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African minor livestock species

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The origins and development of  
African livestock  
Archaeology, genetics, linguistics  
and ethnography

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# African minor livestock species

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## 1. Introduction

### 1.1. The study of "minor" domesticates

Historical studies of the domestication and diffusion of livestock, such as Boettger (1958), Zeuner (1963) or the contributors to Mason (1984a) often give Africa somewhat short shrift. This is especially the case for so-called "minor" species; i.e. any species other than cattle, sheep and goats. The absence of iconographic or literary records and the patchy coverage of archaeology has often led researchers to conclude that little can be said. However, methods do exist of filling these historical lacunae, in particular the use of linguistics and comparative ethnography. The recent development-oriented literature on ruminant breeds summarized in Blench (1993) provides synchronic distributions of major species and races.

Africa represents an elaborate mosaic of production systems and livestock species other than the principal ruminants (Blench 1997). Although cited as "minor" species, animals such as the donkey or camel can play a major role in the economic life of ordinary rural householders. They are, however, of no significant interest to major donor agencies and research is often confined to enthusiastic individuals. As a result, there are often startling lacunae in our knowledge of, say, the history of the domestic pig in Africa. The only author to consider some of these species in detail was Lagercrantz (1950) who reviews the literature on cats, pigeons, ducks, geese and turkeys. Ruminants, donkeys, pigs, chickens and bees are described in other chapters in this volume (Chs 21, 22, 27). The history of the horse in Africa has been discussed elsewhere extensively (Law 1980, Seignobos 1987, Blench 1993) and will not be further treated here. This chapter<sup>1</sup> synthesizes current knowledge of the history of the residual species – "minor" domesticates of Africa.

The use of productivity data from livestock kept under village conditions is beginning to be used to interpret archaeozoological material (see Thorp 1995, Hall, Ch. 19 in this volume). For this reason, the data that exists has been summarized for the species described in this chapter. Minor species have often been given short shrift in this respect and the information summarized here should therefore be treated as tentative.

### 1.2. The domestication process

Sheep, goats, chickens and pigs arrived in Africa fully domesticated and although local races have developed there can be no further interaction with their wild relatives. However, for indigenous African fauna, domestication remains a dynamic process, both in terms of interaction with wild populations and continuing experimentation with new species (Blench 1997). The donkey was almost certainly domesticated in Africa and there is evidence for some introgression of genetic material from wild ass populations in historic times (see Blench, this volume, Ch. 21). With the probable elimination of the last Somali wild asses this process has come to an end. On the other hand, the guinea-fowl is part of the indigenous avifauna of Africa which has been only partly domesticated. In some regions, guinea-fowl are kept in the compound, grow fat and have little tendency to fly away, but their wild ancestry is reflected in their habit of laying eggs scattered in the bush, rather than in a single place.

The process of taming wild animals, especially birds, is already well documented for Ancient Egypt and there is substantial evidence for it in the ethnographic literature. Iconographic records make plain that numerous species were either wild-caught and tamed or actually domesticated. Some of these, such as the crane, are no longer known as domestic animals. In some cases, cachet attaches to the taming of wild animals so that taming does not act as a prologue to the domestication process. The Romans in North Africa are shown as using domesticated cheetahs for hunting while hyena-taming is found across Sahelian Muslim Africa, usually as a type of circus act. However, experimentation continues in sub-Saharan Africa, and there are modern records of unusual domesticates, wild-caught animals "finished" in captivity. Two species of wild fauna that are in transition between husbandry and domestication are the giant rat (*Cricetomys*) and the African Land Snail.

An important aspect of the relationship between man and livestock relevant to the minor species is the keeping of pets. Species regarded as edible in some parts of Africa are kept as pets or working animals elsewhere. In many places these two categories would be regarded as distinct, but even affectionate man-animal relations do not stop pets being regarded as protein. Dogs are commonly used for hunting or to guard property, and are sometimes eaten. Even cats, which are usually semi-feral and whose existence on the margin of villages is tolerated because of their vermin destroying habits, are eaten in some communities.

## 2. Mammals

The history of individual species can be tracked broadly through archaeological and historical sources although more detailed regional information comes from local traditions and lexicographic data.

### 2.1. Camel

The one-humped dromedary is originally an Asian domesticate (Epstein 1971, Wilson 1984) although wild camels were known in North Africa in the Pleistocene.

Camels are present during the Quaternary in the Maghreb but are usually thought to have subsequently died out and been re-introduced in the Graeco-Roman period. This view has been supported by a number of authors, notably Bulliet (1990). Shaw (1979) has provided a history of this debate and vigorously canvassed a contrary view, that the camel was present continuously in the Maghreb, but that its presence was at a low-level and therefore less archaeologically visible. He argues that the camel survived through from the Pleistocene and is therefore indigenous to North Africa. In the absence of archaeological evidence from more recent periods, most scholars do not accept this.

Occasional representations suggest that the camel was brought to Egypt as an exotic at an early period (Brewer et al. 1994:104). The most striking evidence of this is the camel vertebrae discovered in a 1st Dynasty cemetery at Helwan (ibid.). Finds of camel-hair and ceramic models of camels confirm that at least some camels were kept in Egypt and it is now thought that the introduction of the camel in large numbers may be associated with the Assyrians (c. 500 BC). It may be that only with the opening up of long-distance trade routes through desertic regions that the camel came into its own under the Ptolemies.

Whatever its antiquity in North Africa, the camel appears to be represented significantly in the Maghreb only in the first few centuries BC. In North Africa it appears, above all, as a plough-animal and to carry loads (Morales Muniz et al. 1995). In the case of sub-Saharan West Africa, the camel is almost certainly more recent. Bones dating to between AD 250 and AD 400 have been found in the Middle Senegal Valley and bones and camel dung have been identified at Qasr Ibrim, in Egypt in the early first millennium BC (MacDonald & MacDonald, Ch. 8 in this volume). Muzzolini (Ch. 6 in this volume) refers to the extensive rock art evidence for camels and some striking images from Chad have recently been published (Boccazzi et al. 1995).

Unusually, the archaeological materials cited above predate the historical record. The first reference to camels in West Africa is by Al-Yaʿqubi, writing in AD 889–890 who mentions camel nomads, the Anbiya, living south of Sijilmāsa (Levtzion & Hopkins 1981:22). After this date, there are numerous references to camel in Arab writers, mentioning both its use for packing and for irrigation (in Zawīla). Camels were also sacrificed in rituals to establish the location of gemstones according to Al-Bakrī (Levtzion & Hopkins 1981:86). Further east, Al-Idrīsī mentions the Zaghawa people as eating sun-dried camel meat (ibid. 114). The Kano chronicle, referring to present-day northern Nigeria, mentions that the first ruler to own camels was Abdullahi Burja, in about AD 1440.

Linguistic evidence for the camel in West Africa is reviewed in Blench (1995). In west-central Africa, there are two sources of words for camel, loans from Berber and from Fulfulde. Versions of Berber \**lɣm* are common through from northern Nigeria to Chad, whereas in Adamawa, Fulfulde *ngelooba* is usually borrowed. Skinner (1977:179ff.) discusses the history of the \**lɣm* root. He notes that it is probably a borrowing from the Arabic \**gml* root (also borrowed into English) and that the Fulfulde term is probably another version of the same root, perhaps borrowed directly from Arabic *al-gml*.

More problematic is the antiquity of the camel in the Horn of Africa. Archaeological finds of camel materials from this area are summarized in Esser & Esser (1982) and Banti (1993). These authors have argued for its early domestication in the Horn of Africa, from wild camels in the Arabian peninsula. There are several studies of the linguistic evidence or terminology in the Horn of Africa. Most detailed is Bechhaus-Gerst (1991/2) who has explored the vocabulary associated with the camel in Beja. She notes that Arabic sources for Beja camel terminology are few and probably late, concerning only details of saddling leatherwork. Heine (1981) points to the regular reconstruction of terms connected with camel production for example the word for “camel-bell” in proto-Sam, i.e. Somali-Boni-Rendille. It could therefore have spread across from Arabia in “pre-Arabic” times and thence up the Red Sea coast to Egypt and North Africa. The “riding camel” *r-k-b*, shows up as a loan *into* the Sam languages. Banti (1993) has reviewed the considerable linguistic evidence suggesting a deep embedding of camel terminology in the cultures of this region.

## 2.2. Dog

The ancestry of the domestic dog remains uncertain and a number of canids may be implicated in present-day types (Clutton-Brock 1984). European and New World dog remains go back to 10,000 BP. The dog is not native to Africa and was introduced at an unknown period in the past. According to Brewer et al. (1994:114ff.) dogs were known in pre-Dynastic Egypt (Merimde Beni Salame at 6800 BP). They are represented in the rock art of the eastern and western Deserts and so could have been brought across the Sahara in prehistoric times. Earlier this century it was argued that the jackal had played a part in the ancestry of the African pariah dog, a theory that is generally discounted today (Epstein, 1971i).

Three basic types of dog are recorded in Ancient Egypt, the pariah dog, the greyhound and the mastiff. The greyhound was divided into two types, the *tesem* and the *saluki*, the *tesem* being the lean, tall, prick-eared dog represented in many wall-paintings. The *tesem* seems originally to have come from further south, from Nubia and Punt, although where they evolved remains uncertain. Mastiffs were brought into Egypt from Mesopotamia during the Middle Kingdom period but seem not to have persisted (Hauck 1941, Epstein 1971i:3–184 and Brewer et al. 1994:117).

The pariah and the greyhound appear to have spread out from North Africa over much of the continent. The social and cultural importance of dogs in African culture, as well as the antiquity of their domestication in the Near East suggests that they should be at least as old as other domestic stock in Africa. Archaeological evidence for the antiquity of dogs in sub-Saharan Africa is somewhat sparse (see MacDonald & MacDonald Ch. 8, and Smith Ch. 11 in this volume). Despite this, all other types of circumstantial evidence suggest they are of considerable antiquity. The pariah is the common dog found all over Africa, whose distribution is shown in Figure 20.1.

The greyhound seems to have spread widely in Africa, although in many places it crossed with the pariah, thereby diluting its distinctive body shape. The approximate distribution of greyhounds and mastiffs is shown in Figure 20.2.

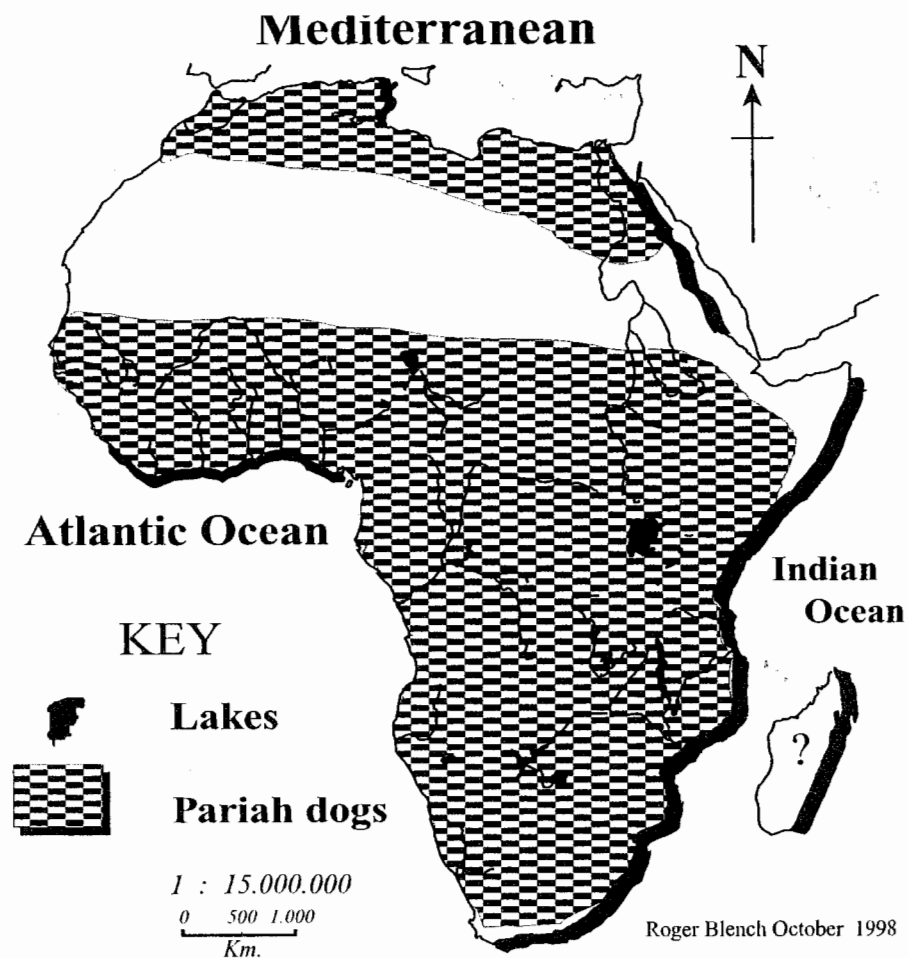


Figure 20.1 Distribution of pariah dogs in Africa.

Exotic breeds were brought in during the colonial period and have in many places crossed with local dog races to produce distinctive breeds such as the Rhodesian ridgeback. The Basenji, a non-barking dog in west-central Africa is not usually held to constitute a distinct race (Dollman 1937).

2.2.1. *Social role of dogs* Dogs are kept for a variety of functions, notably hunting, guarding, to fulfil social obligations and as food. Frank (1965) has exhaustively reviewed the ethnographic literature on domestic dogs in Africa. The use of dogs to pay brideprice is widely attested throughout Africa. Young men who are getting married often buy dogs from other communities as part of the payment to their prospective father-in-law. Dogs are used to herd other domestic animals, especially sheep, in North Africa and as far south as the rangelands of eastern

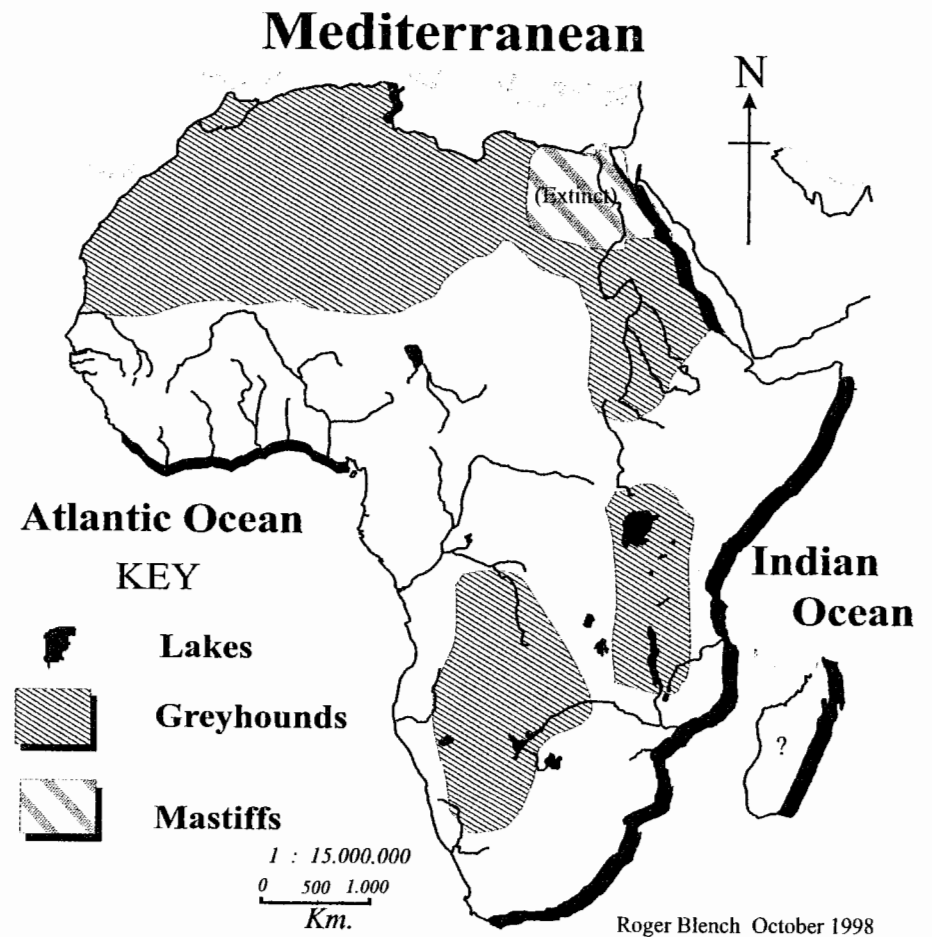


Figure 20.2 Distribution of greyhounds and mastiffs in Africa.

Sudan. The culture of “sheep-dogs” seems never to have spread further into sub-Saharan Africa.

2.2.2. *Cynophagy* In some parts of Africa, eating dog meat is regarded with horror, whereas elsewhere the flesh is regarded as a delicacy. Because this is a distasteful subject for many European authors and because both Livestock Departments in African countries and international agencies such as FAO do not usually regard dogs as livestock, the prevalence and nutritional significance of eating dogs has probably been under-rated. A study of the trade in dogmeat in Nigeria found a flourishing commerce from north to south as well as specialized butcheries passing outside the usual market system (RIM 1992ii). A similar situation is documented for northern Cameroon by Thys & Nyssens (1983). Such descriptions are rare and the trade is almost certainly more widespread than this fragmentary documentation suggests.

Discussions of dog eating are uncommon in the literature, but a lively debate about cynophagy in the Sahara was conducted in the 1950s (Canard 1953, Bureau 1954, Chalumeau 1954). Other reviews of material on dog eating in Africa can be found in Mauny (1954) and You (1955). Where dogs are eaten, they are regarded as a prestigious food, often with unspecified magical properties. Among the minority peoples of Nigeria, for example, where the community is called for collective farmwork by an individual it is common to reward those who come with roast dog. By contrast, in Muslim areas eating dog meat is regarded as wholly unacceptable and where dogs are slaughtered in northern towns, it is usually in secrecy.

*2.2.3. Linguistic evidence* Using linguistic evidence to uncover the diffusion of the domestic dog has a specific problem; the tendency for names for dog to be phonaesthetic. Barth (1862ii) observed long ago that the widespread similarities in names for dog in Africa argued for a single broad introduction into Africa. Sasse (1993) has shown that terms for "dog" show remarkable similarities all over the world probably reflecting the early and rapid diffusion of the domestic dog.

### 2.3. Cat

Domestic cats are kept in all parts of Africa, and are used to hunt vermin and for medicinal and magical purposes. In some places, like dogs, they have become semi-feral. Domestic cats are usually considered to have developed from *Felis sylvestris libyca*, still found wild through much of arid North Africa (Robinson 1984). Cat remains are found in Jericho as early as 7000 BC and in Egypt at 4000 BC but there seems to be no way to establish whether these are domestic or simply tamed wild cats (Brewer et al. 1994:108). The Egyptians are likely to have brought the cat into domestication gradually, with full domestication by 1000 BC. There is no evidence on the date or means whereby it spread south of the Sahara, although today it is found throughout the continent. Cats can survive in a feral state and there are reports of such cats being tamed again, especially by children (see references in Lagercrantz 1950:59–60).

There are virtually no archaeological records of the domestic cat in sub-Saharan Africa, apart from a find at Jenné-Jeno and even in this case it is unclear that it could be adequately distinguished from wild or feral types (MacDonald 1995b). Cats are well embedded in the culture of Arab North Africa and it is assumed that they spread as commensals both across the Sahara and down the Nile into sub-Saharan Africa after 1000 BC. Although cats are usually considered as forbidden for food, there are widespread reports of their consumption for magical purposes.

The ethnographic literature on the domestic cat has been reviewed by Lagercrantz (1950:54–66). Cats are nowhere common, yet they are found throughout the continent as Lagercrantz (ibid. Map. 10) shows. Cats seem to thrive and there have almost certainly been multiple importations from different sources. There appears to be at least one very ancient stratum of cat populations, since the cat, like the pig, is common among the Omotic and Nilo-Saharan populations of the Ethiopia–Sudan borderland who have until recently been rarely exposed to trade. Strikingly, among the Dogon in Mali, the cat is considered as belonging to the inhabitants of the

aboriginal people of their country. At the same time, European traders introduced cats all around the coast and Muslim traders brought cats across the Sahara, while the Indian Ocean trade brought Persian cats to all the ports of East Africa.

There have been some limited linguistic studies, notably Skinner (1977) and Blench (1995). Skinner (1977:181) argued that the Cushitic and Chadic lexemes were cognate and thus cats were of great antiquity among Afroasiatic speakers. This seems difficult to believe as there is no evidence for such early transmission of the domestic cat through this region. Blench (1995) shows that words for cats are highly diverse and heavily influenced by phonaesthetic factors (in other words the names are influenced by imitations of cat sounds): this makes the usual methods of historical linguistics difficult to apply.

### 2.4. Other mammals

*2.4.1. Rabbit* The rearing of rabbits was introduced into Africa in the late nineteenth century through Christian missions and the colonial agricultural service. Rabbit production is now well established in many parts of Africa, and breeding stock can be bought in most major urban markets. Little has been written about traditional rabbit production in Africa, with the exception of Matthewman (1977).

If rabbits give birth while still pubescent, at 3–5 months, the progeny are less likely to survive owing to an inadequate milk supply from the dam. The kindling interval can be reduced to 4–5 weeks if the feeding is maintained at a high level. Some producers say that a younger doe will give birth to more kittens and have more litters if she is mated before full sexual maturity. A principle of rabbit production is separating the buck from the pregnant doe. The buck should be kept apart until the kittens are weaned, otherwise he is likely to eat them. If mating is too frequent, the breeding life and progeny output of the doe will decline.

Most rabbits kept in compounds are fed maize or cereal-bran with beer residues and greenery. The greenery is either grasses, in the wet season, or tree browse, during the dry season. These feeds are then supplemented with an irregular supply of kitchen scraps and tuber peelings. Local rabbits in Africa seem to have adapted rapidly to a low quality diet and minimal attention. Despite disease problems and faults in husbandry techniques, rabbit-rearing is an enterprise that is spreading rapidly.

*2.4.2. Giant rat* The giant rat (*Cricetomys gambianus* Waterhouse) is part of the native wild fauna of West Africa. It has been in domestication since the early 1960s, and perhaps previous to that. Several writers have discussed the biology feeding and carcass composition of the giant rat (Ajayi 1974, Tewe & Ajayi 1979, Ajayi & Tewe 1980) and there is also a short discussion of the extension of giant rats in village-level production in Matthewman (1977). The step to domestication was originally based on the capture of wild litters which were then fattened and slaughtered. However, more recently, many producers have taken to breeding rats in captivity. The productivity of the giant rats has been studied by Tewe et al. (1984) and they give the following values for various reproductive parameters (Table 20.1).

**Table 20.1** Reproductive parameters of the giant rat.

Adult weight (g)	692–1220
Female breeding age (wks)	20–24
Oestrous cycle (days)	4–5
Gestation period (days)	28
Weaning age (days)	26
Litter size	1–5
Birth weight (g)	16–28
Weaning weight (g)	66–186
Age at maturity (wks)	24
Killing-out percentage	51.5

Source: Tewe et al. (1984).

These figures suggest that the giant rat has many advantages as a domesticate, in particular a high turnover of breeding stock and a killing-out percentage comparable with the rabbit.

**2.4.3. Guinea-pig** The guinea-pig, *Cavia porcellus*, is rarely included in any discussion of African livestock and almost nothing has been published about their introduction, spread and traditional management. Matthewman (1977), who studied backyard stock in the Ibadan area of Nigeria, found that guinea-pigs were relatively common, and in one village some 10 per cent of households kept them. Guinea-pigs are known in most parts of West Africa but are only sporadically kept, with no consistent pattern of distribution.

Guinea-pigs were originally domesticated in the Andean region of South America and they were probably introduced to Africa by missionaries and colonial agricultural officers, as they seem to have been known in a few areas for some time. A Nupe name for guinea-pig, *etsu nasara*, “the white man’s rat” was recorded in Nigeria in 1914 (Banfield 1914). The Hausa name is *beran Masar*, “rat of Egypt” although it is unlikely that guinea-pigs were traded across the desert.

Guinea-pigs first give birth at 6–12 wk of age. After the first birth, the female will give birth every month thereafter. There is no controlled breeding and the male and female are permanently together even during birth and suckling. The size of litters is between two and four, and mortalities are rare among the new-born. Variations in productivity do not seem to be the result of breed differences but to differing husbandry and hygiene conditions. Animals reared in a confined space seem to thrive least well.

**2.4.4. Water-Buffalo** The domestic water-buffalo is kept in the Nile Valley for dairying and draught power. It is especially adapted to working in flooded fields, but is also used for threshing and water-raising. It is divided into two local races, the Beheri of the Delta and the Saidi of upper Egypt (FAO 1977:236). Its introduction to Egypt seems to have been from the Near East, since it is represented in Syria and Palestine in the late pre-Christian era. It is usually assumed to have been

brought by Islam, although there is no direct evidence of this. Dates for its introduction to Africa vary between the sixth and ninth centuries AD. Although occasional attempts to export it to other North and East African countries have been made it has nowhere persisted (Epstein 1971i). There is a history of attempts to introduce buffaloes into the countries of eastern and southern Africa (FAO 1977:239ff.) but all of these have failed. In Mozambique, however, buffalo were introduced in 1966 and some 1,000 animals are still kept on private farms (Goe 1996).

**2.4.5. Elephant** Marshall (Ch. 10 in this volume) refers to evidence for domestication of the African elephant, *Loxodonta africana*, at Meroe some 2,000 years ago. At the site of Musarwarat es Sofra (first century AD), northeast of Khartoum, pens have been identified for domesticated elephant (Shinnie 1967:95). The African elephant is generally thought to be much more difficult to tame than the Asian elephant and this represents a considerable achievement but one which did not persist.

#### **2.4.6. Experimental domestications and commensals**

**Grasscutter** – The grass-cutter or cane rat, *Thryonomys swinderianus*, has been the object of various domestication initiatives, particularly in Nigeria and Benin Republic, some of which are described in Matthewman (1977) and Ajayi & Tewe (1980). Experimental work at the University of Ibadan in Nigeria suggests that domestic cane-rat colonies should be economically viable, but the practice has yet to spread to farmers in the same way as domesticated giant rats.

**Antelope** – Attempts to farm individual antelope species have a long history in eastern and southern Africa, going back to the colonial period. Although individual farm owners have successfully kept species such as eland, it has not so far proven possible to breed them economically (Field 1984).

**Hedgehog** – In eastern Bauchi State, northeastern Nigeria, wild hedgehogs, *Atelerix albiventris*, were recorded being caught and fattened to eat (RIM 1992ii).

**Rock hyrax** – In Kaduna State northern Nigeria, the practice of catching wild rock hyraxes and fattening them for eating was recorded (RIM 1992ii).

**European rats and mice** – The house rat is not strictly a domesticate but a commensal whose spread appears to follow that of humans. The spread of such a rat has been well documented in Oceania, where the Polynesian rat appears to have travelled from island to island in the canoes of the Austronesians as they expanded across the Pacific. Armitage (1994) has summarized recent findings concerning the early spread of the black rat in Eurasia. Surprisingly, the European Black rat, *Rattus rattus*, is reported by Plug & Dippenaar (1979) and Plug (1996) from the ninth century site at Ndongwane, Natal in South Africa. Armitage (1994:235) attributes this to Arab traders, but this is chronologically problematic as Natal is remote from their routes and it does not allow sufficient time for the rat to spread overland from the East coast ports. More likely, therefore, is the possibility that the rat came with the Graeco-Roman traders whose pottery has been recently uncovered in Tanzania (Juma 1996).

In West Africa, the Black rat, *Rattus rattus*, the Norway Rat, *Rattus norvegicus* and the House Mouse, *Mus musculus* are all present today (Rosevear 1969, Happold

1987:127–8). The last two are fairly rare, being only recorded as commensals in large coastal towns. However, the Black rat has been noted as gradually spreading northward in this century and is now well-adapted to inselberg habitats even in arid areas. Black rats have been studied in Ghana (Ewer 1971) and Khartoum, Sudan (Happold 1967).

The black rat is a major pest on stored grain and indeed can only survive in conjunction with human settlement. In non-Muslim areas they are frequently eaten and towns such as Benin have whole market sections devoted to different types of raw and prepared rat. In Kano city, northern Nigeria, small amounts of food are left out for domestic rats apparently to deter them from infiltrating the family food stores.

### 3. Birds

#### 3.1. General

The domestic poultry found in Africa are chickens, pigeons, Muscovy ducks, guinea-fowl and turkeys. Attempts to introduce Rouen ducks and geese have generally been unsuccessful. Chickens are by the far the most important poultry species, numerically and in terms of social and economic significance. Williamson (Ch. 23 in this volume) and MacDonald (1992, 1995a) examine the history of the chicken in Africa in greater detail and it is not further discussed here.

There is relatively little information on the productivity of local breeds and virtually no studies of poultry kept under village conditions. The most useful comparative material was compiled in central Mali by Kuit et al. (1986) and Wilson et al. (1987) and some comparative data can also be drawn from the studies of Wilson (1979) in Sudan.

#### 3.2. Guinea-fowl

The crested or helmet guinea-fowl, *Numida meleagris galeata*, Pallas, is part of the native fauna of West Africa. It is distributed from Senegambia to Cameroon and is also found in a part of western Zaïre. It was presumably domesticated long ago, although the larger domestic races closely resemble their wild counterparts. There are several wild species and genera of guinea-fowl in West and East Africa, notably *N. meleagris meleagris* in Sudan and Ethiopia, but apparently only *N. meleagris galeata* has been domesticated (see Donkin 1991, Map 1.). Wild guinea-fowl are still regularly trapped as a source of food and their eggs are raided in the bush. Mongin & Plouzeau (1984) present an overview of recent scholarship on the guinea-fowl worldwide, while Ayeni (1983) summarizes existing information for West Africa. Donkin (1991) is an “ethnogeographical” study of the guinea-fowl that synthesizes a great deal of scattered material, especially on the iconography of the guinea-fowl in the Mediterranean.

One of the more puzzling aspects of the history of the guinea-fowl is a residual population found in the foothills of the Middle Atlas in Morocco (Hartert 1919). This is claimed to be a new subspecies, *N. meleagris sabyi*, which is said not to be

feral nor simply an isolated population of *galeata*. However, it is known as *djaj el hend* (“hen of the Indies”) or *habeshr* (“of Ethiopia” standing for Africa in general) to the local Berber populations. This makes it seem more than probable that it does represent escaped domestic birds, although presumably this question could be resolved through DNA analysis.

There is no evidence that *N. meleagris* is found wild in Egypt and it may be that what few ornithological records there are represent feral escapes (Houlihan & Goodman 1986:82–3). Representations of guinea-fowl occur from the pre-Dynastic period onwards, but with a somewhat shaky command of detail that suggests the artists were not very familiar with this bird. During the Ptolemaic period there is a record of them being carried in cages in a pageant, suggesting their continued rarity. There are no certain finds of *domestic* guinea-fowl in sub-Saharan sites, although remains attributable to either wild or domestic guinea-fowl seem common enough in West Africa (cf. MacDonald & Macdonald Ch. 8 in this volume). The problem would appear to be one of osteological differentiation. The fact that guinea-fowl seem to have been imported into Europe from the fifth century BC onwards suggests a fairly early domestication in Africa (Mongin & Plouzeau 1984). Poultry are poorly represented in early African historical sources, but Ibn Sa‘īd mentions guinea-fowl in Jaja, i.e. medieval Borno (Lewicki 1974:91). The more abundant recent historical and ethnographic references are collated in Donkin (1991).

Guinea-fowl rearing is mostly associated with semi-arid West Africa, although various subspecies of guinea-fowl are found in all ecozones. Five colour-types are distinguished, based on plumage, although these interbreed freely (Okaeme 1982:36). White guinea-fowl are common in parts of West Africa, an indicator of long-established domestication, since this would decrease their fitness to blend in with vegetation in the wild. In the subhumid zone, domesticated guinea-fowl are rarer, and it is more common to buy “wild” eggs from hunters or Fulbe women and then put them under chickens to hatch. The keets remain in the village with the hen until they are mature. They are then marketed or slaughtered before they escape back to the wild. Guinea-fowl are both territorial and monogamous and a high number of males are necessary to prevent the females laying infertile eggs. Domestic guinea-fowl are not usually provided with housing and roost in nearby trees at night. Donkin (1991:66) cites ethnographic sources suggesting that guinea-fowl were tamed but not domesticated in other parts of Africa as prestige possessions.

Measuring the productivity of village guinea-fowl is not easy because they tend to scatter their eggs in the bush and raise the keets outside the compound. Kuit et al. (1986) in Mali give some reproductive parameters for traditional management in a village environment in West Africa (Table 20.2). Ayeni & Ajayi (1983) explore the significance of guinea-fowl as an animal protein supplement and Ayorinde & Ayeni (1986) compare the seasonal performance of local and exotic guinea-fowl under station conditions in northwestern Nigeria.

In the wild, females lay some 15–20 eggs per breeding season, but in captivity they may lay as many as 50–100. Ayeni & Ajayi (1983:164) recorded guinea-fowl in captivity begin to lay eggs at between 28 wks and 32 wks and the eggs take 27 days to hatch, with low egg fertilities of around 30 per cent.

**Table 20.2** Comparative productivity parameters for guinea-fowl.

Parameter	Kuit et al. (1986)
Mean egg weight (g)	37.3
Mean eggs per clutch	9.6
Hatchability %	44
Mortality to one month (%)	49

Domestic guinea-fowl are rarely fed but generally allowed to find their own food. Their diet is a mixture of seeds and other vegetable matter and insects. Ayeni (1983:143) gives a breakdown of the typical diet of wild guinea-fowl in the Lake Kainji region of northwestern Nigeria. Guinea-fowl respond to supplementation with grain in the dry season. Grain can also be scattered simply to build up the attachment of the birds to a particular compound.

### 3.3. Pigeon

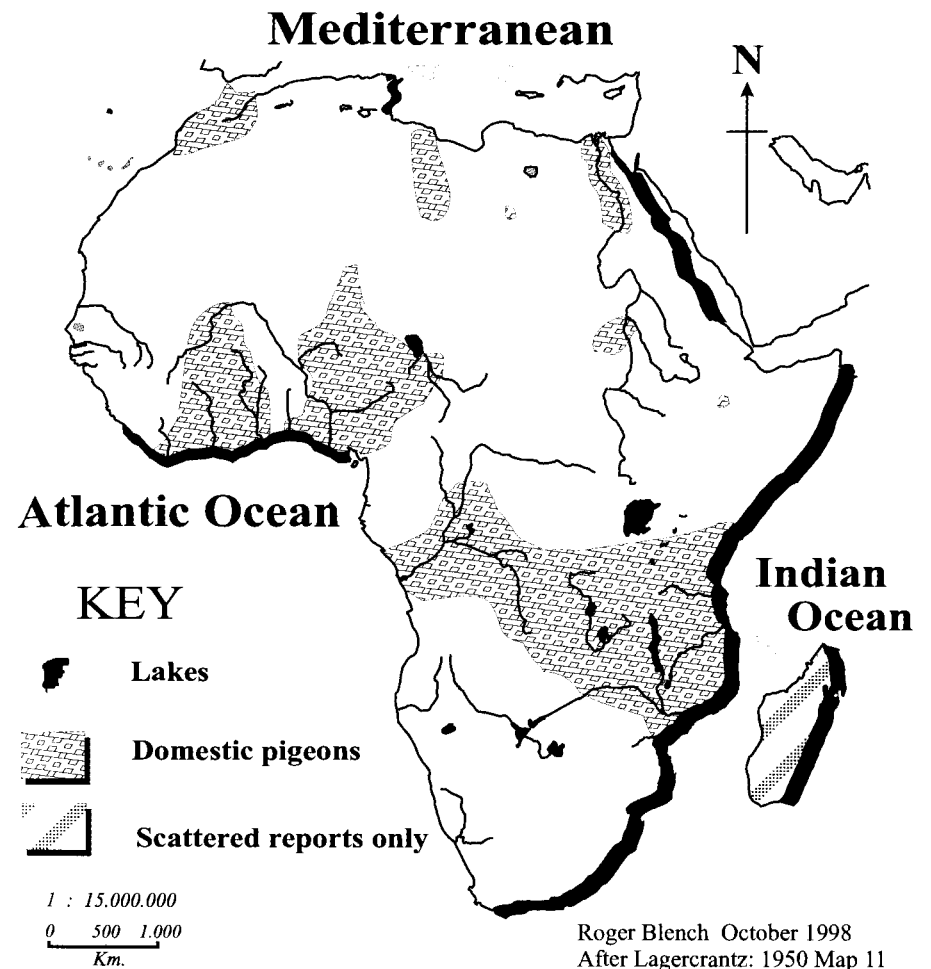
Charles Darwin first identified the rock-pigeon, *Columba livia*, as the ancestor of the domestic pigeon, and his insight has been affirmed by recent research. Its domestication is discussed by Zeuner (1963) and Hawes (1984) who argue that pigeon-keeping may have begun in Persia and spread to Egypt. Domestic pigeons have been known for some 3,000 years, and the practice of attracting semi-feral pigeons to stay near the household is probably equally ancient. The ethnographic literature on pigeons in Africa has been reviewed by Lagercrantz (1950:66–74).

Representations of pigeons in Ancient Egypt are often not clearly distinguishable from the turtle-dove, *Streptopelia turtur*, which is known to have been tamed and sometimes force-fed (Houlihan & Goodman 1986:99ff.). The antiquity of pigeon-keeping in west-central Africa is unclear, as the grey pigeon is part of the indigenous fauna of the region. Al-Umarī reports the peoples of the “Sudan” kept pigeons (or doves?) in the fourteenth century (Levtzion & Hopkins 1981:267).

Lagercrantz (1950:Map 11) represents the distribution of managed domestic pigeons in Africa and Figure 20.3 is an adapted and updated version of this.

The patchiness of distribution is hard to interpret. Although there is some link with the trans-Saharan trade, pigeon-keeping in west-central Africa forms a very uneven pattern. There is some evidence that pigeons were also introduced in coastal areas by Europeans, which may explain their presence in Ghana and at the mouth of the River Congo. The distribution of managed pigeons across the Congo basin may in part be connected with the Arab trade routes, but this makes it difficult to understand why the practice of pigeon-keeping is virtually unknown in the Great Lakes region which experienced extensive Arab contact. Peoples such as the Ila and Mbala people of Zambia, who seem not to have been in contact with the coast trade, keep pigeons in cotes atop tall platforms (Smith & Dale 1920i:134).

This usual system for keeping pigeons in Africa is semi-feral, and only occasionally are more elaborate production systems used. Even the concept of ownership is somewhat fluid, since pigeons can be “lured” from one cote to another by

**Figure 20.3** Distribution of domestic pigeons in Africa.

putting out sugared water or grains. Pigeons are housed in purpose-built pigeon-cotes made of pottery or mud but not otherwise confined. In Egypt, depictions of pigeon-cotes first appear in the Graeco-Roman period (Husselman 1953) although it has been suggested that pigeon domestication took place earlier (Keimer 1956).

Large-scale Egyptian columbaria are made from mud and thatch, and these may contain as many as 1,000 pigeons (Hornell 1947). The semi-feral system of production and the mud columbaria in west-central Africa resemble strongly those still used in Egypt. Shelters for pigeons vary quite widely in different areas. In the towns, purpose-built cages are made from scrap wire and plywood. These are placed in the centre of the compound, and the faeces drop to the ground through the wire floor and are swept up every morning. In the old city of Kano pigeons are housed in clay pots suspended from the rafters of buildings.



**Table 20.3** Comparative productivity parameters for African domestic pigeons.

Parameter	Wilson (1979)	Kuit et al. (1986)
Mean egg weight (g)	16.6	14.4
Mean eggs per clutch	2	2
Age at first egg (days)	132	
Clutches per year	8.4	8
Mean annual egg output	17	15
Hatchability %	81	68
Mortality to leaving nest (%)		25
Weight of mature males (g)		338
Weight of mature females (g)		290

**Table 20.4** Flock structure for African domestic pigeons.

n=1020		
Age-Class	Sex	%
Adults	male	38.6
	female	39.3
Immature	male	4.1
	female	3.7
Nestlings		14.5

Source: Kuit et al. (1986: Table V).

The training of pigeons to carry messages, a practice widespread in Europe, is also known throughout the Middle East and in Egypt (Lagercrantz 1950:67). This is rare in sub-Saharan Africa, but carrier-pigeons seem to have been used in the inter-city warfare between Muslims in the Lake Chad area in the nineteenth century. Rabeh, the slaver who controlled much of this area in the later part of the century, built carrier pigeon towers into some of his forts.

Pigeons, once paired up at sexual maturity, remain with their mate for life. A female starts to lay clutches of eggs at approximately 6 weeks of age. The brooding period is seven days during the dry season and ten days in the wet season. Chicks normally leave the nest after 14 days and mature body size is attained by 6–8 wk. Pigeons generally raise two or more broods a year and each clutch always consists of one male and one female chick.

Pigeons are not kept for their eggs which are anyway laid in small clutches, but are raised solely for meat. The productivity of pigeons is difficult to measure as pigeons are kept in such low-input systems and the owners rarely note either the fertility of individual animals or the hatchability of eggs. Table 20.3 shows estimates for some productivity parameters in traditional production systems in Sudan and Mali and Table 20.4 shows a flock structure in Mali.

The flock structure is strikingly different from chickens as proportions of males to females are approximately equal and the numbers of nestlings and immatures much lower. This is because pigeons lay smaller clutches, but a greater percentage reach adulthood as losses to predation and disease are much lower. In addition, adult offtake is divided equally between the sexes as opposed to chickens where cocks are slaughtered for preference.

Pigeons have traits that make them poorly adapted to intensive production:

- monogamous matings;
- altricial young;
- considerable space requirements for flight.

This suggests that semi-feral production systems in use at present are very efficient in terms of the low level of inputs required.

Linguistic evidence from the names of pigeon in the vernaculars of West Africa is discussed in detail by Blench (1995). The widespread Hausa name *tàantabàřaa*, is borrowed from Twareg, supporting the hypothesis of a trans-Saharan introduction. Barth (1862ii:201) says, somewhat mysteriously, "This domestic pigeon has, beyond a doubt, been introduced into Negroland by the Songhai" although he gives no reason for this beyond the obvious resemblance between the Songhay and Hausa names for pigeon.

Otherwise, there is a great variety of names, presumably reflecting the fact that the pigeon is part of the indigenous fauna. A few names actually attribute to the pigeon an Egyptian origin, such as Mandara "cock of Egypt" or the Margi "bird of Egypt". Although this is not necessarily a reliable guide, in this case, it seems likely that the culture of pigeon-keeping travelled across the desert with the caravan trade.

### 3.4. Geese

The common domestic goose of Europe and North Africa, *Anser anser*, is a domestic form of the greylag goose (Zeuner 1963, Crawford 1984). The earliest evidence for domestic geese is in Ancient Egypt, where there are Old Kingdom representations of geese confined in poultry yards or being herded. The pictures are sufficiently imprecise so that it is unsure whether the greylag goose or the white-fronted goose, *Anser albifrons*, is being depicted. Both were trapped and eaten, and on occasion force-fed to increase their plumpness for the table (Houlihan & Goodman 1986:54ff.). However, if the white-fronted goose was domesticated, this practice did not persist, whereas the rearing of the greylag goose spread westwards along the North African littoral, and into the Near East and Europe. Despite its belligerent nature, the Egyptian goose, *Alopochen aegyptiaca*, was apparently also domesticated for the table in the Old Kingdom (Houlihan & Goodman 1986:64). A domestic goose bone has been excavated at Carthage, although from a relatively late period, the sixth to seventh centuries AD (Levine 1994).

References to geese in Africa have been reviewed by Lagercrantz (1950:82–7). Lagercrantz concludes that almost all reports of greylag geese are connected with direct European or Arab contact. It is generally assumed that the domestic goose did not cross the Sahara, although the Songhay in Mali do have geese (Rouch 1954:21) and this may result from contact with Morocco. Al-ʿUmarī mentions that

under Mansa Musa, the ruler of Mali in the fourteenth century, the peoples of the "Sudan" kept geese (Levtzion & Hopkins 1981:267). It may be that geese were kept in a few communities at the end of the trans-Saharan trade routes. Equally likely, however, is the possibility that these are not *Anser* but another species of goose domesticated or tamed. The spur-winged goose, *Plectopterus gambensis*, has been recorded in Mali at San, Bamako and Segou, kept as a backyard species (MacDonald, pers. comm.) as well as in northeast Nigeria (RIM 1992ii).

### 3.5. Duck

The common domestic duck in Africa, the Muscovy duck, *Cairina moschata*, was first brought from South America by the Portuguese in the sixteenth century. Clayton (1984) and Donkin (1989) describe the domestication and spread of the Muscovy duck. A related wild species, *C. hartlaubi*, is indigenous to the forest zones of West Africa.

The ethnographic literature on ducks in Africa has been reviewed by Lagercrantz (1950:74–82) but since many sources conflate European ducks, *Anas*, with *Cairina*, these are not as useful as for other species. Lagercrantz's Map 12 shows the distribution of references to ducks in his sources. Jeffreys (1956) describes early sources relating the spread of the Muscovy duck in West Africa, although he drew the mistaken conclusion that it was a pre-Columbian introduction. Muscovy ducks spread inland relatively early, although many Muslims regard ducks as unclean. The Eurasian domestic duck, or Rouen duck, derived from the green-headed mallard (*Anas platyrhynchos*), has been brought into Africa on an experimental basis but does not usually enter into village production.

Ducks are invariably kept in free-range systems and scavenge for their food. Although they prefer to be near water, they seem to tolerate the dry season in the semi-arid zone successfully. Ducks have not been reared intensively and have rarely attained major importance in the household production system, because they are too susceptible to disease and predators. Ducks are rarely taken to market and are most often eaten as a protein supplement or served to unexpected visitors. Duck eggs are not usually collected or eaten as it is generally said that the females should raise as many young as possible in view of high mortalities.

Data available for the reproductive parameters of the Muscovy duck under traditional management are limited to Kuit et al. (1986) summarized in Table 20.5. Egg output is low compared with chickens, and ducklings suffer from heavy predation losses.

### 3.6. Turkey

The turkey is of North American origin, and was first taken to Europe in the sixteenth century. It is usually considered to have been introduced to Africa only in colonial times. Lagercrantz (1950:87–91) has reviewed references to its presence and shows that these are almost entirely associated with coastal settlement. Turkeys are scattered in rural areas of semi-arid Africa and are usually produced to sell to wealthy Christian families at Christmas time.

**Table 20.5** Productivity parameters for traditionally managed Muscovy ducks.

Parameter	Wilson (1979)	Kuit et al. (1986)
Mean egg weight (g)	66.8	69.3
Age at first egg (days)	213	–
Mean eggs per clutch	10.8	13.3
Clutches per year	4.7	2–3
Mean annual egg output	50	30–40
Hatchability %	84	51
Weight of mature drakes (kg)	–	3.07
Weight of mature ducks (kg)	–	2.04

In West Africa, the turkey is widely known by the name *tolotolo* or some variant thereof. This has usually been assumed to be a recent ideophonic construct but somewhat surprisingly a recent study of domesticates in Mixe–Zoque languages of central America has recorded very similar terms, for example Jicaque *tolo* (Wichmann 1997). This may suggest that some turkeys were brought by the Portuguese along with their Amerindian name.

Turkeys kept free-range are allowed to scavenge for their food, but even under village conditions they must be supplemented with grain if they are to stay healthy. Turkeys are thus relatively expensive to produce (RIM 1992ii). Moreover, many producers were discouraged by outbreaks of unknown diseases and there is no reservoir of traditional expertise to draw on to prevent this.

### 3.7. Other birds

Many bird species can be captured wild and then tamed and experimentation has a long history in the continent. The Ancient Egyptians seem to have been experts in this process, as a wide variety of species are represented in wall-paintings and engravings, appearing as offerings or being fed for the table (Houlihan & Goodman 1986).

**3.7.1. Ostriches** The ostrich, *Struthio camelus*, is distributed throughout arid and semi-arid Africa and still survives even in heavily hunted environments such as the Egyptian Desert (Goodman & Meininger 1989:113). The four extant wild races are interfertile and have become less genetically distinct following crosses with feral ostriches moved around for domestication purposes. Rock engravings representing the hunting of wild ostrich are known from the Badarian period in Egypt. The process of domestication may have begun with the corralling of wild ostriches in hunting preserves (Houlihan & Goodman 1986:3ff.). Whether the ostrich was truly domesticated is disputed but by the Ptolemaic period they were used to pull carts in ceremonial processions. During the Byzantine era ostriches were bred on farms for their feathers and this practice seems to have continued up until the nineteenth century.

This process of domesticating ostriches for their feathers may be associated with Islam, for early twentieth century livestock censuses in Borno, northeastern Nigeria, record ostriches raised for their feathers and skin. Early colonial livestock census forms invariably included a column for ostriches, but the practice of keeping them seems to have disappeared in the 1940s. Ostrich farming has a long history in southern Africa and the high price of feathers in the nineteenth century led to a substantial production in some communities. The trade subsequently went into decline as the fashion for feathers fell away, but it has recently revived as a meat production operation (Siegfried 1984).

Ostrich eggs are widely used as ornaments in Islamic buildings in West Africa and along the Blue and White Niles. Lagercrantz (1950:380–86) has reviewed the distribution of ostrich eggshell ornaments in Africa. In Mali, for example, many mosques have ostrich eggs on the spires of the roof. This conception seems also to have been present on the North Africa littoral and to have penetrated Europe in the Middle Ages as the ostrich egg occasionally appears in paintings from the fifteenth century onwards.

**3.7.2. Turtle-dove** The turtle-dove, *Streptopelia turtur*, was domesticated in Egypt by the 5th Dynasty (c. 2400 BC) and appears to have been kept both for the table (when it was force-fed) and as a pet (Houlihan & Goodman 1986:103–6). Unlike other Egyptian domesticates this one seems to have taken hold and domestic doves spread both around the Mediterranean and across the Sahara. Bynon (1984:253) quotes the Ghat (Berber) name as *taturturt* and further connects this with the Latin *turtur*. Doves are presently kept in some semi-arid areas of west-central Africa as pets.

**3.7.3. Cranes** The common crane, *Grus grus*, was well known in Ancient Egypt and by the 4th Dynasty (c. 2500 BC) and appears to have been already domesticated (Houlihan & Goodman 1986:84–6). It is commonly represented as force-fed and this may be because the flesh would be otherwise unpalatable. The demoiselle crane, *Anthropoides virgo*, seems also to have been domesticated and is represented in mixed flocks with the common crane from the 5th Dynasty onwards. This practice seems not have survived into the Islamic period.

**3.7.4. Peacocks** In Islamic areas of sub-Saharan Africa, peacocks are a well known household pet of wealthy families, and are often kept in the courts of rulers. This practice appears to be first recorded in the Kingdom of Jaja (present-day Kanem) by Ibn Sa'īd in the thirteenth century (Levtzion & Hopkins 1981:187) and is very much the case in present-day Nigeria (RIM 1992ii).

**3.7.5. Crows** In the course of the survey of Kano in northern Nigeria, a single instance of an individual keeping pied crows (*Corvus albus*) in an enclosure was recorded. These crows were sold for medicinal purposes (RIM 1992ii).

## 4. Other species

### 4.1. Reptiles and amphibians

**4.1.1. Crocodiles** The practice of keeping crocodiles has been recorded from most parts of Africa. In some traditional religions in West Africa, for example among the Nupe of Nigeria and the Dogon of Mali, sacred crocodiles were kept in ponds and given offerings (Nadel 1954:27–8). More commonly, however, young crocodiles are kept in small hand-dug ponds and are eaten for medicinal purposes. Crocodile farming has recently become established in the hinterland of Mombasa, Kenya.

**4.1.2. Tortoises** The ordinary savanna tortoise, *Geochelone sulcata*, is well known in semi-arid West Africa and very large tortoises were kept in some of the courts of the Muslim Emirs. In Mali, the Dogon people raise giant tortoises for meat and Wilson et al. (1987) report on the productivity of tortoises raised in urban settings in Mali. Three species of the much smaller *Kinixys*, the hinged tortoise are also found in Africa (Villiers 1958:131ff.). Tortoise meat is reported to have medicinal virtues and tortoises are sometimes caught in the bush and raised for food.

**4.1.3. Soft-shelled turtles and terrapins** There are four species of soft-shelled turtle, and six species of terrapin recorded in the fresh waters of Africa (Villiers 1958).

English	Family	Genera
Soft-shelled turtles	Trionychidae	Trionyx, Cycloderma, Cyclanorbis
Terrapins	Pleurodira	Pelomedusa, Pelusios

In Sahelian west-central Africa, turtles and terrapins are captured for food and are also kept as pets in water sources, where their function is to keep the water clean. Turtles placed in water-pots to eat mosquito larvae and clear other possible worm infestations are common in the region of Lake Chad. Food scraps are thrown down the wells to feed the turtles. Apart from these hygienic functions, turtles are also reared for meat. At Okotiana, in the Niger Delta in southern Nigeria, turtles are reared for sale: they are kept in large bowls of water and are fed on raw palm kernel and fresh fish (RIM 1992ii).

The marine green turtle, *Chelonia mydas*, is intensively reared for its meat and shell on Réunion island, as well as in the Caribbean and on the Torres Strait Islands (Reme 1980).

### 4.2. Molluscs – snails

The African land snail, *Achatina* sp., has long been exploited in the more humid regions of West Africa. The snails are usually collected from the bush in the rainy season, along with other edible molluscs. Martinson (1929) describes local collection systems in Ghana and Prunier (1945) has made a short but valuable

compilation of information and references. Stahl (1993) describing the Punpun phase of the Kintampo complex in Ghana (c. 3500 BP) notes heavy exploitation of *Achatina* for food.

Prunier (1945) recommended that snail farming (heliculture) be tried in West Africa and this actually began in the 1970s, as a response to the declining supplies of snails from the forest. Snail farms are usually found in humid West Africa close to large towns and there is a luxury trade in *Achatina* to northern cities.

The land snail grows slowly: it takes three years to reach sexual maturity, five to attain a normal mature weight and seven to reach 400 g. The average snail found in markets has a shell weighing 85 g and meat weighing 250 g. Snail eggs are eaten in some places, rather like the roe of fish. None the less, its growth characteristics have made it attractive to producers in Europe and some snail-farms in Wales have recently experimented with *Achatina*.

Small-scale snail farms are usually made up of rectangular cement enclosures about a metre high, covered in wire netting to prevent the snails escaping. The whole enclosure is surrounded by a ditch to prevent predatory ants from entering and eating the snails. Fresh green leaves are placed in the enclosures occasionally, but no other husbandry measures are taken.

## 5. Conclusion

This preliminary study of "minor" African domestic animals has highlighted important lacunae in the prehistory of the region. To recover their history, a synthesis of distributional, linguistic and ethnographic data must be employed. Archaeology has so far contributed little, principally because it tends to concentrate on larger species, especially the ruminants. In part, this is because smaller fauna are less often preserved or recorded and because there are too few specialists skilled in identifying non-mammals or mammalian microfauna. In the case of recently introduced species, these rarely occur in the sites with a time depth of greatest interest to archaeologists. However, in understanding the subsistence strategies of African populations outside the strictly pastoral areas, small but populous species may have an importance similar to cattle in the arid zones.

Evidence from both Ancient Egypt and from recent surveys suggest that the process of domestication is not fixed, and that individuals or cultures continue to experiment with new species and techniques. The failure of certain Egyptian domesticates to persist or spread to the rest of Africa (e.g. the white-fronted goose, *Anser albifrons*) suggests that the high labour inputs needed to maintain certain species made them viable only under rather specific economic conditions, perhaps in the context of royal or aristocratic households. Synchronic cases of small, local and recent domestication abound in Africa and it is clear that domestic stock can exist in a dynamic relationship with wild fauna. At the same time, the rapid spread of recent exotics such as the rabbit argues that new domesticates may meet the evolving needs of urban dwellers and that the pressure of modernization can even accelerate this process.

## Note

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