest recorded introductions of rabbits out of their homeland date back to the second half of the 2<sup>nd</sup> millennium B.C. (1.400-1.300 B.C.), when this lagomorph was apparently imported onto Menorca, in the Balearic archipelago, by ancient settlers from the Iberian peninsula (Sanders & Reumer 1984). As far as is presently known, in the central Mediterranean region the first evidence for the introduction of the species dates to no earlier than the

3<sup>rd</sup>-2<sup>nd</sup> century A.D., since remains of rabbits have been provided by the archaeological exploration of the islands of Nisida and Capri, in the Gulf of Naples, and Zembra in Tunisia (Barrett-Hamilton 1912; Vigne 1988; Albarella 1992; Flux & Fullagar 1992; Flux 1994; Callou 2003; Kaetzke *et al.* 2003). Recent archaeozoological evidence, however, suggests an earlier importation of the lagomorph, comprised between the 1<sup>st</sup> century B.C. and the 1<sup>st</sup> century A.D., in the case, for example, of the sanctuary of Juno at Tas Silg on Malta (Masseti & De Marinis 2008). However, in view of the possibly excessive antiquity of this latter datum, and its chronological isolation, it cannot be excluded that the animals dug down from upper strata to the level where their remains were discovered. Rabbits are peculiar to offshore islets, but they were probably not imported onto the Eastern Mediterranean islands before the end of the Classical period and/or the beginning of the Middle Ages (Kaetzke *et al.* 2003). This fact is further underscored by the lack of toponyms referring to rabbits in the Eastern Mediterranean basin. One of the first indications of the occurrence of the leporid on the islets of the latter geographic area is found in the Venetian *Book of Bans*, of the 14<sup>th</sup> century, where the small islet of Kouphonísi, offshore southern Crete, is described as a probable rabbit-warren (Rackham & Moody 1996). Among the other elements supporting the theory of a recent historical introduction of the rabbit into the Eastern Mediterranean territories, we can consider the fact that Turkish people still refer to the species as the *ada tavscan* [*bare of the islands*] (Masseti & De Marinis 2008). A domestic artiodactyl is also documented among the species exploited by the Muslims of the Iberian peninsula: the dromedary, *Camelus dromedaries* L., 1758. However, the number of remains of this camelid that have so far been registered from the Islamic period is scanty. These consist essentially of those yielded by the excavations of the cathedral of Granada (Riquelme 1992; Morales-Muñiz *et al.* 1995), Espino (Granada) and San Miguel (Granada) (Morales-Muñiz *et al.* 1995), as well as Alarcos (Ciudad Real) and San Luis (Seville) (Moreno-García *et al.* 2007). In Arab and Norman Sicily the diffusion of the dromedary has not to date been attested by the discovery of any

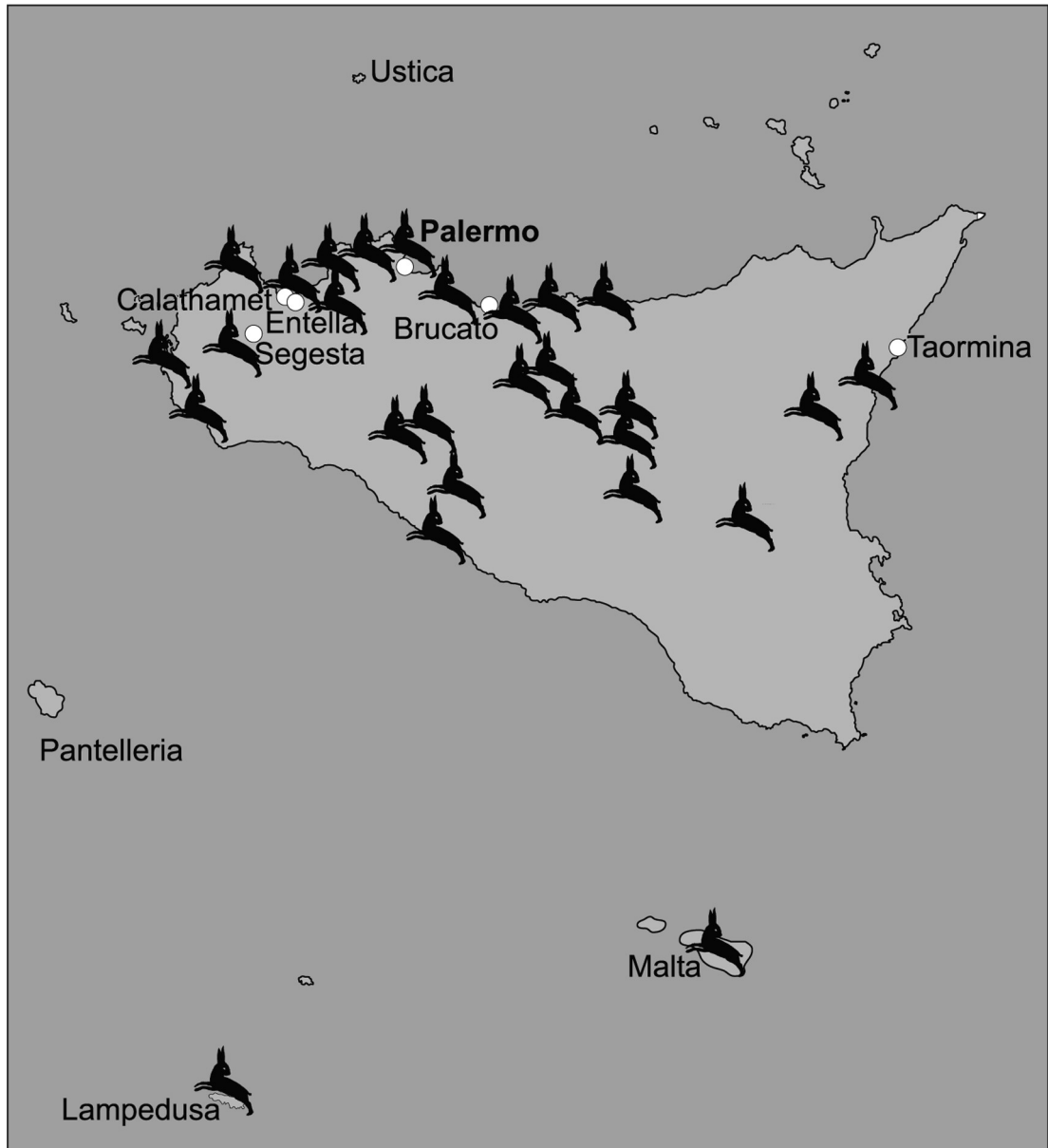


FIG. 16. — Map showing the main sites for rabbit hunting in mediaeval Sicily (data from Bresc 1980; Bossard Beck 1984; Fragapane 1993; Bedini 1999; Sarà 1997 and 2005; Masseti & Zava 2002b).

osteological remains, although 11<sup>th</sup> century literary sources refer to the utilisation of the camelid (*cf.* De Grossi Mazzorin 2006).

Regarding the circum-Sicilian islands, it is interesting to note that Idrisi, the Arab geographer who,

in 1154, wrote the geographic treatise better known as the *Book of Roger* for the Norman king Roger II, observed that several of these featured a very interesting fauna. Marettimo, in the Egades archipelago, for example, was inhabited by wild goats and gazelles



(*cf.* Amari & Schapparelli 1883; Rizzitano 1994). On Malta, not far distant, gazelles were let loose in large private grounds for hunting purposes in mediaeval times (Lanfranco 1969), as on the nearby islet of Comino, where a set of bones from a gazelle of undetermined age has been uncovered from strata of soil and loose rocks (Boffa 1966). Several centuries later, the aforementioned Abela (1647) also described a bay of Malta as: “Ramlatal Ghoslien, *Arenale delle Gazelle*” [*strand of the gazelles*]. Literary references document the importation of these artiodactyls also on other Mediterranean islands, such as Cyprus, again in mediaeval times (Flourentzos 1977), and Mallorca, in the Balearic islands, between the 12<sup>th</sup> and the 15<sup>th</sup> centuries (Llabrès Ramis & Vallespir Soler 1983). Beyond the peculiar use of islands, since antiquity, as natural reservoirs of fresh meat (*cf.* Masseti 1998), in the past centuries the European nobility often regarded these same territories, especially those located near the mainland coasts, simply as game preserves (Masetti & Zava 2002a). The importation of gazelles into Sicily may have continued, possibly without interruption, up to the 19<sup>th</sup> century when several of these ungulates were comprised among the game of the park of the Palazzo d’Orleans in Palermo (*cf.* Di Matteo 2003). Images of gazelles are to be found in the mosaics of the ceiling of the *Sala di Re Ruggero*, in the Norman Palace of Palermo. These mosaics have been dated to the Swabian period (13<sup>th</sup> century) (Bottari 1966; Malignaggi 1991), considered to be later than those of the walls of the same room which can instead be referred to the time of William I, that possibly is between 1154 and 1159 (*cf.* Di Pietro 1954; Toesca 1955). To date, however, no bone fragments of *Gazella* sp. have been provided by the excavation of any of the mediaeval sites of Sicily.

#### THE “EARTHLY PARADISE” AS A *VIRIDARIUM*

To return to our 12<sup>th</sup> century miniature, the image of the *Genoard* proposed by the *Liber ad honorem Augusti* could be considered as a green space of the *viridarium* type: a site devoted to the cultivation *inter alia* of ornamental plants and medicinal spe-

cies (*cf.* Ciarallo 2004). In fact, at the top of the Berne illumination is the legend: *viridariū genoard*. Several authors, such as Caselli (1994) and Lorenzi (2006), still regard the *Genoard* as a large park for hunting located immediately outside the walls of Palermo. But, in the illumination of Pietro da Eboli it is clearly represented as part of the urban context, occupying as already noted roughly the same area as the other city districts and constituting a continuation of the Halqah palatine complex. The latter was the upper part of Muslim and Norman Palermo, enclosed within a wall that isolated it from the rest of the *Cassero* (keep) of the ancient city. The walls, clearly visible in the miniature, appear to make specific reference to the enclosed nature of the *Genoard*, the irrigated garden that: “...*already represents the apex, the citadel girdled by walls which must be defended from the attacks of herds of men and beasts, the verdant and luxuriant garden, set against the yellow of the vast reaches of the landed estates.*” (Lupo 1990). The *Genoard* could well have been a *viridarium* annexed to the royal palace of Palermo, functionally connected with the system of suburban hunting parks. In view of the zoological species shown within this enclosure, it could have been a breeding area. Effectively, the “earthly paradise” must have housed a special fauna, selected not only for aesthetic reasons, as in the case of the parakeets, but also for hunting purposes, among which falconry was — as we have seen — foremost. Here, the world of the hunt was not restricted to the experimentation of techniques for rearing birds of prey but, as also noted by Salvarani (1999), was also a lavish display of sophistication, a flaunting of exotic and rare prey constrained to live in the “garden-paradise” and an ostentation of skills in archery. Then, to cap it all, came the display of wondrous hunting felids whose formidable leaps in ambush made them outshine even the best of hounds (Masetti 2009a).

#### THE SICULO-ENGLISH NORMAN CONNECTION. CONCLUDING REMARKS

The Normans of Sicily inherited structures of the *viridaria* and hunting park type from previous cultures. Their conquest of Sicily, after 1060, brought

them into contact with the classical and Islamic traditions of emparking and the keeping of beasts (Rowley 1983; Rackham 1986): traditions that they were later to transmit to the rest of the Western World.

The Normans of Sicily gradually began to replace the areas spatially delimited by architectural structures, the so-called “paradises” of Islamic inspiration, through the creation of “parks”, much larger areas in which hunting was performed as an aristocratic prerogative (Salvarani 1999). They also devoted particular attention to the control and management of the woods and forests of Sicily and to the game which found refuge and nourishment within them. They introduced the regime of the *foresta*, which indicated the *incultum* strictly belonging to the demense, governed in line with the practice of the English Normans by feudal reserve rights controlled by the royal officials, the *forestarii* (Willemsen 1987; cf. Trombetti Budriesi 2000). Bresc (1980) has traced a fascinating map of what must have been the distribution of this type of infrastructure in the Sicilian territory between the 12<sup>th</sup> and the 15<sup>th</sup> centuries; the same author inserts within the progressive process of Norman transformation of the previous Arab agricultural and forestry policies in Sicily the introduction of the regime of the forest as a hunting reserve strictly supervised by the monarch and by the feudal nobles. Moreover, the mountainous ridge overlooking the Tyrrhenian Sea and the Ionian coast between Messina and Syracuse was also cloaked in an extensive series of woods and parks, elected by the Normans as *loca congrua venationibus et solacis* (literally, *areas suited to hunting and leisure*) and a location for castles (Bresc 1980; cf. Tramontana 1999; cf. Galloni 2000). Frederick II devoted particular attention to the management of the forested stretches of the island, within which the exclusive hunting rights belonged to the sovereign, a regime which was most likely introduced by the first Norman princes (cf. Bresc 1980). The game must have been particularly abundant; in the forest, and often also in the *solacia*, big game hunting was performed. Various historic documents, including several royal ordinances, together with the archaeological finds, confirm the variety of the large game. This consisted mainly of cervids. Red deer, *Cervus elaphus* L., 1758, of Etna are featured

in the price lists of the Catania butchers, and also among the archaeozoological finds of Brucato (Bossard-Beck 1984; Burgio *et al.* 1998), Entella (Bedini 1999), Segesta (Di Martino 1997), and Fiumedinisi (Villari 1988). The most abundant ruminant was, however, the above-mentioned fallow deer (Bossard-Beck 1984; Di Martino 1997; Burgio *et al.* 1998; Bedini 1999; Sarà 2005; Lupo 2006-2007), the subject of numerous royal orders, and also marketed in Palermo, followed by the roe deer, *Capreolus capreolus* (L., 1758), present on the markets of both Palermo and Catania (Bresc 1980). One tooth (P<sub>4</sub>) of a brown bear, *Ursus arctos* L., 1758, has also been found among the faunistic remains provided by the excavation of the mediaeval castle at Fiumedinisi (Villari 1988). One of the most coveted prey in this type of hunting at the Norman court must have been the wild boar, *Sus scrofa* L., 1758, and/or the feral pig, at least judging from the abundant finds of osteological fragments and teeth of the species discovered, for example, at the palace of Steri in Palermo (Falson 1974; Lupo 2006-2007), or at Brucato itself (Bossard-Beck 1984). Moreover, we should not overlook the fact that, at the mediaeval courts, hunting was not only an enjoyable pastime and a way of training for war, but also a mode of flaunting one's social prestige through the uncommon privilege of disposing of rare game. Moreover, various studies have shown that the percentage represented by wild animals in the victualling of the mediaeval courts was actually quite modest, while bred livestock played a much more important role (cf. Bresc 1980; Sosson 1980; Niedermann 1995; Fiorillo 2005).

The Normans ruled Sicily for over a hundred years. By the late 11<sup>th</sup> century, they were active not only on the large Mediterranean island but also in southern Italy, England, northern Europe, and the Levant (cf. Sykes 2007). Throughout the twelfth century, links between England and Sicily became increasingly close, resulting in considerable political and cultural exchange (Cassady 1986; Loud 2003). This provided ample opportunity for the exchange of ideas and goods, such as the spread of Arab architectural influence from the 11<sup>th</sup> century on, as illustrated in the Norman tower of Canterbury (1070), the atrium or arcades of the Galilee chapel

in Durham Cathedral, and Arab overtones in other British buildings between the 11<sup>th</sup> and the 12<sup>th</sup> century (*cf.* Ragghianti 1968).

The occurrence of Sicilian artefacts in northern European contexts in this period is not as surprising as it might seem, being evidence of a fairly well documented trade with foreign countries. In this regard, we can mention the *oliphant* from the Saint Arnoul abbey of Metz, still preserved in the collections of the National Museum of the Middle Ages (Musée national du Moyen Âge) in Paris. Consisting of hollowed elephants tusks, oliphants had multiple functions in the Middle Age. Some were used as musical instruments and drinking horns, while others contained relics, which explains why a number of them were conserved in church treasuries (Dectot 2003). The Metz specimen is characteristic of Sicilian workshops of the last third of the 11<sup>th</sup> century, whose art was distinctly marked by Fatimid influences (Dectot 2003). Another fragment of oliphant, on display in the museum of Cluny, but originally destined to a German church (Hatot & Broucke 2008), can again be referred to the production of a workshop in southern Italy. The importation of exotic materials and/or of the durable parts of allochthonous animals, such as elephant tusks, was merely the continuation of a practice which had been going on for centuries — if not for millennia — whenever political and economical conditions were favourable. This tradition had its oldest roots in the trade that had been plied between North Africa, the Mediterranean and the rest of Europe since very ancient times (*cf.* Masseti 2002b).

It is amply established that, under the Normans, Sicily became a focal point for the transmission of Islamic contributions to medieval Europe, a model and an example which was universally admired (Aubé 2006). Although less important than Spain, the island nevertheless played a key role in the transmission of knowledge to Europe (Lewis 1993). After the Normans conquered the emirate of Sicily and inherited its Islamic legal administration, Norman law came to be significantly influenced by Islamic law and jurisprudence. The Normans in their turn introduced a number of Norman and Islamic legal concepts to England after the Norman Conquest, and may even have laid the foundations

for English common law (Makdisi 1999). There was a particular period of increased diplomatic contact between the Normans of Sicily and England, for a generation or so after 1160, culminating in the visit of Richard I to the island during the Third Crusade (Loud 2003). Later on, these contacts were probably further strengthened with the marriage of Frederick II to the sister of Henry III of England in 1235.

This cultural exchange between the Sicilian and the English Normans is also demonstrated by Henry I's park at Woodstock, which is thought to have been based on Sicilian models. According to Rowley (1983), it is clear from 13<sup>th</sup> century and later documents that this park had a royal palace and gardens, some of which, in the Moorish style, used water as a principal design element. The legendary maze, Rosamund's Bower, created by Henry II, grandson of Henry I, near the Woodstock palace, is marked today by a fountain which was known as "Everswell", and is probably the oldest designed water feature in Britain (Hopwood 2004). It has been suggested that the extensive chain of hunting parks and villas (*solacia*), with their artificial pools and fountains, created by the Norman kings outside the western walls of Palermo was the inspiration for Rosamund's Bower, possibly the earliest example of aesthetic landscaping in England (Rowley 1999). The palace of Zisa, one of the most beautiful rural pavilions comprised within the "ideal countryside" created by the Norman kings around Palermo, has a central court across which water from a spring ran through a series of basins set into the ground. According to Rowley (1983), this was an oriental feature which the Normans had appraised from the Arabs, and it recurs in the Alhambra palace in Muslim Spain. In Sicily there was a continuity which, from the time of a tradition already codified during the Roman period, also affected Muslim and Norman constructions. According to Leone *et al.* (2004), the structural complex of buildings and isolated pavilions, gardens, pools and artificial streams, all in the same area, harks back to the tradition originating in the "pavilion type" urban palaces in Rome in the 3<sup>rd</sup> century A.D., that emerged once again in the 12<sup>th</sup> century, albeit with original formulae, at the Norman court of Sicily.

According to the chronicler William of Malmesbury (c. 1080/1095-c. 1143), the menagerie of Henry I at Woodstock was stocked with a wide variety of exotic animals including lions, *leopards*, camels, and lynxes, which the Norman king received from foreign rulers and friends (Plot 1705; Parnell 1999; Bartlett 2000). It is important to note that — apart from the lynxes, presuming that is that they were not actually caracals — all these species could have originated from North Africa and/or the Levant. It is also said that the menagerie may have included a crested porcupine (Plot 1705; Rybot 1972; Ververs 1976; Landsberg 1998), which could have been sent to Henry I by William of Montepellier (Hahn 2003). But, in this case too it seems very likely that it could again have been procured through the offices of the Normans of Sicily, originating either from the latter island or from North Africa. In fact, the distribution range of the crested porcupine still extends through Northern and sub-Saharan Africa, but never any European countries except for Italy, the island of Elba and Sicily (Cabrera 1932; Corbet & Jones 1965; Niethammer 1982; Lovari 1993; De Marinis *et al.* 1996; Amori & Angelici 1999). On the latter island and in the rest of Italy, the current presence of the species could have an anthropochorous origin, deriving from importations made in even fairly recent historical times (Masseti 2008).

The possession and display of exotic animals was considered a sign of great prestige and power in the courts of mediaeval Europe (Ortalli 1985; Giese 2008). Thus, trade in exotic animals was commonplace amongst rulers: even in the early 9<sup>th</sup> century Charlemagne was sent an elephant, called Abu l'Abbas, by the Abbasid caliph (Hodges 2000). Throughout Europe, and even beyond, a considerable amount of evidence exists to show that since mediaeval times wild game was regularly transferred from one habitat into another, normally for hunting purposes and to create game parks (*cf.* Lehmann 1969; Chapman & Chapman 1975; Macgregor 1992; Masseti 1996 and 1999; Wiles *et al.* 1999). Moreover, regarding the introduction into Britain of certain zoological species, such as the fallow deer and the pheasant, according to several scholars, including Chapman & Chapman (1975, 1997), Rackham (1997), and

Rowley (1983, 1999), a conceivable source could have been via the Sicilian connection. It is difficult instead to substantiate the claim of a Norman introduction of other animals, such as the rabbit. In fact, in the light of the available archaeozoological evidence, it seems most probable that this introduction dates to the late twelfth-century (*cf.* Sykes 2007). However, a recent review of the evidence concluded that fallow deer in Britain descend from animals introduced during the Norman period (Sykes 2004 and 2007; Sykes *et al.* 2006). The late 11<sup>th</sup>-early 12<sup>th</sup> century would have been an appropriate time for the Normans of England to have acquired fallow deer from their Sicilian colleagues (Rackham 1986; Sykes 2007). By the 13<sup>th</sup> century the fashion for this cervid had already spread to Wales, Scotland and Ireland (Rackham 1986). The rabbit too appeared in England at the beginning of the 12<sup>th</sup> century (*cf.* Rackham 1986). Its occurrence is documented by the discovery of bones in 12<sup>th</sup> century levels at Exeter (Maltby 1979), and since the 13<sup>th</sup> century in Rayleigh Castle (Essex) (Hinton 1912-1913), and Launceston Castle (Cornwall) (Albarella & Davis 1996). Various literary references confirm the subsequent spread of the lagomorph, in the course of the 13<sup>th</sup> century (*cf.* Veale 1957). Pheasants were certainly in England by the mid 12<sup>th</sup> century or may have arrived in the late 11<sup>th</sup>, and the Normans possibly obtained them via Sicily (Rackham 1986). It seems highly possible that all these game-species were sent from the large Mediterranean island as part of the scheme of gift-exchange between rulers, and they may even have formed part of Henry I's menagerie. It cannot be excluded that the conceptual foundations of the theory of "nature conservation", which over recent centuries have been particularly developed by the Anglo-Saxon culture and disseminated to the rest of the world, were embedded in previous foreign traditions, inherited from far afield, possibly from the early Arabian culture that had in turn imbibed them from Late Antiquity. Even in the days of Henry I of England, the keeping of exotic animals by royalty or nobility was hardly a new idea, but had its roots in classical antiquity, which according to Hahn (2003), endowed it not merely with respectability, but also with a certain continental *je ne sais quoi*, and something of the

*kudos* of the ancients. Thus, in the course of the 12<sup>th</sup> century, a Sicilian cultural connection with the Normans of Britain, possibly as we have suggested borrowed from traditions deriving from late antiquity, may indeed have been one of the original sources of the by now global story of nature conservation, playing a fundamental role of cultural filter between the Late Antique and the Modern world.

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