

A history of domestic animals in Northeastern Nigeria

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PREFATORY NOTES

Acronyms, toponyms, etc.

Throughout this work, “Borno” and “Adamawa” are taken to refer to geographical regions rather than current administrative units within Nigeria. “Central Africa” here refers to the area presently encompassed by Chad, Cameroun and Central African Republic.

Orthography

Since this work is not written for specialised linguists I have adopted some conventions to make the pronunciation of words in Nigerian languages more comprehensible to non-specialists. Spellings are in no way “simplified”, however. Spellings can be phonemic (where the language has been analysed in depth), phonetic (where the form given is the surface form recorded in fieldwork) or orthographic (taken from earlier sources with inexplicit rules of transcription). The following table gives the forms used here and their IPA equivalents:

This Work	Other Orthographic	IPA (1989)
y		j
c	ch	tʃ
j	dj	dʒ
dl	zl	lʒ
tl	hl, sl	ʈ

Words extracted from French sources have been normalised to make comparison easier.

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Tone marks

The exact significance of tone-marks varies from one language to another and I have used the conventions of the authors in the case of published languages. The usual conventions are:

High	'
Mid	Unmarked
Low	`
Rising	ˊ
Falling	ˋ

In Afroasiatic languages with vowel length distinctions, only the first vowel of a long vowel is tone-marked. Some 19th century sources, such as Heinrich Barth, use diacritics to mark stress or length. These have been "translated" into modern notation to avoid the confusing implication of tone-marking.

A word prefaced by # represents a pseudo-reconstruction, in other words a form derived from inspection of roots that looks probable, but has not been rigorously established through sound-correspondences. This contrasts with *, used to indicate reconstructions from systematic sound-correspondences.

INTRODUCTION

Historical studies of the domestication and diffusion of livestock, such as ZEUNER (1963) or the contributors to MASON (1984 a) often give Africa somewhat short shrift. 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 ethnography.

Northeastern Nigeria presents an elaborate mosaic of livestock species, breeds and production systems. The origins and evolution of this situation have been little researched, and archaeology remains at the survey stage. However, recent ethnographic and linguistic surveys have provided a fresh overview of the region. This paper¹ is an attempt to synthesise current knowledge to produce a speculative outline history of its domestic animals.

¹ I am grateful to Bruce Connell and Neil Skinner for reading and commenting on this paper and for Peter Breunig for giving me an advance copy of his report on the Gaji Gana site. The original field data presented in the appendix was collected in Borno between 1990 and 1993. I am particularly grateful to Jim and Marta Wade for both hospitality and seeking out speakers of various languages. I should also like to thank Alfredo Muzzolini for a comprehensive set of offprints: I have not had the opportunity to incorporate all the details they contain due to the deadline on the paper.

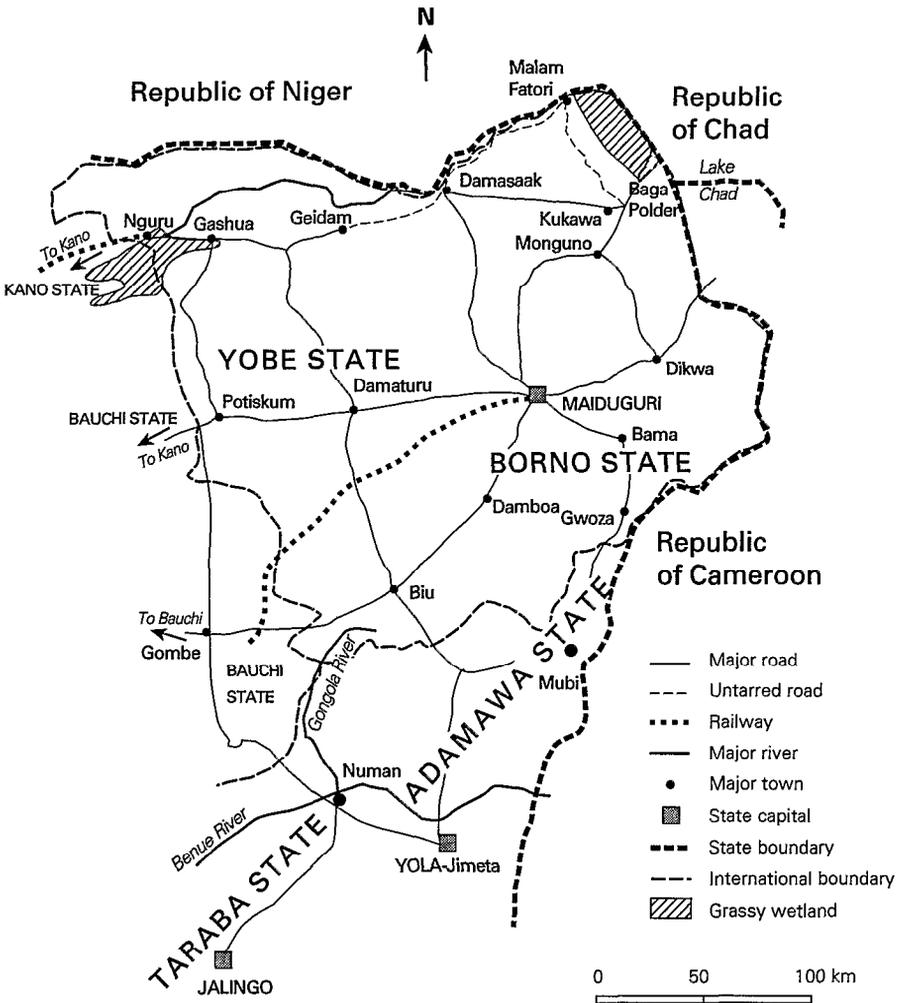


FIG. 1. — Northeastern Nigeria: administrative boundaries and infrastructure. Two new states, Taraba and Yobe, were created in September 1991. No precise maps of their boundaries have yet been published and so only their general locations are marked.

Northeastern Nigeria is a large area and I have set limits on it for the purpose of this study (fig. 1). Until 1991, the region fell within Borno and northern Gongola States. In September 1991, both Borno and Gongola States were divided into two by Government decree. The two "new" states thus created were Yobe State, based on Damaturu, west of Maiduguri, and Taraba State, with a capital at Jalingo but including southern Gongola State. The area studied takes in the present-day Borno State, the east of Yobe State and northern Adamawa State, above the Benue River. I have given less attention to the extreme west of Borno State -the old Fika Emirate and the flood-plains of the Hadejia-Jama'are up towards Nguru-Gashua.

The most comprehensive picture of the climate, ecology and vegetation of Northeastern Nigeria is the Land Resource Division Study of North-Eastern Nigeria (DE LEEUW *et al.*, 1972). Rainfall can be as low as 300 mm annually on the Nigeria/Niger border, rising to 700 mm near Yola. Most of Borno is semi-arid savannah or sub-desert, with flooded pastures towards Lake Chad and montane regions in the extreme south-east. The soils in the north-central part of Borno are largely aeolian sands, formed by wind-drift from the desert.

Lake Chad no longer exists as a body of open water in Nigeria, and it has been replaced by open plains of swampy grassland or even dry savannah. The prehistoric extent of Lake Chad can be seen from the distribution of *firki*, a distinctive clay plain of black cotton soil. The *firki* plains are broad flat expanses of heavy clay, virtually without trees, covered with annual grasses in the wet season. In places stands of acacias and desert-date interrupt the plain. The Gwoza hills, along the Cameroon border, are part of the larger granite chain of the Mandara mountains and, in the south-west, the Biu Plateau, a basalt plain, rises to nearly 1,000 m. These mountains are covered in scattered rock pieces with some regions of flat soil between them.

METHODOLOGY AND SOURCES

This type of historical reconstruction essentially depends on four types of source material; archaeology, historical records, linguistic data and current ethnographic research. Concealed within linguistics and descriptive ethnography is the evidence for past history. Compiling lists of names for animals in a variety of languages, provides a basis for constructing a model of historical stratification. Unlike food plants, where the distinct speciation usually results in a clear terminology, the important differences within species of livestock, i.e. breeds, are neither consistent in terminology nor easily elicited.

Archaeological Data

Until very recently, archaeological research in Borno was represented almost entirely by the excavations of Graham CONNAH (1981, 1984). Connah's monograph on the Daima sequence, a *firki* (clay plain) settlement mound, illustrates the transition from Stone Age to Iron Age in the Chad Basin. However, the material is disappointingly late in historical terms and CONNAH and JEMKUR (1982) mention a 3,000 B.P. barrier. This may reflect the much higher water levels of Palaeo-Chad in the past, as the presence of *firki* apparently represents former lake levels effectively preventing settlement over a wide area and thereby eliminating potential archaeological sites.

In 1990, work began on a more detailed archaeological survey, a preliminary report on which is given in BREUNIG *et al.* (1991). The most significant finding they report is of pottery associated with charcoal on the Bama ridge at a site near Konduga with a radiocarbon date of $6,340 \pm 250$ B.P. In the Gaji Gana site, north of Maiduguri, there are numerous volcanic flake tools, representing stone axes and also bifacial arrowheads as well as domestic cattle bones. BREUNIG *et al.* (in press) tentatively associate these with the Saharan complex identified by SHAW (1977); if so, this suggests that Borno had a historical influx of population from the Saharan region between 5,000 and 2,000 B.P.

Beyond Borno, the broader archaeology of the Sahara is the major source in providing dates for the diffusion of domestic animals to the Lake Chad region. The results of recent work have been summarised in SMITH (1980, 1992), EPSTEIN and MASON (1984) and GAUTIER (1987). Another related reference source are the studies of Saharan rock-art, especially by MUZZOLINI (1983 a, b, 1990, 1991 and references therein). A recent discussion of the evidence from ethnography and linguistics is found in BLENCH (1993 b).

Historical Sources

The earliest historical sources relevant to this region are from the medieval period, when the first Arab geographers began to collate data about the "Sudan". More occasionally, other types of written source, such as correspondence, also exist, although these are richer for political rather than economic history. LEWICKI (1974) has filleted the Arabic sources for references to (edible) domestic animals and his compilation is the most comprehensive study for the whole region.

In the more recent epoch, studies of this region inevitably start with DENHAM and CLAPPERTON (1828). Far more valuable, however, is Heinrich BARTH, and there are few subjects on which he does not have

some illuminating commentary. Apart from the materials in his *Travels and Discoveries* (BARTH, 1857-1858), in the footnotes to his comparative lexical data, BARTH (1862. II) has additional observations on the history of domestic animals. NACHTIGAL (in Borno in 1870 but here quoted in the modern annotated English translation, 1980) devoted some pages of his travels to the livestock of Borno. Other travellers include ROHLFS (1874), ALEXANDER (1908) and MACLEOD (1912). Materials on Borno were synthesised by SCHULTZE (1913) who includes a useful appendix on ruminant livestock breeds with their Kanuri names. SEIDENSTICKER and ADAMU (1986) represent the most significant bibliographic resource for Borno and the surrounding region.

Lexicographical Sources

No systematic linguistic survey has ever been undertaken in this region and many of its languages remain virtually undescribed. The wordlists of MEEK (1931) are still a significant resource as are the Chadic wordlists in KRAFT (1981) despite the hasty circumstances of their collection. The major languages have useful lexicographical sources and I have used ABRAHAM (1962) for Hausa and CYFFER and HUTCHISON (1990) for Kanuri. TAYLOR's (1932) Fulfulde dictionary is the principal source for Nigerian Adamawa, but NOYE (1989), although concerned with Fulfulde of Northern Cameroon, cites many of the same forms found in Nigerian Adamawa. A number of other single-language references are given in the table of sources after the bibliography.

There are four texts dealing with the etymology and possible source of names for domestic animals in this region. The most important is SKINNER (1977) which discusses and sets out the lexical data for a wide range of Chadic languages. Although it will be apparent that I disagree with many of Skinner's historical conclusions, his pioneering paper established cognate sets for many of the major roots and base forms and made many valuable suggestions concerning etymologies. Skinner followed this up with a useful discussion of loanwords in Hausa (SKINNER, 1981) which further develops some of the ideas in the previous paper. SCHUH (1982 a) as part of a survey of West Chadic, included a discussion of names for domestic animals. TOURNEUX (1987), in Seignobos' important compilation of data on the pony in Central Africa, collates much of the available information on names for equids and also suggests historical inferences that can be drawn from these.

To make sense of existing roots within the broader context of the phyla to which individual languages belong, it is often necessary to look at large-scale syntheses that refer to regions centred well outside Northeast Nigeria. The most standard work for Niger-Congo is GREENBERG (1966), although WESTERMANN (1927) and MUKAROVSKY (1976-1977)

represent more significant assemblages of data. Nilo-Saharan is less well-served, but I have been able to make use of the unpublished compilations of Roland Stevenson. For Cushitic, a useful source is EHRET (1987) and for Chadic, NEWMAN (1977). SKINNER (in prep.) is an etymological dictionary of Hausa which has extensive cross-referencing to other branches of Afroasiatic. Another source of useful comparisons is BENDER's study of livestock terminology in northeast Africa (1982).

HUMAN POPULATIONS

Figure 2 shows the approximate distribution of ethnic groups in northeast Nigeria. More detail on the names, locations, population size and classification can be found in CROZIER and BLENCH (1992) and in BRETON and DIEU (1983). The populations of northeast Nigeria can be usefully divided into two parts: the diverse, agriculturally-oriented peoples of the south, and the peoples of the north-central region corresponding broadly to the domain of the Kanuri people, but encompassing a variety of pastoral peoples. The Kanuri have a prominent place in African historical texts because of the existence of early chronicles of their kingdoms and the striking archaeological sites that remain from this era. In some ways, this has mitigated against descriptive ethnography; many Kanuri subgroups are almost unknown in the literature.

Northeastern Nigeria represents a confluence of three of Africa's four language phyla, Niger-Congo, Nilo-Saharan and Afroasiatic. In terms of number of languages, Chadic languages predominate, although Nilo-Saharan probably covers the greatest geographical area. Table 1 shows the language phyla and some representative groups within them, with comments on their range.

In the main, Kanuri are cultivators, but have substantial holdings of both cattle and small ruminants. Where the environment permits, they manage these animals directly; however, where pasture is inadequate or there are water shortages, they have developed entrustment arrangements with the Shuwa Arabs and the Fulbe. The Kanuri are well-known for their elaborate and ancient kingship systems, and their complex hierarchical social structure (COHEN, 1967). The Kanuri live interleaved with more pastoral groups, speaking closely related speech-forms. In the north, these are represented by the Mober and Manga and in the central region by the Badawai and Koyam. Shuwa Arabs are mobile pastoralists whose links are with the related Arabic-speaking groups in Northern Cameroon and Chad. They appear to have first penetrated this region in the fourteenth century (ZELTNER, 1970). Fulbe pas-

toralists probably came into Borno from further west as early as the fifteenth century, although their political hegemony in Yola, further South, only dates from the early nineteenth century.

TABLE 1
Language Phyla and Families Represented in Northeastern Nigeria

Language Phyla	Main Groups	Comments
Nilo-Saharan		
	Kanuri, Kanembu, Teda	Kanuri were confined to further north until the nineteenth and early twentieth centuries and much of the Maiduguri region was inhabited by Gamergu and Margi
Niger-Congo		
1. Adamawa	Yungur group Longuda	Settled agricultural groups
2. Bantu	Jarawan: Mbula-Bwazza	A single group represented more fully elsewhere in Nigeria
3. Atlantic	Fulbe	The Fulbe entered the region as nomadic pastoralists but many are now settled agro-pastoralists
Afro-Asiatic		
1. Chadic	West Chadic: Dera, Hausa	The Hausa are either traders or farmers specialising in dry-season cultivation
	Central Chadic: Bura, Margi	Other Chadic speakers are settled cultivators
	Fali, Laamang, Bata, Sukur, Yedina etc.	
2. Semitic	Shuwa Arabs Uled Suliman	Shuwa Arabs reached Borno in the Middle Ages but the Uled Suliman are recent migrants to the region (1980s)

South of the Kanuri is by and large the domain of the highly fragmented Central Chadic languages. Of West Chadic, only Dera [Kanakuru], between the Yungur cluster and Wiyaa [Waja], falls "naturally" within the region. However, Hausa, although spoken only by recent migrants and as a second language, has exercised a powerful influence on the region, witnessed by the extensive loan-words found in all the languages of the region. Like the Adamawa-speakers, most of the Chadic groups are dispersed with no central authority. Since the late 1960s, the peoples of the Gwoza hills (the foothills of the Mandara proper) have been under pressure to move to the plains through the Gwoza Resettlement Scheme.

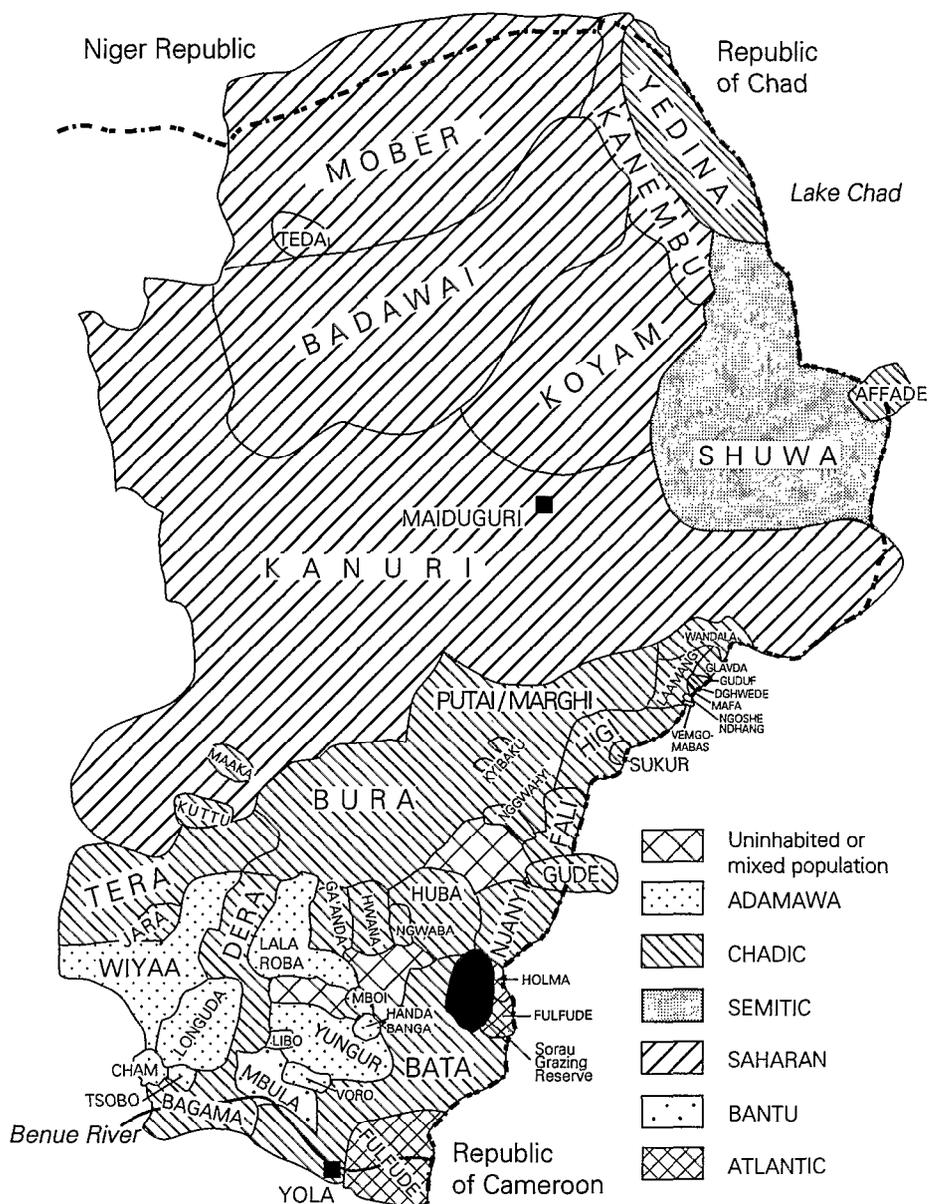


FIG. 2. — Languages of Northeastern Nigeria.

The pattern is thus of a mosaic of small, highly diverse agricultural groups, interconnected primarily by the political authority of the Kanuri in the pre-colonial era, and by the long-distance trade-routes opened up by the Hausa in this century. In addition, the whole region has long been penetrated by highly mobile pastoral groups, who inevitably carry both ideas and artefacts from region to region. More detailed descriptions of the populations can be found in BAROIN (1985), BLENCH (1990), BOUQUET (1990), BRAUKÄMPER (1991), LE COEUR (1950), LE ROUVREUR (1989), PALMER (1929), STENNING (1959) and WHITE (1941 a, b).

Classification of Language Phyla

Within Northeastern Nigeria, the classification of the languages is broadly accepted. However, the quest for the routes whereby domestic animals reached this region can only be tracked linguistically by establishing external cognates.

INDIVIDUAL LIVESTOCK SPECIES

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. Setting a somewhat arbitrary political boundary on the languages cited is a convention adopted to limit the size of the potential dataset and provide a sense of the regional system. However, citations are given from languages and reconstructions outside the region, where these are appropriate to understanding the pattern of the data. Syntheses of data from individual languages are given in a series of tables in the Appendix, which should be consulted in conjunction with the descriptive sections. Descriptions of the present-day use and management of individual species is drawn from RIM (1992).

Camel

The one-humped dromedary is originally an Asian domesticate (EPSTEIN, 1971). Although it made its way into Egypt as an exotic at an early period, it seems to have only been developed as a work-animal in the Roman period. Most West African camels are pack or dual purpose animals classified as a lowland desert race (WILSON, 1984: 48). Camels are used to carry loads, as personal transport, to draw water and to pull ploughs. Working camels are almost exclusively males and very few animals are bred in Borno. Nearly all the camels found there today are bred in the Republic of Niger, particularly by the Teda. The Uled Suleiman and some Manga and Mober pastoralists bring herds from Niger in the dry season. In this region, camels vary in colour from brown or dark red to fawn, with a darker, sometimes black, mane.

There are no references in the medieval Arabic sources to camels in Borno or Hausaland (LEWICKI, 1974: 88). The Kano chronicle mentions that the first ruler to own camels was Abdullahi Burja, in about 1440 A.D. Writing about Borno in 1870, NACHTIGAL (1980, II: 193) mentions that fresh camel-meat was preferred to cattle. This has completely changed in the last century, as now beef is the prestigious food and camels are usually shipped to Hausaland for slaughter.

Camels were evidently more common in northeast Nigeria until recently, as many languages have words for camel, and yet speakers today only have indistinct ideas about the appearance of the camel itself. Sukur traditions mention the use of camels to bring firewood and other trade goods up into the mountains. Even today, Wandala traders occasionally appear in the Gwoza area with load-carrying camels.

Linguistically, there are two sources of words for camel in northeast Nigeria, loans from Berber and from Fulfulde. Through most of southern Borno, some version of Berber **lym* is common, whereas in Adamawa, Fulfulde *ngelooba* is usually borrowed. SKINNER (1977: 179) discusses the history of the **lym* 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*. SCHUH (1982 a) points out that in Twareg dialects close to Northern Nigeria, camel is presently *aləm*, i.e. the *-y-* yielding Hausa *-ƙ-* has been deleted. TOURNEUX (1987) gives further names for camel in Cameroon and Chad, where again, the Berber root is common.

BARTH (1862, II: 187) has a delightful folk etymology for the Kanuri *kalí(gí)mo*, relating it to the word *kalgî*, meaning thorn. Although camels do indeed eat thorns with relish, this name is simply the Berber root with a *ka-* prefix. The absence elsewhere of the *ka-* prefix in Kanuri-Kanembu suggests that the Borno empire did not play a significant role in diffusing the camel, and that the settled peoples south and west met Twareg traders and learnt about camels directly. The Teda word *ae* is probably quite distinct, although there is a possibility that it is a form of *alem* with deleted consonants. It suggests, however, that the Teda received their camels early (and possibly directly from Egypt) and that they have played little or no rôle in diffusing the camel further south.

Horses and Ponies

The history of the horse in West Africa is long and complex and has been the subject of much dispute (see EPSTEIN, 1971, II and BLENCH, in 1993 b and references therein). Essentially, there are two quite distinct breeds in West Africa, the small trypanotolerant pony, ridden bare-

back by a variety of non-Muslim peoples, and large, North African horses, Barbs, used for warfare and associated with Islam. The evidence points to different historical strata for these breeds. The ponies, with a long history of adaptation to West African climatic conditions, would have been brought across the desert during the Neolithic period, and probably underwent dwarfing in West Africa. Large horses of North African origin (Barbs) were transported to Borno in late medieval times.

There is a variety of historical evidence for the use of ponies in Borno, most notably that of KOELLE (1854) who describes mounted marsh-dwelling Bedde [Bade] raiders causing havoc in north-western Borno. However, in the twentieth century, pony populations seem to have disappeared, in contrast to the situation in Central Nigeria. Borno is the only region of Nigeria where horses continue to be used on an everyday basis for personal transport, although they are not used for work. Herding cattle on horseback is still common in Borno and senior Fulbe often direct transhumance movements of herds from horses. Horses have a very high prestige in traditional circles, and local chiefs lose face if they cannot participate in Sallah processions and Durbars with liveried horses. Horses are bred in a few villages and also by some of the Fulbe Maare, and are almost always sold by private contracts rather than in markets.

The complexity of equid terminology has meant that the elicitation of vernacular terminology has often been inadequate. Although a number of languages, such as Hausa, have two quite distinct lexemes for "horse" to cover the size distinction, without a special enquiry for a word for pony, researchers are unlikely to record such a word. There are also often distinct words for "stallion", "mare" and "colt" and at least one word for "old nag".

The linguistic evidence for horse names has been considered at some length by SKINNER (1977) for Chadic and TOURNEUX (1987) for Central African languages. Tourneux shows clearly that there is a complex pattern of loans and re-interpretation, involving both "donkey" and "camel". Terms for horse~pony are given in Appendix, table A2. They show several major roots—the most widespread of which is probably the #tVgVn—series in Chadic corresponding to Hausa *dookii*. Hausa *dukushi*, "colt", is presumably the same root with a diminutive suffix (SKINNER, in prep., 48). These appear to be ancient, although it is unlikely on historical grounds that they are reconstructible to proto-Chadic. They almost certainly would then have originally applied to the pony. Indeed among the Sukur, the large horse is known as the *duk makka*, the "pony of Mecca", an explicit reference to a presumed North African origin.

These have undergone a remarkable series of changes, most notably voicing of one or both consonants, deletion of the final nasal, deletion

of all but $C_1 V_1$, move of the final nasal to become homorganic with C_1 , and fricativisation of C_2 . Nonetheless, they can generally be recognised as transformations of the original root.

The $\#kVr$ - roots, such as Hausa *kúurùu*, show up in scattered attestations elsewhere, for example as “mare” in Ga’anda, but most notably in words for donkey (table A3). It is certainly attested in both Kanuri and Teda and both SKINNER and TOURNEUX further relate it to proto-Cushitic **fiarr* “wild ass”. It was then applied in some places to the pony, and later to the domestic donkey. Curiously, it is not easy to identify the sources of either the Twareg, Teda or Shuwa Arab words for “horse”.

The other common and much later root widespread in the region are the words related to the Arabic *faras*. Such words also appear in Cushitic, for example, Xamir *fərza*. This is discussed by SKINNER (1977: 195) who considers that its ubiquity illustrates a “root that is clearly widespread in AA [Afroasiatic]”. Although this is true, the historical implication, that the large horse is therefore ancient in Central Africa, is false. Whatever the history of the root in the Middle East, the forms in Central Africa are originally loan-words from the Arabic, although mediated through other languages such as Kanuri and Songhay. The word would have travelled with the large Barb horses from North Africa that were brought across the desert in the medieval period.

TOURNEUX (1987: 182) also discusses an interesting word cited by Barth, *kádara* in some Kanuri dialects, meaning “old nag” or “pony”. This is borrowed into some languages further east, but does not show up in western Adamawa, unless Njanyi forms like *kara* are not cognates of the kVr - roots but results of the erosion of *kadara*.

Donkey

The donkey is indigenous to the African continent and its wild progenitor is usually considered to be the Nubian wild ass (EPSTEIN, 1984: 176). Nonetheless, a wild ass survived in the Atlas mountains until Roman times which may also have contributed to the gene pool of the donkey. Records of domestic asses begin in Egypt in the 4th millennium B.C. In view of this, it is surprising that historical and linguistic evidence tends to suggest that it was a relatively late introduction to West Africa. There are no rock-paintings of donkeys and no references in the medieval Arabic sources to donkeys in Borno or Hausaland (LEWICKI, 1974: 88-89). This tends to suggest that if the donkey was part of the “package” that came across the desert with Islam, then it came relatively late.

Donkeys are limited to the semi-arid regions by their susceptibility to humidity, but their southern range can be extended by careful mana-

gement. They are common in northeastern Nigeria where they are the backbone of rural transportation. They are used to draw water from the deep wells in the sandy areas, and as many as three may be yoked together for this purpose. The donkey is a key element in the urban culture of the Hausa, transporting firewood from rural areas and returning with manure and ashes to fertilise the fields.

LE COEUR (1950: 158) describes the semi-feral system of donkey-keeping practised by the Teda and this system was formerly common among Kanuri groups as well. The opening of trade routes to the south and the demand for their meat has caused their disappearance. The disappearance of the breeding stock of donkeys in northeast Nigeria has led to a trade in donkeys from the Republic of Niger.

Names for donkey in northeast Nigeria are given in Appendix, table A3. Across central Nigeria, most languages have a direct loan from Hausa *jaaki*. This is borrowed from Twareg *ejak* and the possible connection with words for "waterbuck" proposed by SKINNER (1977: 189) is unnecessary.

However, in the northeast, forms of the Kanuri *kóro* are dominant, and these may have a complex etymological history. Chadic forms are divided between those with central vowels, *kwara* etc. and those with back vowels. The *kwara* forms are extremely similar to those in Cushitic and Omotic. BENDER (1988: 152) reconstructs proto-Omotic **kur* for ass. Skinner cites **dAnkwAr* for proto-Cushitic, and languages such as the Central Cushitic Bilin has *dəx'ara*. The most likely history of this root is that it originally developed as a word applied to "wild ass", probably in Ethiopia. As the wild ass is indigenous to the Horn of Africa. This would have been borrowed into Chadic at an early period, minus the *dV-* prefix. It would then have been loaned into Kanuri-Kanembu and back into Chadic languages further west. The spread of terms for donkey was probably associated with trade caravans mounted by the Kanuri and Wandala. This probably is reflected in the Hausa word for a gelded donkey, *agùrù*.

A less widespread root is *#sVg-*, only found in the Mandara and the adjacent plains. Further south, the donkey appears to have been unknown until the nineteenth century, as the name is a loanword from Fulfulde, *vamde*.

Cattle

General

The ancestry of domestic cattle remains one of the most disputed topics in the broader debate over domestication. The most comprehensive overview of the origin of the traditional cattle of Africa is EPSTEIN

(1971) and EPSTEIN and MASON (1984). Wild cattle seem to have been present in the Ancient Near East and Northeast Africa as late as 5,000 B.C. and the earliest African cattle presumably derive from these, who also included historical speculations about the chronology of their introduction into Nigeria. MUZZOLINI (1983 b) has reviewed the evidence for cattle in Ancient Egypt and GAUTIER (1987) has synthesized the archaeological evidence for Northern and Middle Africa.

Very early dates, before 9,000 B.P., are postulated for cattle in the Eastern Sahara (GAUTIER, 1981: 336, 1984: 69 and WENDORF and SCHILD, 1984: 420) who note comparable domesticated cattle from Syria by the tenth millennium B.P. This suggests that the isochronic diagram constructed by SHAW (1977: 108) showing cattle reaching West Africa at 1,200 B.C. (a date from the Daima excavation) is merely an artefact of sampling and that they must have been in the region far earlier. BREUNIG *et al.* (in press) also give a date for the bones of domesticated cattle of ca. 3,000 B.P.

There are three major types of cattle in Northeastern Nigeria, the zebu, the muturu and the kuri. Zebu are by far the most numerous and were probably established in Borno prior to the coming of the Fulbe. Kuri are found only in Borno and in adjacent parts of the Niger, Chad and Cameroon Republics. There are muturu cattle in the Mandara mountains and in adjacent parts of Cameroon. Figurines of cattle have been recovered from excavations at Daima, south of Lake Chad, in the earliest layer of occupation, which dates from before 500 B.C. (CONNAH, 1981: 136). The cattle represented do not appear to have humps and may well have been the ancestors of modern-day kuri cattle.

Muturu

The muturu is otherwise known as the West African shorthorn and is a small, stocky creature, usually black or brown without a hump. It was traditionally kept in systems of intensive fattening, often in underground pits (THYS *et al.*, 1986 a, b and TUPPER-CAREY, 1944). A comprehensive description of muturu distribution and production systems in Nigeria is given in BLENCH *et al.* (in press).

Kuri

The origin of the kuri is unknown. The nucleus of the kuri cattle population is within the region of the former Lake Chad, and along its eastern shores. Kuri were first recorded by the traveller Heinrich Barth in 1851. He records "I saw the first specimen of the 'kuri', a peculiar kind of bull of immense size and strength, with proportionately large horns of great thickness and curving inwards" (BARTH, 1857-1858, II: 200). These distinctive, inflated, spongy horns are unknown in any other breed. The most comprehensive study of the kuri is QUEVAL *et al.* (1971) which synthesised almost all the available materials up to 1970.

Kuri cattle have extremely variable colours and they can tolerate semi-aquatic conditions; they can often be seen grazing in water up to their stomachs in the pools alongside the Baga Polder. Formerly, when lake levels were higher, they used to swim between the islands as part of the annual migration from the low-lying swamps to the high ground. The name Kuri, *kùrí* in Yedina, probably comes from the section of the Yedina on the east of the lake who are also called Kuri.

Zebu

Zebu are the dominant breed of cattle in northeast Nigeria today. The distinctive feature of the zebu is the presence of a fatty hump, a morphological feature that leaves no direct archaeological trace, although they can sometimes be detected from skeletal features if the right bones are present. The zebu originates in India and was probably brought to the Horn of Africa at least 2,500 years ago and must have reached semi-arid West Africa by 1,000 A.D. (EPSTEIN, 1971). This is also confirmed by recent archaeozoological material at a number of sites in Mali (MACDONALD, p.c.). CONNAH (1981: 182) illustrates a clay figurine of a zebu from the uppermost spit of Daima which apparently dates to this period.

One problem with this relatively simple model is that many early representations in rock-art of cattle in the Ancient Middle East, Egypt and the Sahara show cattle with some sort of hump. MUZZOLINI (1983 a, 1991) has undertaken a detailed investigation of the representations of cattle in Saharan rock-art. He concludes that there are some apparently early images of humped cattle that do not fit with the late introduction of zebu and therefore advances the hypothesis of an independent evolution of humpedness in the Sahara. The present-day humped breeds of West Africa almost certainly combine genetic material from the indigenous breeds and the incoming zebu. Recent work on the cattle DNA appears to suggest a dual domestication in the Indian and Middle Eastern regions (LOFTUS *et al.*, in press).

Linguistic Evidence

All three language phyla in northeastern Nigeria have quite distinctive base forms for cattle and there is relatively little overlap. This indicates that cattle must have crossed the desert at an early period of their dispersal and that there were probably multiple introductions into West-Central Africa. This is confirmed by the present-day distributions of individual breeds (BLENCH, 1993 b).

The Saharan languages, Kanuri and Teda-Daza, have cognate forms for "cow", which have parallels in Berti, *firr*, and Zaghawa *hílí*. These do not seem to occur in neighbouring languages or in other branches of

Nilo-Saharan. Curiously, the Kanuri term for “he-goat”, *dâl*, closely resembles the word for “bull”, *daló*, and the original meaning may have been “male animal”. This suggests that cattle reached the western Saharan-speakers early and probably not from the North African coast. The word for “bull” in Teda, *dǎr*, however, appears to be related to Arabic *toor* and this may also be etymologically connected with the Kanuri form.

For Niger-Congo, GREENBERG (1966: 17) cites cognate forms from all its major branches, suggesting an original root something like *#na*. There appear to be no cognates in Kordofanian (excluding Greenberg’s unconvincing comparison of words for “antelope”), arguing that cattle were brought to West Africa after the Kordofanian speakers broke away from the main body of Niger-Congo. The terminology does not clearly distinguish between subspecies, but it is evident that cattle were part of the cultural repertoire of Niger-Congo speakers at the beginning of their expansion in West Africa. In northeast Nigeria this root is attested in Fulfulde and the Adamawa languages. Rather surprisingly, it is also loaned into the Chadic Njanyi, *-nako*, but this is exceptional.

All branches of Chadic attest a form something like *tla-* and it is striking that Cushitic also has a voiceless lateral, *#tl-*, in the same C₁ slot (EHRET, 1987: 80). This tends to suggest early contact between speakers of the proto-languages. COHEN (1969: 182) produces an *#IV-* series for Afro-Asiatic, for example Akkadian *lu* and Soqotri *lee* which may form a cognate set. These may, however, refer to the wild bull, still present in the Middle East and Arabia in the 5th millennium B.C.

Hausa *sâa* has always been somewhat problematic as the sound-change that would make it cognate with *-tla* is rather improbable. NEWMAN (1977) suggested that Hausa cannot be a regular reflex of proto-Chadic and is thus likely to be a loan-word, a view echoed by BYNON (1984: 251). However, it is now clear that similar forms co-occur in Cushitic for “cow”, and EHRET (1987: 61) has reconstructed **faa^h* for proto-Cushitic. Other attestations related to *shaanuu* occur in old Semitic languages, for example, Akkadian *š a’num*, and in Berber, Twareg *ees-waan* “cattle”. Neither root has significant attestations in Omotic, which shows a scatter of forms, arguing that Omotic speakers only became familiar with cattle after the language had diversified (BENDER, 1988). Although these roots clearly co-exist in Afroasiatic, the absence of widespread attestations for *s-* in Chadic do suggest borrowing. Another possible source for Hausa is the Shuwa Arabic root *sâ’a*, meaning “wealth in livestock”. A name for cattle can probably be reconstructed virtually to proto-Afroasiatic, excluding Omotic.

A rather individual name for cow is the Yedina term *tâmú*, which is not cognate with other terms for cattle, but which closely resembles the root for “sheep”, *#tVm-*. Although such a meaning shift looks strange

at first sight, it seems to have occurred in Omotic (BENDER, 1988) and perhaps elsewhere in Afroasiatic (cf. Shuwa Arab *bagar*, “cattle” and the very similar root for goat in Chadic).

Another possible connection is the rather more restricted root in Chadic *#kVm-*. This resembles closely the common Agaw term for “cattle”, something like *#kəm-* (APPLEYARD, 1984: 39). Whether this is a genuine cognate or simply an accidental lookalike depends on whether more attestations are available in Chadic and Cushitic. COHEN (1969: 112) noted a common Afroasiatic *k-* for “bull” though he speculated that it was possibly a widespread loan. The link between Chadic and Cushitic is striking and argues for early contact between the Eastern and Western Sahara.

Goat

The goat, *Capra hircus aegagrus*, evolved 7 million years ago, but it was probably not domesticated until 10,000 years ago in the Mesolithic period of the Ancient Near East (GAUTIER, 1981: 336; MASON, 1984 b). They were certainly kept in Egypt after 5,000 B.C. and presumably spread to sub-Saharan Africa shortly after that. The site at Haua Fteah, Cyrenaica in North Africa, has small ruminant bones dating from the 6,800 B.P. with no associated cattle and Kadero, near Khartoum, has both cattle and small ruminants at 6,000 B.P. (GAUTIER, 1981: 336).

Goats in northeast Nigeria are divided into two related categories; the long-legged savannah goats, including white “Balami” goats and red types often known as “Sokoto Red”, and the black or black-and-white West African Dwarf goats (WAD). Whether these can be distinguished in archaeological contexts remains to be seen. The dwarf goat, often known as the West African Dwarf (WAD) is relatively homogeneous throughout its range. Savanna goats are much more variable in both coat colour and body type. Dwarf goats are highly adapted to the West African environment and are likely to be the earliest type in the region. The site of Shaheinab in the Sudan had dwarf goats at 3,300 B.C. (SHAW, 1977: 110).

At Daima, CONNAH (1981: 183) notes the sudden appearance of clay figurines of long-legged goats at spit 17-18, i.e. ca. 1,000 A.D., and these continued to the surface deposits. Indeed such figurines could still be bought in 1990 at markets in adjacent Niger Republic. CONNAH’s illustration (fig. 8.10) shows an animal with a prominent distended udder – it seems likely that these figurines emphasize the milking qualities of the long-legged goats, in sharp contrast to dwarf goats, which are never milked. It therefore seems likely that long-legged, savanna breeds used for dairying, such as the Balami, were brought in by specialised pastoralists at this period.

In West Africa, terms for goat in West-Central Africa can be reconstructed to a considerable apparent time-depth. GREENBERG (1966: 19) cites cognate forms from all the major branches of Niger-Congo and WILLIAMSON (1989: 117) proposes #-*bhod^hi* for proto-Mande-Congo. As with cattle, there appear to be no cognates in Kordofanian, arguing that goats spread to West Africa after the Kordofanian speakers broke away from the main body of Niger-Congo.

Words for goat in northeast Nigeria (table A5) form a set that is complex and difficult to interpret. There is very little trace of Niger-Congo #-*bu-* in languages outside the phylum. Chadic languages have distinctive roots suggesting that goats were known to speakers from an early period. The roots in Saharan are distinctive and apparently not reflected in other languages of the area, although the source of Hausa *àkwiyàa* may be in Saharan *kanyi~haane*. The Teda *orko* for goat rather strikingly resembles the proto-Cushitic **?org-* for “small ruminant” (EHRET, 1987: 22). This may be an example of the inter-Saharan connections also possible in the case of cattle and guinea-fowl.

The two very distinctive roots in Chadic are #-*kVn-* as a generic for goat or female goat, and #-*bVgVr-* for male goat. NEWMAN (1977) gives #-*a(w)ku* as a proto-Chadic reconstruction, but there seem to be sufficient attestations of a nasal in C₂ position to add this to the reconstruction. SKINNER (1977: 191) relates the #-*bVkVr-* roots in Chadic languages to Arabic *bagar* “cow” but this seems doubtful without further supporting evidence. Cognacy with Cushitic **bA(g)gA* “small ruminant” is far more likely. It seems likely that these two roots can be reasonably reconstructed to proto-Chadic confirming that speakers of the proto-language already had the goat.

Sheep

As with goats, sheep are descended from an ancestral Near Eastern wild sheep and domestic forms are recorded in Iraq as early as 11,000 B.P. In Africa, they first occur as domesticates in the eastern Sahara at 7,000 B.P. and at Haua Fteah in North Africa at 6,800 B.P. (GAUTIER, 1981: 336). MUZZOLINI (1990) has reviewed the evidence for sheep in Saharan rock art and his revision of the chronology placing the first appearance of sheep rather later, at 6,000 B.P., seems generally accepted.

There are four basic types of sheep in Africa; thin-tailed hair and wool sheep, fat-tailed and fat-rumped sheep (EPSTEIN, 1971, II). All the sheep must originally have come out of Central Asia although they reached Africa by diverse routes. Hair sheep are the most widespread race in Africa and in Saudi Arabia and South India and it is most likely that they were introduced along the same route as zebu cattle, i.e. via the Horn of Africa (RYDER, 1984). One of the problematic aspects of com-

parisons with rock art is the importance attached to decorative horn types in representation; the complex horns shown in Egyptian and Saharan sites seem to be synchronically absent in the Lake Chad area.

All the sheep in northeast Nigeria are thin-tailed hair sheep, although woolled breeds are kept on the far side of Lake Chad. There are three major breeds, the Balami, Uda and Yankasa. The first two are those predominantly used by pastoralists, while the Yankasa is the common breed kept by farmers. Although the Yankasa is the most common breed, Uda and Balami [Kanuri *Wuda* and *Boloni*] sheep are widespread in pastoral herds. Almost all herds include some Yankasa, particularly in the south. Uda are most notably herded by the Uda'en, a Fulbe clan who specialises in this breed.

The Balami is the largest native sheep in Nigeria and is favoured as a stall-fed breed by Muslims throughout the Nigerian Middle Belt. It is white and hairy with pendulous ears, a bulbous nose and a long thin tail; rams have a throat ruff and are horned but ewes are normally polled. The Uda is slightly smaller than the Balami, and has a distinctive coat colour pattern; entirely brown or black forequarters and white behind. Uda sheep are adapted to long-distance transhumance and are less popular for fattening. Yankasa sheep are white with black patches around the eyes, ears and muzzle and sometimes on the feet. The rams have curved horns and a hairy white mane, and ewes are polled.

Linguistic evidence for the antiquity of sheep in Africa is less clear than for cattle and goats and is compounded by the fact that some languages apply the same term to both goats and sheep. In the Niger-Congo languages, there are no convincing reconstructions for "sheep" further back than proto-Volta-Congo i.e. Bantu plus Kwa and Benue-Congo. At this level, a form such as #*gwani* can probably be reconstructed. BENDER (1982) has reviewed the evidence for sheep in Nilo-Saharan and Afroasiatic and finds a variety of roots that suggest multiple introductions after the nuclei of these language families were established.

Table A6 shows the names for sheep and ram in northeast Nigeria. The most striking root (or base form) is #*tVm-*, which occurs widely in Saharan, Afroasiatic and Niger-Congo. I have chosen not to posit a velar for C₃ in Chadic, although it is widespread, since the external source forms contain no trace of it, and it is likely to be an affix added early in the history of Chadic. NEWMAN (1977: 31) proposes **təmki* for sheep in proto-Chadic.

Like other ruminants, the sheep must have been brought across the desert, and the agents of its movement the ancestors of the present-day Berber. It is likely, therefore, that the #*tVm-* roots go back to the Berber *adaman*. This would probably have been loaned into Saharan and also been separately introduced into Chadic at an early stage in its diversi-

fication. The word for a two-year old sheep in Teda-Daza, *duma*, is the link with the Kanuri term as with the Berti *tami*. The borrowings into Niger-Congo would have come from multiple introductions in the West African Sahel at the termini of trans-Saharan routes.

The #*kVm*- root, which occurs throughout Chadic has less in the way of convincing external parallels, although the Kanuri for ram, *ngálàrò*, bears more than a passing resemblance to the Hausa form. Following the argument above, it cannot be part of proto-Chadic, unless it originally had another meaning such as “male animal”. It is therefore an early period loanword. LE COEUR (1950: 201) notes that the Teda word for sheep, *yurumo*, applies to a wool sheep and it may be cognate with Zaghawa *áru*.

Pig

The history of pigs in West Africa is disputed and it is unclear whether they are ancient or were introduced by the Portuguese (EPSTEIN, 1971, II). There is certainly an ancient tradition of pig-keeping at Sennar, in the Sudan, and the black, hairy pigs found in the Nigerian Middle Belt may also be a relic of this practice. CONNAH (1981: 185) recovered a fired clay figurine at Daima that might be a pig, though no bones have been definitely identified. BARTH (1857-1858) mentions that feral pigs were common in Chad in the nineteenth century, which would provide the appropriate geographical link. Whatever the case, the majority of pigs raised today in Northeastern Nigeria are descended from “improved” European breeds imported by missionaries and through agricultural officers.

Pigs are prohibited in the Muslim areas of northern and central Borno, but are widely kept further south, in the Bura, Margi, Kyibaku and Higi areas, and along the Cameroon border. They are confined during the cropping season and fed on the residues of beer. Although there is a small local market, the great majority of pigs are sold to traders from the south who load them into pickups and transport them to Ibi, Enugu or other entrepôt markets.

Pig is frequently not elicited in the usual wordlists and even where it is included, the distinction between the domestic and the two types of wild pig is often ignored. As names for the domestic pig are often borrowed from those applied to wild pigs, especially *Potamochoerus*, the lexical data is at present an unreliable guide to the history of the domestic pig in this region. In Appendix, table A7 gives names for pig in some languages of the northeast. There appears to be an old Chadic root for bush-pig, #*dVgVl*-, that has been applied to the domestic pig. Many peoples have simply taken the Hausa name, *àaladè*, especially in Central Nigeria. This in turn was probably borrowed from Yoruba

elédè, although it is hard to determine through what intermediary route, since words for domestic pig in Nupe and other languages are quite different. On present evidence, it is impossible to decide whether there was an ancient pig population in this region.

Dogs and Cats

Dogs

The ancestry of the domestic dog remains uncertain and a number of canids may be implicated in present-day types (CLUTTON-BROCK, 1984). The dog is not native to Africa and was introduced at an unknown period in the past. EPSTEIN (1971, I) who reviewed this question at length, shows that dogs were known in Egypt in the pre-Dynastic period and so could have been brought across the desert in prehistoric times. It is likely that there have been multiple introductions from different sources, although the only race found in northeast Nigeria is what Epstein calls the “pariah dog”.

Dogs are kept in parts of northeast Nigeria for hunting and guarding, but not eaten. Generally, dogs are not kept by herders in northern Nigeria, but some of the pastoral peoples further south use them to guard their livestock. The dogs are fed milk to encourage them to stay in place while the owner is away. In many Kanuri villages, dogs are regarded as unclean and, sometimes, as contrary to Islam. Nonetheless, populations of semi-feral and often diseased dogs live on the margins of villages in most regions. The Warji and Tangale peoples from Bauchi State travel throughout Borno in the dry season, buying old dogs and catching feral dogs, a practice which is regarded as something of a public service, as dogs often trouble livestock. They then herd the dogs back to the major dog markets, where they are sold on to entrepreneurs who deal with traders from further south, eventually reaching down to Calabar.

BARTH (1862, II) observed long ago that the widespread similarities in names for dog in Africa argued for multiple introductions from a source region, i.e. North Africa. The lexical data on names for dog is given in Appendix, table A8. There are essentially two quite distinct major roots in West Africa, broadly identifiable with Niger-Congo and Chadic.

The main root in Chadic and Saharan is *kidi~keri*, occurring in Saharan and in a variety of forms in Chadic languages. If, as BENDER (1975: 159) and SKINNER (1977: 187) suggest, this root is common Afroasiatic, then Akkadian *k-l-b*, Arabic *kalb* and Kabylé *akelbun* all form part of a cognate set. It is interesting to note that, except for a few cases, Omotic has a wide scatter of terms, indicating that the dog was adopted *after*

Omotic began to diversify. NEWMAN (1977) proposes #*kər-* for the original proto-Chadic, although recognising that the irregular correspondences may well indicate a pattern of ancient loans. The source of the Kanuri and Teda-Daza words will be loans *into* Saharan from proto-Chadic or possibly Berber.

The deeper history of this root is more complex; proto-Omotic for dog is **kan* (BENDER, 1988: 145) closely resembling proto-Indo-European **kwon-* (RABIN, 1982: 27). The third radical, *-b*, is now generally considered to be an affix marking wild animals and would not necessarily travel with the remainder of the word. RABIN (*op. cit.*) notes that forms such as Latin *canis* may be direct loans from Afroasiatic. Historically speaking, given the Middle Eastern origins of the dog, this is not improbable.

The diversity of forms in Chadic languages is striking but it seems at least possible that they are all related, but that the process of ancient loans has created a confusing distribution. If so, then the following processes must have occurred:

- Existence of original **k-l-b* root in Afroasiatic.
- Deletion of *-b* when this root is borrowed into either proto-Chadic or Saharan
- C_2 $l \rightarrow r \rightarrow d \rightarrow \delta$.
- Weakening of C_1 to an approximant, *y-*, *w-*, a glottal and disappearance (Dera and Tera group).
- Centralising of V_1 giving *ada* forms in West Chadic.
- Weakening of V_2 to a palatal approximant in Central Chadic, e.g. Huba *hə̀yà*.
- Change of C_1 velar stop to a fricative *x-* and voicing to *ɣ-*, e.g. Madzarin *xùda* and Gava *yùdà*.
- Deletion of V_1 in some forms, e.g. Afadə *kle* or Margi *hya*.

The development of a high back vowel *u-* in V_1 position in some Central Chadic languages is rather unusual, but the attestation of almost every intermediate form suggests that these are genuine cognates. The origin of the final nasal in Fali language is also unclear and it may represent a trace of some sort of modifier.

Another possible connection is with the Agaw terms for dog, such as Bilin *gə̀də̀ŋ*. These seem to resemble the Chadic forms very closely in some cases. If these are cognate then the complex process of derivation outlined above need not be invoked and the *gVd-* forms in Chadic are ancient and widespread loans.

The Yungur, Mbula and probably Fulfulde forms relate to the common Niger-Congo root for dog #*bu-*. This is found almost throughout West

Africa, in all branches of Niger-Congo except Kordofanian and presumably reflects an early trans-Saharan introduction west of Lake Chad.

The evidence suggests that in West Africa there were at least two quite distinct introductions, which may reflect different routes across the desert. One introduction, in the Lake Chad area, must have been contemporary with the initial development of proto-Chadic. Another introduction, further West, must have introduced the dog to Niger-Congo speakers shortly after the initial expansion of the family.

Cats

Domestic cats are usually considered to have developed from *Felis sylvestris libyca*, still found wild through much of Africa (ROBINSON, 1984). The Egyptians are likely to have brought the cat into domestication gradually, with full domestication by 1,000 B.C. There is no evidence on the date or means whereby it spread to sub-Saharan Africa, although today it is found throughout the continent. Cats are kept throughout northeast Nigeria, but solely for exterminating vermin and not as pets, and are semi-feral in many regions.

The etymology of the word for domestic cat is discussed in SKINNER (1977: 181) who suggests the Cushitic forms are cognate and thus the term is of great antiquity in Afroasiatic. This seems difficult to believe as there is no evidence for such early transmission of the domestic cat through this region. He also argues that Daza, which has one of the same roots as Kanuri, *ngam, must therefore have borrowed this root from lookalikes in Chadic, such as Bade ṅgeeyamən. However, a much more likely process is that the cat was named first in Daza, then in Kanuri and that this term was loaned into the Chadic languages on the fringes of Nilo-Saharan.

Chickens

The chicken is not indigenous to Africa and is generally believed to have been domesticated in India by at least 2,000 B.C (CRAWFORD, 1984: 300). It would have been transmitted to the Middle East shortly after that, since there is strong evidence for chickens in Egypt by the XIIIth Dynasty, i.e. ca. 1,850 B.C (COLTHERD, 1966: 219). The ostrakon from the tomb of Tut'ankhamon's tomb illustrated by ZEUNER (1963: 445) showing a cockerel, may be said to be conclusive. However, after this, there is a long lacuna in the record, and it is generally accepted that attempts to breed the chicken in Egypt were suspended until the Ptolemaic period, when it had also begun to diffuse through Europe. It is most likely that the chicken was introduced to West Africa from North Africa shortly after its development as a major domestic species

in Ptolemaic Egypt. It would presumably have been carried across the desert in the early period of the caravan trade, evidently by-passing the Tibesti.

There are no significant documentary references to the chicken that would illuminate the route by which it reached West Africa, but it is most likely that it was carried across the Sahara, like many domestic plants. CARTER (1971: 194) argues that the chicken spread independently to East Africa from India via the sea-trade; the two introductions are thus likely to be distinct. The earliest clearly identified chicken bones from West Africa are at Jenne-Jeno in Mali, dated to between 450 and 850 A.D. (MACDONALD, 1992). MACDONALD and EDWARDS (1993) note that evidence for the domestic fowl on the North African littoral is presently lacking, making it difficult to be sure about the route by which chickens reached West Africa. CONNAH (1981: 193) mentions "domesticated fowls" in Daima III, but these might well be guinea-fowl.

LE COEUR (1950: 128) has an interesting note on Teda attitudes to chickens. He says that only the Teda of Kawar raise them and that many Teda refuse to eat them, as they are birds. They were previously unknown through much of the Teda area and had begun to spread "*autour des postes français*".

The evidence from the names for chicken (table A10) is difficult to interpret, as many of the terms may have an ideophonic element. Almost all the roots have one or several velars, like English, and these have probably been constantly re-interpreted and re-analysed in the light of sound-symbolism. In addition, there is usually a separate etymon for "cock" and this often alternates with or influences words for chicken in neighbouring languages. Words for chicken in Chadic languages were discussed by SKINNER (1977: 182-3). BARTH (1862, II: 200) gives a number of Kanuri words for chicken that seem not to be recorded in modern lexical sources.

Broadly speaking, there is a very widespread Chadic root of the general form *#dVk-* that seems to apply to the hen. This closely resembles the Arabic *diik* (= cock), and it is not improbable that the chicken was diffused in Central Africa by the earliest trans-Saharan trade. The usual Arabic word for hen is not found, although the Shuwa Arabs have a form with the stem consonants inverted. Another widespread root is *#kVz-*, which could be an adaptation of the common Saharan term for "guinea-fowl" (see below). Another root for "cock" in West and Central Chadic, *#gVj-*, which might be a weakening of *#kVz-* or an independent development.

A wide-ranging review of words for "fowl" in Benue-Congo is given in WILLIAMSON and SHIMIZU (1968: 170-173). In Niger-Congo, the ancient root for "bird" has been adapted to chicken, probably indepen-

dently many times. However, it also appears that some subgroups of Benue-Congo have adapted forms from Chadic languages. For example, the **toko(ro)* roots in Plateau and Kainji languages presumably borrowed from the *tak-* roots in Bura-Margi languages. Jukunoid languages have a predominance of *-kun-* forms resembling those in the Cameroon borderland, for example Fali group languages or Yedina. Some Jarawan Bantu languages have simply borrowed Hausa, suggesting a comparatively late adoption of the chicken.

The chicken is thus likely to have been introduced into West-Central Africa by the earliest trans-Saharan caravans and the principal word for chicken is thus a loan-word from Arabic. This would have spread widely through Chadic and also into neighbouring Benue-Congo languages. The other, more restricted roots would have been local innovations in West Africa.

Other Poultry

Duck

The domestic duck in Borno and elsewhere in Nigeria is the Muscovy Duck, of South American origin (CLAYTON, 1984). It was probably introduced on the sea-coast by the Portuguese and spread inland. Nachtigal, usually a careful observer, says nothing about domestic ducks, so it is likely they had not reached Borno by the 1870s. Ducks are kept sporadically through northeast Nigeria, especially in riverine areas. Not all Moslems will eat duck, a prohibition usually explained by the habit of ducks of eating rubbish.

Table A11 collects together the names available for domestic duck. The analogy with wild duck species made by the Fulbe may also explain some of the other unusual names. The most common term is *àgwàagwá*, probably borrowed by the Hausa from Nupe *gbàngba*. BARTH (1862, II: 203) refers to the name Schön records for duck in Hausa meaning “Yoruba chicken” thus giving a strong pointer to its origin. The Kanuri name also means “Yoruba chicken”, suggesting that the Muscovy duck was brought by Yoruba traders in the post-colonial era. This has in turned been loaned into some languages of southern Borno simply as *yaraba*, minus a word for chicken. Curiously though, the Yoruba term, *pépéyé*, appears to be quite different. This suggests that the duck was first adopted from the Portuguese by the Yoruba. It was then brought to the North by the Nupe traders and spread by the Hausa or Fulbe.

Guinea-fowl

The helmeted guinea-fowl, *Numida meleagris*, is part of the native fauna of Africa, and the domestic forms are barely biologically distinct from

wild types. The wild guinea-fowl is still very common in Borno and, as a result, few farmers keep the domestic variety. There are no certain finds of domestic guinea-fowl in sub-Saharan sites, but guinea-fowl seem to have been imported into Europe from the 5th century B.C. onwards (MONGIN and PLOUZEAU, 1984) suggesting a yet earlier domestication. Poultry are poorly represented in the medieval sources, but Ibn Sa'īd mentions guinea-fowl in Jaja, i.e. Borno (LEWICKI, 1974: 91).

Table A12 gives the name for guinea-fowl in languages of northeast Nigeria. The most common root is #sVb~vVn which SKINNER (1977: 192-193) shows is spread throughout Chadic. Skinner argues from this that the word has spread recently, but this seems unlikely as the guinea-fowl is indigenous to the region. NEWMAN (1977) also notes this root and proposes #zaban for proto-Chadic. Strikingly, the forms in Cushitic are very similar. EHRET (1987: 54) suggests *zagr- for proto-Cushitic, but Agaw forms have -n- in the C₃ slot and centralised vowels in V₁ and V₂. This rather suggests an Afro-Asiatic root, although the particular species of guinea-fowl is not present throughout the area of Afroasiatic. This therefore suggests that either:

- a) the Chadic/Cushitic genetic relationship is closer than conventional models of Afroasiatic suggest;
- b) *or* the word was attached to another species of bird in North Africa and re-applied to the guinea-fowl by proto-Chadic speakers;
- c) *or* there was contact between speakers of the proto-languages.

At this point, none of these possibilities can be ruled out. However, the Shuwa Arabic name "bush-chicken" tends to suggest an encounter with an unfamiliar species, making possibility b) less likely.

Two other less common roots in Chadic, #kVdVn- and #dVkvVm-, appear to be local innovations. The Niger-Congo roots are too few to make a reliable hypothesis. The Saharan forms, *kaji*, etc. are more puzzling, since they are notably similar to the Chadic roots for "chicken" (see previous section). The Saharan form could have been borrowed into proto-Chadic with an attributor, such as "guinea-fowl of the house" and that this was soon lost, leaving the Saharan name for guinea-fowl as chicken in Chadic.

Pigeons

The antiquity of pigeon-keeping in West Africa is unclear, as the grey pigeon is part of the indigenous fauna of the region. Its domestication is discussed by ZEUNER (1963) and HAWES (1984) who argue that pigeon-keeping may have begun in Persia and spread to Egypt. Pigeons are rarer in the north-east than in other parts of northern Nigeria, but some are housed in purpose-built pigeon-cotes made of pottery or mud.

The semi-feral system of production and the mud columbaria resemble strongly those still used in Egypt. NACHTIGAL (1980, II: 193) mentions that pigeons were eaten only as squabs in Borno, before they are fully feathered. LE COEUR (1950: 96) says that the Daza do not raise pigeons although they are content to eat those produced by the Kanuri.

Names for pigeon-dove are given in table A13. Apart from the widespread Hausa *tàantabàṛaa*, borrowed from Twareg, there is a great variety of names, presumably reflecting the fact that the pigeon is part of the indigenous fauna. BYNON (1984: 253) quotes the Ghat name of the pigeon as *taturturt* and further connects this with the Latin *turtur*.

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. The Saharan forms are clearly related to Hausa *tàantabàṛaa*, although the recent weakening of *b*→*w* in Kanuri somewhat obscures this. The initial syllable *ta-* is replaced with the *k-* prefix, a common treatment of loan-words in Kanuri (HUTCHISON, 1981: 80). This however, does not immediately clarify the route by which the pigeon reached West Africa. BARTH (1862, II: 201) says, somewhat mysteriously, «This domestic pigeon has, beyond a doubt, been introduced into Negroland by the Sonyai». He gives no reason for this beyond the obvious resemblance between the Songhay and Hausa names for pigeon.

Others

Rabbits: they are almost unknown in northern Borno, but are increasingly common in the agricultural regions of the south. In most villages they had only been brought in, generally from local markets, since about 1985.

Ostriches: at one time ostriches were raised quite widely for their feathers and skin in northeast Nigeria. Early colonial livestock census forms invariably included a column for ostriches, but the practice of keeping them seems to have disappeared in the 1940s.

Turtles: river turtles are captured for food and are also kept as pets in water sources, where, apparently, their function is to keep the water clean. The placing of turtles in water-pots to eat mosquito larvae and clear other possible worm infestations is common in Borno.

Bees: the domestication of bees is not widespread in northeast Nigeria, but it is practised intensively in the Yobe valley. In some of the agricultural regions further south, bee-keeping has only recently disappeared, apparently as a result of lack of appropriate vegetation.

CONCLUSION

This preliminary study of the domestic animals of Northeastern Nigeria has shown a number of points that need to be taken into account in further work on the prehistory of the region. The most important is that of all the animals considered, only the guinea-fowl is indigenous to the region and has therefore a relatively "simple" history. All the other species arrived later than the speakers of the main language phyla in the region and therefore the development of domestic stock is part of the more elaborate culture history of the region.

Table 2 summarises the conclusions that can be drawn from the combination of linguistic and historical evidence about the introduction and spread of species of domestic animal in northeast Nigeria. These are shown on figure 3. The approximate dates should be treated as very speculative, as suggestions rather than as clearly identifiable in the archaeological record.

TABLE 2
Source regions, routes and approximate dates for domestic animals
in northeast Nigeria

Species	Source of African races	Route	Speculative date
Camel	Northeast Africa	trans-Sahara	2-700 A.D.
Pony	North Africa	trans-Sahara	~1500 B.C.
Horse	North Africa	trans-Sahara	1200 A.D.
Donkey	Nile Valley	? trans-Sahara	?
Cattle	Nile Valley	inter-Sahara	~5000 B.C.
Goat	North Africa	trans-Sahara	~7000 B.C.
Sheep	North Africa	trans-Sahara	~3000 B.C.
Dog	North Africa	multiple	~7000 B.C.
Cat	Indigenous	from further east	~500 A.D.
Chicken	India	trans-Sahara	~500 A.D.
Muscovy duck	South America	from sea-coast	1800 A.D.
Guinea-fowl	Indigenous	—	—
Pigeon	Indigenous	—	—

Three species of domestic livestock that are not indigenous to the region show convincing evidence of being part of the cultural repertoire of proto-Chadic speakers, cattle, goats and dogs. Two other native species, the guinea-fowl and the pigeon, were also known to them, and the method of keeping pigeons in mud columbaria may have been transmitted from North Africa.

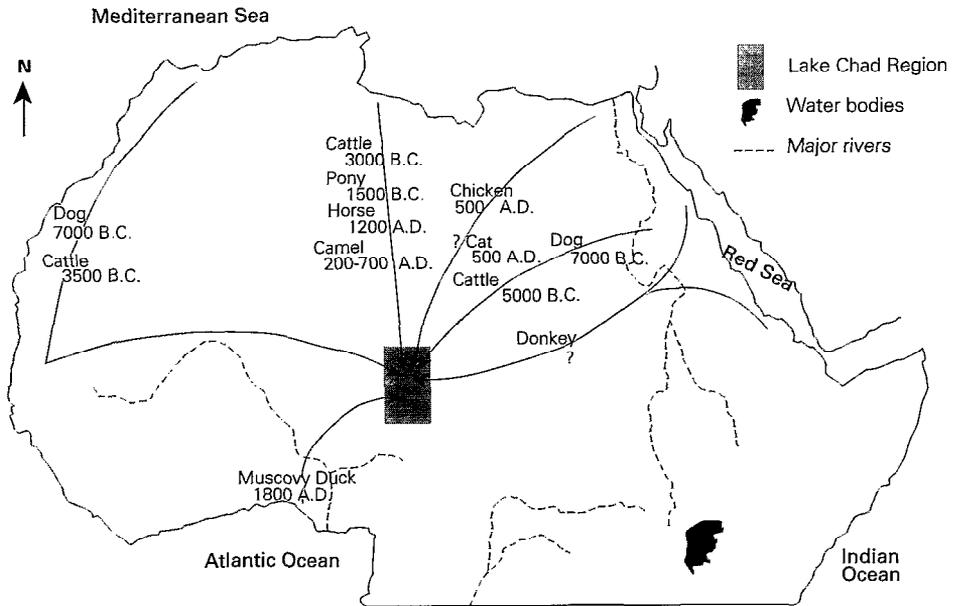


FIG. 3. — Schematic map of routes for domestic animals reaching the Lake Chad region with estimated dates (all dates are very speculative).

Without being explicit, it is usually assumed that the original migration of Chadic speakers was from north Africa across the Sahara. Certainly, the links with Berber seem to point in this direction (e.g. see FLEMING, 1983; BYNON, 1984). However, one of the more puzzling aspects of the linguistic evidence is the apparent connection with Cushitic speakers across the Sahel, the connection marked “inter-Saharan” in table 2. In the case of the donkey, cattle, goat, dog and guinea-fowl there appears to be evidence for direct contact between speakers. The problem is that Cushitic languages are today separated from Chadic languages by a large zone of Nilo-Saharan languages.

Recent work on the prehistory of Nubian and the languages of the Nile Valley by BECHHAUS-GERST (1984-1985) has made this more probable, historically. She shows that when Nobiin speakers reached the Nile Valley (by ca. 1,500 B.C.) they encountered speakers of Cushitic languages from whom they borrowed a large number of words, most strikingly those connected with livestock production (goat, sheep, hen, pig, dung, stock enclosure, milk, etc.). The Cushitic languages that are apparently the source of these loanwords are apparently those known today

as Highland East Cushitic (Haddiya, etc.). This model has recently found confirmation in archaeological work in the Nile Valley (HAALAND, p. c.).

This then makes contact between Cushitic languages and speakers of proto-Chadic more possible. If proto-Chadic speakers migrated from the Nile Valley southwest to Lake Chad, like the Shuwa Arabs, millennia later, they could have been in contact with Cushitic-speakers, perhaps as early as 5,000 B.P. They must already have had some small-stock culture, but probably picked up the donkey at the meeting.

A rather unexpected conclusion from the linguistic evidence is the minor roles played by two peoples apparently geographically central to the routes of transmission, the Teda-Daza and the Shuwa Arabs. In both cases, their names for domestic animals tend to be distinct and show limited connections outside their immediate area. This is initially paradoxical, as both are pastoral peoples who depend on domestic animals for their livelihood. However, the likely answer is that neither had a significant involvement in the long-distance trade. This contrasts with the Hausa and Kanuri, whose terms for animals are scattered across a wide area of the savannahs of West Africa, well beyond the geographical scope of this paper.

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APPENDIX:
LEXICAL DATA

Introduction to the appendix tables

These tables assemble data from a multitude of sources and I have not given the source of each citation except where authors disagree or give different words representing either dialectical or semantic variation.

The transcriptions vary from fully phonemic to "early orthographic" and it would be impossible to harmonise them completely. Nonetheless, I have not necessarily respected the original transcription in the quest to make the data more useable. For example, Lethem uses a circumflex ^ to note vowel length in Shuwa Arabic. Since in most languages this is taken as a falling tone I have transliterated his long vowels as doubled vowels as would be standard in Chadic. The prefatory note shows some of the transliteration conventions used here. I have occasionally cited plurals where these may clarify the understanding of links between lexical items.

I have cited my own data on the following languages:

Bəna of Dumne (=Yungur)	Huba (=Kilba)	Roba
Bahuli (=Fali of Bahuli)	Kamwe (Higi) of Bazza	S. Margi
Bura	Kyibaku (=Chibbuk)	Taghwa (=Zələdvə)
Dera	Lala	Ulan Mazhilvən (=Fali of Jilbu)
Gəna (=Mboi)	Longuda	Urambwiin (=Fali of Bagira)
Glavda	Madzarin (=Fali of Muchella)	Uroovin (=Fali of Vintim)
Gude Dərəbəs	Mandara	
Guduf	Ngwaba	
Holma	Njanyi	

Except in the case of Glavda, I have preferred my own transcriptions. In the case of Dera I have used my own data to supplement Newman (1974).

Sources for citations of names of livestock species

Phylum	Language with location name	Source(s) used
NIGER-CONGO		
Jarawan Bantu	Mbula	MEEK (1931)
West Atlantic	Fulfulde (Adamawa)	NOYE (1989)
Yungur cluster	bəna of Dumne (=Yungur)	RMB

	Roba	RMB
	Lala	RMB
	Gəna (=Mboi)	RMB
	Libo	MEEK (1931)
Longuda	Longuda	RMB, MEEK (1931)
NILO-SAHARAN		
Saharan	Kanuri	CYFFER and HUTCHISON (1990)
	Teda	Le COEUR (1950)
AFRO-ASIATIC		
Semitic	Arabic (Shuwa)	LETHEM (1920)
	Arabic (other)	Various secondary sources
Berber	Twareg	Secondary sources
	Kabyle	DALLET (1985)
Chadic		
West		
• Hausa	Hausa	ABRAHAM (1949), NEWMAN and NEWMAN (1977)
• Bole	Karekare	KRAFT (1981)
	Bole	KRAFT (1981)
	Ngamo	KRAFT (1981)
	Dera (=Kanakuru)	NEWMAN (1974), RMB
	Ngizim	SCHUH (1981)
Central		
• Tera	Tera	KRAFT (1981)
	Pidlindi (=Hinna)	KRAFT (1981)
	Ga'anda	NEWMAN (1978)
	Gabin	KRAFT (1981)
	Hwana	KRAFT (1981)
• Bura-Higi	Bura	KRAFT (1981), HOFFMANN (p.c.)
	Kyibaku (=Chibbuk)	RM
	Huba (=Kilba)	SCHUH, 1982 b
	Margi Babal of Lassa	RMB
	South Margi	RMB
• Mandara	Kamwe (Higi) of Bazza	RMB, KRAFT (1981)
	Mandara	KRAFT (1981)
	Glavda	RAPP, 1968, RMB
	Guduf	RMB
	Taghwa (=Zəladvə)	RMB
	Vizik, Woga	MEEK (1931)
	Mafa	BARRETEAU and Le BLEIS (1990)
• Bata	Sukur	RMB
	Bacama	KRAFT (1981)
	Bata of Zumu	MEEK (1931)
	Bata of Malabu	MEEK (1931)
	Gude (=Cheke of Mubi)	MEEK (1931)
	Gude Dərəbəs	RMB
	Uroovin (=Fali of Vintim)	RMB
	Bahuli (=Fali of Bahuli)	RMB
	Madzarin (=Fali of Muchella)	RMB

	Urambwiin (Fali of Bagira)	RMB
	Ulan Mazhilvən (Fali of Jilbu)	RMB
	Gudu	KRAFT (1981)
	Holma	MEEK (1931)
	Njanyi	RMB
Kotoko	Afaɗə	RMB, SKINNER (1977)
Yedina	Yedina	S.O. Alimata (ine), LUKAS (1939)

TABLE A1.
Names for Camel in N.E. Nigeria

Phylum Family/Branch	Language with location name	Term (plural affix follows in noun- class languages)	Base form or etymology if known
NIGER-CONGO			
West Atlantic	Fulfulde (Adamawa)	ngeelooba	
NILO-SAHARAN Saharan	Kanuri	kalí(gí)mo	<Berber
	Kanembu	kalímo	<Berber
	Teda-Daza	ae pl. aa	?
AFRO-ASIATIC Semitic Berber	Arabic (Shuwa)	jamal	
	Arabic (other)	al-gml	
	Kabyle	aly ^w em	
	Twareg	aləm	
Chadic			
West			
• Hausa	Hausa	ràakumii	<Berber
• Bole	Karekare	dlukumo	<Berber
	Bole	dlukumo	<Berber
		riimo (Schuh, 1982)	
	Dera (=Kanakuru)	dláŋók	<Berber
	Ngizim	dláŋámáú, dláŋkámáú	<Berber
Central			
• Tera	Ga'anda	ŋgèlùdáá	<Fulfulde
Bura-Higi	Kyibaku (=Chibbuk)	dlugwam	<Berber
	Huba (=Kilba)	dláŋwám	<Berber
	Margi Babal of Lassa	adlugwom	<Berber
	S. Margi	lægwam	<Berber
Mandara	Mandara	lugwama	<Berber
	Hitkala	dlæŋwaama	<Berber
	Glavda	ádlæŋóma	<Berber
	Guduf	lungwome	<Berber
	Taghwa (=Zələdvə)	tlugwama	<Berber
	Mafa	dlúgúmáy	<Berber
Bata	Uroovin (=Fali of Vimtim)	ngelooba	<Fulfulde
	Bahuli (=Fali of Bahuli)	ŋgelooba pl. ŋgelobiin	<Fulfulde
	Njanyi	ngelooba	<Fulfulde

TABLE A2.
Names for Horse and Pony in N.E. Nigeria

Phylum Family/Branch	Language with location name	Term (plural affix follows in noun- class languages)	Base form or etymology if known
NIGER-CONGO			
Jarawan Bantu	Mbula	pir	<Ar.
West Atlantic	Fulfulde (Adamawa)	puccu pl. pucci	
Yungur cluster	Roba	piro pl. pira	<Ar.
	Gəna (=Mboi)	piso pl. piza	<Ar.
	Libo	ipttra	<Ar.
Longuda	Longuda	gwanwa	?
NILO-SAHARAN			
Saharan	Kanuri	fār (H&C)(=horse) kádara (Barth) (=old nag)	<Ar. <Ar. (See Tourneux, 1987: 182)
	Kanembu	kústa (=colt) furu	<Ar.
	Teda	askı pl. aská alfadera (=mule)	?
AFRO-ASIATIC			
Semitic	Arabic (Shuwa)	jawaad ħi šaan	
	Arabic (Classical)	faras (=mare) faras	<Ar.
Berber	Kabyle	al-fadarii (=mule) lxil	<Ar.
	Twareg (Hoggar)	aeawdiw ays	?
Chadic West			
• Hausa	Hausa	dookii (=horse) fúurùu (=pony)	#tVgVn- < Kanuri 'donkey'
• Bole	Karekare	alfadarii dòku	<Ar. #tVgVn-
	Bole	dòofo	#tVgVn-
	Ngamo	dò	#tVgVn-
	Pero	tóojè	#tVgVn-
	Tangale	tuuje	#tVgVn-
	Dera (=Kanakuru)	dók pl. dóohjín	#tVgVn-
	Bade	dùwún	#tVgVn-
	Ngizim	diikwan (=mare) dùukà (=horse) kústâ (=colt or pony)	#tVgVn- #tVgVn- < Kanuri
Central			
• Tera	Tera	parsə dox (=stallion)	<Ar. #tVgVn-
	Pidlimdi (=Hinna)	pirfi	<Ar.
	Ga'anda	kware (=mare)	< Kanuri 'donkey'

			p'órs`	<Ar.
	Gabin		pirse	<Ar.
	Hwana		puřsè	<Ar.
• Bura-Higi	Bura		takù	#tVgVn-
	Kyibaku (=Chibbuk)		takù	#tVgVn-
	Huba (=Kilba)		tákú	#tVgVn-
	Nggwahyi		iakù	#tVgVn-
	Margi Putai		taku	#tVgVn-
	Margi Babal of Lassa		tagu	#tVgVn-
	Margi of Wamdiu		tagu	#tVgVn-
	S. Margi		tagu	#tVgVn-
	Kamwe (Higi) Nkafa		gìdùwi	? + #tVgVn-
	Kamwe (Higi) of Bazza		gudù	? + #tVgVn-
• Mandara	Mandara	bulsi yakay=horse		
		bulsa=pony		<Ar.
	Gamergu		bírša	<Ar.
	Dghwede		pílísà	<Ar.
	Gava		píliŋi	<Ar.
	Glavda	pólísha (Rapp)=horse		<Ar.
		elbedir (Tourneux)=pony		(<Ar. al-fadar 'mule')
	Guduf		pəlisc	<Ar.
	Taghwa (=Zəladvə)		pəl'ŋa	<Ar.
	Mafa		píléŋ=horse	<Ar.
• Bata	Sukur	dölöh=pony		#tVgVn-
		duk (=horse)		#tVgVn-
		makka (=pony)		?
	Bacama		duwey	#tVgVn-
	Bacama Mulyen		púró	<Ar.
	Bata (ex Tourneux)	dùwé gbàkè=horse		#tVgVn-
		dùwé=pony		#tVgVn-
	Gude		tùxwa	#tVgVn-
	Uroovin (=Fali of Vintim)		tuxun	#tVgVn-
	Bahuli (=Fali of Bahuli)		jihun	#tVgVn-
Madzarin (=Fali of Muchella)		gixun	#tVgVn-	
Urambwiin (Fali of Bagira)		jixun	#tVgVn-	
Ulan Mazhilvøn (Fali of Jilbu)	jixwi,jixun		#tVgVn-	
Gudu		dúhù	#tVgVn-	
Daba		pílís=horse	<Ar.	
		úddá=pony	?	
Holma		kalan	< Kanuri 'donkey'	
Njanyi		kəra, kara	< Kanuri 'donkey'	
Kotoko	Afadə	muskúáng (Tourneux)		?
		peli (Skinner)		<Ar.
	Gulfey	mpaŋ pl. mpare		?
	Ngala	buskóng (Tourneux)		?
		kara (RMB)		< Kanuri 'donkey'
Yedina	Yedina (=Buduma)	bokór (Tourneux)		?
		búkwòr (Alimata)		?

TABLE A3.
Names for Donkey in N.E. Nigeria

Phylum Family/Branch	Language with location name	Term (plural affix follows in noun- class languages)	Base form or etymology if known
NIGER-CONGO			
West Atlantic	Fulfulde (Adamawa)	wamnde	?
	Fulfulde (Gombe)	mbabba	?
NILO-SAHARAN			
Saharan	Kanuri		kóro
	Kanembu		kuró
	Teda-Daza	àgór (Tourneux) orm ^w e pl. arma (Le Coeur)	S. dialects N. dialects
AFRO-ASIATIC			
Semitic	Arabic (Shuwa)		ḥumaar
Berber	Kabyle		avyul
	Twareg		ejak
Chadic			
West			
• Hausa	Hausa	jàakfí pl. jaakunàa ágüfù (sand-coloured)	<Twareg < Teda-Daza
• Bole	Karekare		koro <Kanuri
	Bole		koro <Kanuri
	Ngamo		koró <Kanuri
	Pero		áurà <Hausa or Teda jàasi <Hausa lugu < Berber 'camel'
	Dera (=Kanakuru)		lá-`kwára <Kanuri
	Bade		koro <Kanuri
	Ngizim		kwáařá <Kanuri
Central			
• Tera	Pidlimdi (=Hinna)		koro <Kanuri
	Ga'anda		k'wáari'i <Kanuri
	Gabin		kwarì <Kanuri
	Hwana		kwara <Kanuri
• Bura-Higi	Bura		kwara <Kanuri
	Kyibaku (=Chibbuk)		kwara <Kanuri
	Huba (=Kilba)		kwára <Kanuri
			sàj #sVg-
	Nggwahyi		kwára <Kanuri
	Margi Babal of Lassa		kwara <Kanuri
	S. Margi		kwara <Kanuri
	Kamwe (Higi) of Nkafa		kwara <Kanuri
	Kamwe (Higi) of Bazza		kwara <Kanuri
• Mandara	Mandara		?əzùjwà #sVg-
	Gamergu		wúsungo #sVg-
	Dghwedé		zuŋgù #sVg-
	Gava		yyijwà #sVg-
	Glavda		?ayyujwà (Kraft) #sVg-
			azhyungwa (Rapp) #sVg-
	Guduf		lyijwa #sVg-

	Taghwa (=Zələdvə)	yuŋwa	#sVg-
	Hədkala	zuŋa	#sVg-
	Mafa	kiɖeh	?
	Sukur	zuŋwa	#sVg-
• Bata	Bacama	kwareyɔ̀ mbuɟey mbərsə (=male donkey)	? Kanuri + Arabic <Ar. faras 'horse'
	Gude (=Cheke of Mubi)	vāmda	<Fulfulde
		kwara	<Kanuri
	Uroovin (=Fali of Vintim)	kwara	<Kanuri
	Bahuli (=Fali of Bahuli)	kwara pl. kwariin	<Kanuri
	Madzarin (=Fali of Muchella)	vamde	<Fulfulde
	Urambwiin (Fali of Bagira)	kɔra	<Kanuri
	Ulan Mazhilvən (Fali of Jilbu)	vamde	<Fulfulde
	Gudu	kwára	<Kanuri
	Daba	njèŋw-njèŋw, ndeŋ-ndeŋ	Ideophonic?
	Njanyi	vamde	< Fulfulde
Kotoko	Afaɖə	gəro	<Kanuri
		boro	? <Ar. faras 'horse'
Yedina	Yedina	kúró	<Kanuri

TABLE A4.
Names for Cattle in N.E. Nigeria

Phylum Family/Branch	Language with location name	Term (plural affix follows in noun- class languages)	Base form or etymology if known
NIGER-CONGO			
Jarawan Bantu	Mbula	mda	?
West Atlantic	Fulfulde (Adamawa)	nagge pl. na'i	#na-
Yungur cluster	ɓəna of Dumne	na pl. nasa	#na-
	Roba	naa pl. naaá	#na-
	Lala	naa pl. naaa	#na-
	Gəna (=Mboi)	naa pl. naaza	#na-
	Libo	inɔwa	#na-
Longuda	Longuda	belɪŋwe	?
NILO-SAHARAN			
Saharan	Kanuri	fē daló (=bull)	
	Teda	för, fur dör (=bull)	
AFRO-ASIATIC			
Semitic	Arabic (Shuwa)	bagar ɬoor (=bull)	
Berber	Kabyle	tafunast arumul (=bull)	
	Twareg	eesu pl. eeswaan	
Chadic			
West			
• Hausa	Hausa	sāa pl. shaanuu	? See text

		bijimi (=bull)	
• Bole	Karekare	kwám	#kVm-
	Bole	pəmì	?
		bijimi	?
	Ngamo	kòm	#kVm-
	Dera (=Kanakuru)	blj̀t̀m̀i (=bull)	?
		l̀áá pl. l̀ááñj̀m̀	*tla
		mamila (=bull)	?
	Ngizim	t̀l̀à	*tla
Central			
• Tera	Tera	dla	*tla
	Pidlimdi (=Hinna)	̀òà	*tla
	Ga`anda	t̀l̀à	*tla
	Hwana	̀ɬ̀ara	*tla
		kwèl̀ (=bull)	#kVm-
• Bura-Higi	Bura	tla	*tla
	Kyibaku (=Chibbuk)	tla	*tla
	Huba (=Kilba)	t̀l̀à	*tla
	Margi Babal of Lassa	tla	*tla
	S. Margi	t̀l̀à	*tla
	Kamwe (Kamale)	tla	*tla
• Mandara	Mandara	dla	*tla
	Dghwedɛ	̀ɬ̀à	*tla
		deyelè (=bull)	#kVm-
	Gava	̀ɬ̀à	*tla
		kawà (=bull)	#kVm-
	Glavda	t̀l̀à	*tla
	Guduf	t̀l̀à	*tla
		dayale (=bull)	#kVm-
	Taghwa (=Zalədvə)	tla	*tla
	Həɟkala	tla	*tla
	Mafa	dlè	*tla
	Sukur	jir tle (=muturu)	? + *tla
		shehu (=zɛbu)	?
• Bata	Bacama	m̀b̀ùt̀ò	?
		awto (=bull)	?
	Gude Dəɾəbəs	la	*tla
	Uroovin (=Fali of Vimtim)	lan	*tla
	Bahuli (=Fali of Bahuli)	lan pl. liin	*tla
	Madzarin (=Fali of Muchella)	lan	*tla
	Uramɔwiin (Fali of Bagira)	lan	*tla
	Ulan Mazhilvən (Fali of Jilbu)	lan	*tla
	Gudu	l̀áksù	*tla
	Daba	̀òà	*tla
		m̀ə̀l̀ə̀v̀ (=bull)	?
	Holma	pilrkin	?
	Njanyi	nàkà	? loan from Niger-Congo
Yedina	Yedina	t̀ámú	? cf. root for sheep
		báree (=steer)	sheep
		k̀ur̀i (Kuri breed)	?
			? perh. named after people

TABLE A5.
Names for Goat in N.E. Nigeria

Phylum Family/Branch	Language with location name	Term (plural affix follows in noun- class languages)	Base form or etymology if known
NIGER-CONGO			
Jarawan Bantu	Mbula	bulpinda	#bu- + ?
West Atlantic	Fulfulde (Adamawa)	ⁿ beewa pl. be'i kajaawa (=mature she- goat)	#bu ?
Adamawa	ɓəna of Dumne	ɓere pl. aŋɓera	#bu
Yungur cluster	Roba	himbo pl. himba	? + #bu
	Lala	himbo pl. himza	? + #bu
	Gəna (=Mboi)	humb pl. humza	? + #bu
	Libo	iyu bu viriŋga	?
Longuda	Longuda	jejuwe	? perh. cf. Hausa
NILO-SAHARAN	Kanuri	dâl (=he-goat)	? cf. Kanuri 'bull'
		kanyî (=female)	?
Saharan	Teda	orko pl. arka nyei pl. nya (=he-goat)	? cf. Cushitic ?
		hanne	cf. Kanuri
AFRO-ASIATIC	Arabic (Shuwa)	mi'ize kaja	<Arabic <Fulfulde kaaja- wa
		teis (=he-goat)	
Berber	Kabyle	atroosh (=he-goat) beebee aḥuli (=he-goat)	
Chadic			
West			
• Hausa	Hausa	ākúyàa, àkwiyàa pl. àwàakii (=she-goat)	< Kanuri?
		bùunsuruu (=he-goat)	#bVkJr-
• Bole	Karekare	wòci	#Cos-
		bùgùrè (=he-goat)	#bVkJr-
	Bole	ɓariye	?
	Ngamo	?ɓfi	#Cos-
		bùzùrù (=he-goat)	<Hausa?
	Dera (=Kanakuru)	kwáarà pl. kwadín buhut pl. bukurin (=he-goat)	#kVn- #bVkJr-
	Bade	'oosi or akûn	#Cos- #kVn-
	Ngizim	mázàràn (=he-goat) áakù	? #kVn-
		gàbàábù, gàbùzùrù (he-goat)	<Hausa?
Central			
• Tera	Tera	guno	#kVn-

		bokəra (=he-goat)	#bVkJr-
	Ga'anda	yikwá (generic)	See Gabin
		maləm (=he-goat)	#mVgVIVm-
	Gabin	yükwətà	See Ga'anda
		mèlɪme (=he-goat)	#mVgVIVm-
	Hwana	?wàla	?
		wufiraa (=he-goat)	?
• Bura-Higi	Bura	kwi	#kJn-
		ncuwa (=he-goat)	?
	Kyibaku (=Chibbuk)	kwəy	#kJn-
		?abà (=he-goat)	#bVkJr-
	Huba (=Kilba)	kwí	#kJn-
		bùrá (=he-goat)	#bVkJr-
	Margi (s.l.)	ku	#kJn-
		mənci'u (=he-goat)	?
	Margi Babal of Lassa	ku	#kJn-
	S. Margi	ku	#kJn-
		abəra (=he-goat)	#bVkJr-
	Kamwe (Kamale)	kwe	#kJn-
		ʒùfa (=he-goat)	?
	Kamwe (Higi) of Bazza	kwô	#kJn-
		mɪŋgulum (=he-goat)	#mVgVIVm-
• Mandara	Mandara	nawe	?
		wùràlè (=he-goat)	?#wufile
	Dghwedɛ	ɣwè	#kJn-
		wùfile (=he-goat)	#wufile
	Gava	wəyà	#kJn-
		?usəlà (=he-goat)	#wufile
	Glavda	ágwà	#kJn-
		baabáagwà (=she-goat)	? + #kJn-
	Guduf	wəyà	#kJn-
		usale (=he-goat)	#wufile
	Taghwa (=Zəɫədvə)	ugwa	#kJn-
	Həɫkəla	ogo	#kJn-
		dɪŋal	?
	Mafa	bökɥ	#bVkJr-
	Sukur	ikʷ	#kJn-
• Bata	Bacama	bogəre (=he-goat)	#bVkJr-
	Bata of Zumu	hutu	?
	Gude Dəɾəbəs	xwa	#kJn-
	Uroovin (=Fali of Vimtim)	xwun	#kJn-
	Bahuli (=Fali of Bahuli)	hwun	#kJn-
	Madzarin (=Fali of Muchella)	xun	#kJn-
	Urambwiin (Fali of Bagira)	xun	#kJn-
	Ulan Mazhɪlvən (Fali of Jilbu)	xwi	#kJn-
	Gudu	hwöksu	#Cos-
		bwárə (=he-goat)	#bVkJr-
	Daba	ginəw	#kJn-
	Holma	hɔtsi	#Cos-
	Njanyi	ho'o	#Cos-
Kotoko	Afadə	mfu	?
		sebege (=he-goat)	? + #bVkJr-
Yedina	Yedina	kàani	#kJn-

TABLE A6.
Names for Sheep in N.E. Nigeria

Phylum Family/Branch	Language with location name	Term (plural affix follows in noun- class languages)	Base form or etymology if known
NIGER-CONGO			
West Atlantic Adamawa	Fulfulde (Adamawa)	m̄baala pl. baali	
Yungur cluster	β̄əna of Dumne	t̄əma pl. t̄əmasa	#tVm-
	Roba	t̄əmk̄a pl. t̄əmk̄aa	#tVm-
	Lala	t̄əma pl. t̄əmaa	#tVm-
	Ḡəna (=Mboi)	cim̄t̄ò pl. cim̄t̄èz̄á	#tVm-
Longuda	Longuda	s̄ɪŋlaw̄a	?
NILO-SAHARAN			
Saharan	Kanuri	d̄imi nḡólárò (=ram)	#tVm- cf. Chadic forms
	Teda-Daza	yuromo duma (two year old sheep)	? compare Zaghawa áru #tVm-
AFRO-ASIATIC			
Semitic	Arabic (Shuwa)	towar daa'in kabish (=ram) kharuuf (=ram)	? cf. Glavda form ?
Berber	Arabic (other) Berber (s.l.) Kabyle	ħml adaman ufrik ikerri	#tVm-
Chadic			
West			
• Hausa	Hausa	tuunkiȳaa pl. tumaakii raagoo (=ram)	#tVm- ? + #kVm- ? compare Kanuri nḡólárò
• Bole	Karekare	t̄ānci ḡəmu (=ram)	#tVm- #kVm-
	Bole	t̄ām̄fi ŋgam (=ram)	#tVm- #kVm-
	Ngamo	t̄ənc̄i ḡəm (=ram)	#tVm- #kVm-
	Dera (=Kanakuru)	t̄íŋá pl. t̄íŋḡán (=ewe) ḡám pl. ḡámín (=ram)	#tVm- #kVm-
	Bade	taaman, t̄əmakun gwaman	#tVm- #kVm-
	Ngizim	t̄əməakú ḡóom̄āk pl. ḡóom̄ámin	#tVm- #kVm-
Central			
• Tera	Tera	ndəβaŋ gam	? #kVm-

	Jera	ndomox	#tVm- + ?
	Ga'anda	còxrá	cf. Gabin, Hwana
	Gabin	ciwò hòrete	cf. Ga'anda, Hwana
	Hwana	cəwřàřaa	cf. Ga'anda, Gabin
		kàmdà (=ram)	#kVm-
• Bura-Higi	Bura	təma	#tVm-
	Kyibaku (=Chibbuk)	təma	#tVm-
	Huba (=Kilba)	kətən	?
	Margi (s.l.)	agam (=ram)	#kVm-
	Margi Babal of Lassa	əntəmaho	#tVm-
	S. Margi	təmaho	#tVm-
		gam (=ram)	#kVm-
	Kamwe (Kamale)	gaməy	#kVm-
	Kamwe (Higi) of Bazza	tīməw	#tVm-
		kūtaro	?
• Mandara	Mandara	kiyewe	?
	Dghwede	tuwiyə	#tVm-
		gambà (=ram)	#kVm-
	Gava	tùwàyə	#tVm-
	Glavda	túughwà	#tVm-
	Guduf	tuwaaye	#tVm-
		gama (=ram)	#kVm-
	Taghwa (=Zəladvə)	tuwaka	#tVm-
	Həđkala	tuwaka	#tVm-
		ŋgaama	#kVm-
	Mafa	təmbək	#tVm-
• Bata	Bacama	mbàgàto	? + #kVm- + ?
	Gude Dərəbəs	baga	? + #kVm-
	Uroovin (=Fali of Vintim)	bagan	? + #kVm-
	Bahuli (=Fali of Bahuli)	bagan	? + #kVm-
	Madzarin (=Fali of Muchella)	bagan	? + #kVm-
	Uramđwiin (Fali of Bagira)	bagan	? + #kVm-
	Ulan Mazhilvən (Fali of Jilbu)	bagan	? + #kVm-
	Jili	gamwu (=ram)	#kVm-
	Gudu	mbəksü	? + #kVm- + ?
		góombúu (=ram)	#kVm-
	Daba	tumuk	#tVm-
		ndəhəz (=ram)	?
	Njanyi	pekede	?

TABLE A7.
Names for Domestic Pig in N.E. Nigeria

Phylum Family/Branch	Language with location name	Term (plural affix follows in noun- class languages)	Base form or etymology if known
NIGER-CONGO			
Jarawan Bantu	Mbula	trmbırım	?
West Atlantic	Fulfulde (Adamawa)	alade	< Hausa
		hinñjiiru pl. hinñjiiji	< Ar.
Yungur cluster	θəna of Dumne	alade pl. iyo alade	< Ar.
	Roba	alaudi pl. alaudiya	< Ar.
	Gəna (=Mboi)	gilangaja	?
Longuda	Longuda	jirowa	?
NILO-SAHARAN			
Saharan	Kanuri	áládè	< Ar.
AFRO-ASIATIC			
Semitic	Arabic (Shuwa)	khanziir	
	Arabic (other)	ħinziir	
Chadic			
West			
• Hausa	Hausa	àaladè	< Ar.
• Bole	Ngamo	ndɔguzu	#dVgVl-
	Dera	alade	(<Hausa)
Central			
• Bura-Higi	Bura	gadu	cf. Hausa gaduuruu
	Huba (=Kilba)	dàglà	#dVgVl-
	Margi Babal of Lassa	fùfù	?
	S. Margi	dagula <i>or</i> gadu	#dVgVl- (<Hausa)
• Mandara	Mandara	nabɛe	?
	Glavda	gháavəsà	#dVgVl-
	Guduf	alede	(<Hausa)
	Taghwa (=Zəladvə)	yuvaza	#dVgVl-
• Bata	Gude Dərabəs	dagala	#dVgVl-
	Bahuli (=Fali of Bahuli)	dagalan	#dVgVl-
	Madzarin (=Fali of Muchella)	teru	?
	Uramɓwiin (Fali of Bagira)	dagolan	#dVgVl-
	Ulan Mazhilvən (Fali of Jilbu)	gərdəmi	#dVgVl-
	Holma	bellen	?
	Njanyi	dagla	#dVgVl-

TABLE A8.
Names for Dog in N.E. Nigeria

Phylum Family/Branch	Language with location name	Term (plural affix follows in noun- class languages)	Base form or etymology if known
NIGER-CONGO			
Jarawan Bantu	Mbula	rmvwa	Old NC root
West Atlantic	Fulfulde (Adamawa)	rawaandu pl. dawaadi	Old NC root
Yungur cluster	ḡəna of Dumne	bʷee pl. anbʷee	Old NC root
	Roba	pwee pl. empaa	Old NC root
	Lala	bwee pl. embaa	Old NC root
	Gəna (=Mboi)	abwā pl. bwàazá	Old NC root
	Libo	yibowa	Old NC root
Longuda	Longuda	joa	cf. Ngizim perh. orig. Teda
NILO-SAHARAN			
Saharan	Kanuri	kári	#kVr-
	Teda	kidii	#kVr-
		ju	#jV-
AFRO-ASIATIC			
Semitic	Arabic (Shuwa)	kalb	#kVr-
Berber	Kabylé	akelbun	#kVr-
		uççay	
Chadic			
West			
• Hausa	Hausa	kàree pl. kaarñukàa	#kVr-
• Bole	Karekare	ʔadà	#kVr-
	Bole	kuti (Kraft)	#kVr-
		adda (Skinner)	
	Ngamo	ada	#kVr-
	Maaka	ʔadà	#kVr-
	Dera (=Kanakuru)	yédé pl. yéfiyán	#kVr-
	Bade	jaan	#jV-
	Ngizim	jà	#jV-
		gáasà	?
Central			
• Tera	Tera	yiida	#kVr-
	Pidlimdi (=Hinna)	ʔida	#kVr-
	Ga'anda	yidè	#kVr-
	Hwana	wùdè	#kVr-
• Bura-Higi	Bura	kila	#kVr-
	Kyibaku (=Chibbuk)	kiya	#kVr-
	Huba (=Kilba)	həyà	#kVr-
	Margi (s.l.)	hya	#kVr-
	Margi Babal of Lassa	xiya	#kVr-
	S. Margi	hya	#kVr-
	Kamwe (Kamale)	kire	#kVr-
• Mandara	Mandara	kre	#kVr-
	Gava	yùdà	#kVr-
	Dghwede	yudi	#kVr-
	Glavda	ghógya pl. ghógyàxa	? Ideophonic

	Guduf	ayɔda	#kVr-
	Taghwa (=Zələdvə)	kira	#kVr-
	Həɖkala	kəre	#kVr-
	Vizik, Woga	kire	#kVr-
	Mafa	kəda	#kVr-
	Sukur	kəra	#kVr-
• Bata	Bacama	sakey	? + #kVr-
	Bata	kəde	#kVr-
	Gude Dərəbəs	ada	#kVr-
	Uroovin (=Fali of Vintim)	xədan	#kVr-
	Bahuli (=Fali of Bahuli)	xədan pl. xədiin	#kVr-
	Madzarin (=Fali of Muchella)	xūda	#kVr-
	Uramḡwiin (Fali of Bagira)	xudən	#kVr-
	Ulan Mazhylvən (Fali of Jilbu)	xudən	#kVr-
	Gudu	húdà	#kVr-
	Daba	xìzà	#kVr-
	Holma	yanba	Innovated with Njanyi
	Njanyi	yamumba	Innovated with Holma
Kotoko	Afaɖə	kle	#kVr-
Yedina	Yedina	kákí	#kVr-

TABLE A9.
Names for Cat in N.E. Nigeria

Phylum Family/Branch	Language with location name	Term (plural affix follows in noun- class languages)	Base form or etymology if known
NIGER-CONGO			
West Atlantic Yungur cluster	Fulfulde (Adamawa) ḡəna of Dumne	faatuuru pl. paatuuji kuta pl. kutaasa	<Kanuri <Arabic
	Roba	kuta pl. kuta	<Arabic
	Lala	kuta pl. kuta	<Arabic
	Gəna (=Mboi)	deŋyo pl. deemza	?
NILO-SAHARAN			
Saharan	Kanuri	ngamfatú	
	Kanembu		
	Teda	ngam	
	Daza	bàttú	
AFRO-ASIATIC			
Semitic	Arabic (Shuwa)	biss giṭṭ	Ideophonic? ? but cognate w. English ?
Berber	Arabic (other)	quttah	
Chadic	Kabyle	muc	
West			
• Hausa	Hausa	mussà, mùzuuruu kyânwa	Ideophonic? ?
• Bole	Bole	ḡənwà	cf. Hausa

	Ngamo	pātu	<Kanuri
	Dera (=Kanakuru)	ngádlà	?
	Bade	patu, patukule	<Kanuri
	Ngizim	ɲgeeyamən	<Kanuri
		gáyim	<Kanuri
		pàatú	<Kanuri
Central			
• Tera	Pidlimdi (=Hinna)	pātu	<Kanuri
	Ga'anda	fatu(ru)	<Kanuri
		ɲgǎhlá	cf. Dera
	Gabin	fātu	<Kanuri
	Hwana	ʔámɲwara	?
• Bura-Higi			
	Bura	yauwi	? Ideophonic
	Kyibaku (=Chibbuk)	partu	<Kanuri
	Huba (=Kilba)	pátǎrú	<Kanuri
	Margi Babal of Lassa	patu	<Kanuri
	S. Margi	pātu	<Kanuri
	Kamwe (Higi) of Bazza	pātu	<Kanuri
• Mandara	Mandara	partu	<Kanuri
	Glavda	patuma (RMB)	<Kanuri
	Gava	pátuma	<Kanuri
		kətǎləmbayà	<Arabic
	Guduf	uvoledé	?
	Dghwede	pátuwè	<Kanuri
	Taghwa (=Zǎlədvǎ)	partuma	<Kanuri
	Mafa	pátuw	<Kanuri
	Sukur	patu	<Kanuri
• Bata	Bacama	koletǎ	cf. Gava
	Bacama Mulyen	sùkǎrúwǎ	?
	Gude Dǎrǎbǎs	gudera	?
	Uroovin (=Fali of Vintim)	guldǎrǎn	?
	Bahuli (=Fali of Bahuli)	bwekǎn pl. bwekǎnyin	?
	Gudu	ǎwátǎa	?
	Daba	mǎbǎva	?
	Njanya	ʔwanya deke'	leopard of chicken'
Yedina	Yedina	hattu	<Kanuri

TABLE A10.
Names for Chicken in N.E. Nigeria

Phylum Family/Branch	Language with location name	Term (plural affix follows in noun- class languages)	Base form or etymology if known
NIGER-CONGO			
Jarawan Bantu	Mbula	mgukulek	? cf. Dera
West Atlantic	Fulfulde (Adamawa)	gertogal pl. gertoode	
Yungur cluster	ḡəna of Dumne	go	?
	Roba	yaa-ø (-a)	#yab- w. deletion of C ₂
	Lala	yaa-ø (-za)	#yab- w. deletion of C ₂
	Gəna (=Mboi)	gwoo	cf. ḡəna
	Libo	iyua	#yab- w. dele- tion of C ₂
Longuda	Longuda	suyawa	? + #yab-
NILO-SAHARAN			
Saharan	Kanuri	gudowúm (=cock) kuwí (=hen)	
	Teda-Daza	kogaya	
AFRO-ASIATIC			
Semitic	Arabic (Shuwa)	jidaad	
	Arabic (other)	dajaaj (=general) diik (=cock)	
Berber	Kabyle	tayaziṭ	
Chadic			
West			
• Hausa	Hausa	kàazaa	<Saharan 'gui- nea-fowl'?
• Bole	Karekare	kezi	#kVz-
		gəjà (=cock)	#gVj-
	Bole	yàwi (=hen)	#yab-
		gaajà (=cock)	#gVj-
	Ngamo	yabi	#yab-
		gàjà (=cock)	#gVj-
	Pero	póojè	?
	Dera (=Kanakuru)	yáabè pl. yáapiyén	#yab-
		kolək (=cock)	?
	Bade	kaazədaakon	#kVz- + ?
	Ngizim	gāazá pl. gāazàdín	#gVj-
		gàskám (=cock)	?
Central			
• Tera	Tera	kuza (=hen) gacac (=cock)	#kVz- #gVj-
	Pidlimdi (=Hinna)	kujà	#kVz-
	Ga'anda	cemsà	? #kVz-
	Gabin	címse	? #kVz-
	Boka	dèkta	<Arabic diik?
	Hwana	dīyara	<Arabic diik?

• Bura-Higi	Bura	mtəka, təka ^Y	<Arabic diik?	
	Kyibaku (=Chibbuk)	ntika	<Arabic diik?	
	Ngwahyi	ntika	<Arabic diik?	
	Huba (=Kilba)	tfgà	<Arabic diik?	
		vəgə̀m (=cock)	?	
	Margi Putai	mt̀kà	<Arabic diik?	
	Margi Babal of Lassa	ambugoxo	?	
	Margi Hildi	tika	<Arabic diik?	
	Margi Wamdiu	tukà	<Arabic diik?	
	S. Margi	tika	<Arabic diik?	
	Kamwe (Fali of Kiria)	kəŋkà	reduction of Bazza form?	
	Kamwe (Higi) of Kamale	kaŋkà	reduction of Bazza form?	
	Kamwe (Higi) of Bazza	kwànt̀kwa, wànt̀xa	? + Arabic diik?	
	• Mandara	Mandara	ukula	#kVI-
		Dghwedə	guskè	#kVcVk-
		ɣatukulu	#kata + #kVI-	
Gava		wocikà	#kVcVk-	
		ɣət̀k̀wula (=cock)	#kata + #kVI-	
Glavda		ɣwàcɪka (Kraft) <i>or</i> zərá ghw`cka (Rapp) <i>or</i> wacka (RMB)	#kVcVk-	
Guduf		uwacike	#kata + #kVI-	
		ayatakule (=cock)	#kVcVk-	
		dayade (=hen)	?	
Cineni		wàcika	#kVcVk-	
Gəvoko		icoko	#kVcVk-	
Hədfkala		xtakwa (=hen)	? + Arabic diik?	
		vazaka (=cock)	? + ? #kVz- w. metathesis	
Laamang		ɣatakwal	#kata + #kVI-	
Taghwa (=Zə̀lə̀dvə)		takwala	#kata + #kVI-	
Vizik, Woga	xata kwal	#kata + #kVI-		
Mafa	watsak	? + Arabic diik?		
Sukur	takur	#kata + #kVI-		
	izhak ^w (=cock)	? #kVz- w. metathesis		
• Bata	Bacama	dʔykto	<Arabic diik?	
	Bacama Mulyen	dʔə́k̀d̀	<Arabic diik?	
	Bata of Zumu	diək	<Arabic diik?	
	Bata of Malabu	deikəi	<Arabic diik?	
	Gude Dərəbəs	gyagyà	Ideophonic?	
	Uroovin (=Fali of Vintim)	iikn	<Arabic diik?	
	Bahuli (=Fali of Bahuli)	iikn pl. iiknyin	<Arabic diik?	
	Madzarin (=Fali of Muchella)	buja'in	?	
	Urambwiin (Fali of Bagira)	yiikun	<Arabic diik?	
	Ulan Mazhilvən (Fali of Jilbu)	yiiki	<Arabic diik?	
	Jili	kwukwùla (Kraft)	#kVI- with redup.?	
	Gudu	dʔyù	<Arabic diik?	
	Daba	gə̀mdak	? + diik?	
	Holma	dəkin	<Arabic diik?	

Kotoko	Njanyi	ɗeke	<Arabic diik?
Yedina	Afaɗə	kusku	#kVcVɓk-
	Yedina	kɔgwí	< Kanuri

TABLE A11.
Names for Duck in N.E. Nigeria

Phylum Family/Branch	Language with location name	Term (plural affix follows in noun- class languages)	Base form or etymology if known
NIGER-CONGO			
West Atlantic	Fulfulde (Adamawa)	caygal wuro	'duck of house'
NILO-SAHARAN			
Saharan	Kanuri	kuwí yárawábe	'chicken of Yoruba'
	Teda	—	only words for wild duck spp.
AFRO-ASIATIC			
Chadic			
West			
• Hausa	Hausa	àgwàagwa kàazar Yaràbaa	<Nupe ? 'chicken of Yoruba'
• Bole	Ngizim Dera	ndàkám agwagwa	? (<Hausa)
Central			
• Bura-Higi	Bura Ihuba (=Kilba) Margi Babal of Lassa S. Margi	handa àgwágú ahada tìka Maka	? <Hausa ? 'chicken of Mecca'
• Mandara	Mandara Glawda Guduf Taghwa (=Zə̀lədvə) Sukur	yaraba yaraba (RMB) wacewace gwagwa yeda	<Kanuri <Kanuri ?ideophonic <Hausa ?
• Bata	Gude Də̀rə̀bəs Uroovin (=Fali of Vintim) Bahuli (=Fali of Bahuli) Madzarín (=Fali of Muchella) Urambwiin (Fali of Bagira) Ulan Mazhilvən (Fali of Jilbu) Njanyi	agwagwa akuuku agwagwa agwagwa maxada'an mbokum mboki agwagwa	<Hausa Ideophonic? <Hausa <Hausa ? Ideophonic? <Hausa

TABLE A12.
Names for Guinea-fowl in N.E. Nigeria

Phylum Family/Branch	Language with location name	Term (plural affix follows in noun- class languages)	Base form or etymology if known
NIGER-CONGO			
West Atlantic	Fulfulde (Adamawa)	jaawngal <i>pl.</i> jaawle	?
Yungur cluster	Roba	tuwa <i>pl.</i> tuwaa	?
	Lala	tuwa <i>pl.</i> tuwaa	?
NILO-SAHARAN			
Saharan	Kanuri		káji
	Teda		kay gule
			Barth gives a form identical to Kanuri.
AFRO-ASIATIC			
Semitic	Arabic (Shuwa)	jidaad al khala	'chicken of bush'
Chadic	Arabic (other)	kajjiye	<Kanuri
West			
• Hausa	Hausa	zàaboo <i>pl.</i> zàabii	#sVb~vVn
• Bole	Karekare	dákù mò	#dVkVm-
	Bole	ḍù mò	#dVkVm-
	Ngamo	d kumò	#dVkVm-
	Dera (=Kanakuru)	dúuṅò, dújwò	#dVkVm-
	Bade	saavanyin	#sVb~vVn
	Ngizim	záabàni	#sVb~vVn
	Tangale	kwatirè	?
Central			
• Tera	Tera	civan	#sVb~vVn
	Pidlimdi (=Hinna)	sivàndi	#sVb~vVn
	Ga`anda	safana	#sVb~vVn
	Gabin	sèfène	#sVb~vVn
	Boka	sèfànda	#sVb~vVn
	Hwana	sèfàna	#sVb~vVn
• Bura-Higi	Bura	tsəvər	#sVb~vVn
	Kyibaku (=Chibbuk)	dzəvər	#sVb~vVn
	Nggwahyi	zivira	#sVb~vVn
	Huba (=Kilba)	tsəvər	#sVb~vVn
	Margi Babal of Lassa	tsəvər	#sVb~vVn
	Margi Wamdiu	tsivüf	#sVb~vVn
	S. Margi	tsəvər	#sVb~vVn
	Kamwe (Nkafa)	zürune	#sVb~vVn
• Mandara	Mandara	zabre	#sVb~vVn
	Glavda	zhábàra	#sVb~vVn
	Gava	zaburà	#sVb~vVn
	Guduf	zaura	#sVb~vVn
	Dghwede	zàvǝra	#sVb~vVn
	Həḍkala	zəvanaaka	#sVb~vVn
	Taghwa (=Zəladvə)	zhabra	#sVb~vVn
	Mafa	zápán	#sVb~vVn

• Bata	Sukur	zabul	#sVb~vVn
	Bacama	kwádǎŋto	#kVdVn-
	Bacama Mulyen	kwádǎŋú	#kVdVn-
	Gude Də̀rə̀bəs	zovuna	#sVb~vVn
	Uroovin (=Fali of Vintim)	zavunan	#sVb~vVn
	Bahuli (=Fali of Bahuli)	zavunan	#sVb~vVn
	Madzarín (=Fali of Muchella)	zavunən	#sVb~vVn
	Uramδwiin (Fali of Bagira)	zavunun	#sVb~vVn
	Ulan Mazhilvən (Fali of Jilbu)	zàvùnî	#sVb~vVn
	Gudu	zúvʌn	#sVb~vVn
	Daba	zàvun	#sVb~vVn
Njanyi	kwádǎŋe	#kVdVn-	

Table A13.
Names for Pigeon in N.E. Nigeria

Phylum Family/Branch	Language with location name	Term (plural affix follows in noun- class languages)	Base form or etymology if known
NIGER-CONGO			
West Atlantic Yungur cluster	Fulfulde (Adamawa)	fondu pl. pooli	
	Roba	muktu pl. mukta	
	Lala	muktu pl. mukuza	
NILO-SAHARAN			
Saharan	Kanuri	kátáwar (C & H) katábora (Barth)	< Twareg
	Teda-Daza	kátabar (Barth) ebero (Le Coeur)	< Twareg ? eroded form of katabar
AFRO-ASIATIC			
Semitic	Arabic (Shuwa)	hamaam	<Arabic
		teire masr	'bird of Egypt'
Berber	Kabyle Twareg	tamilla	
		tedə̀birt	
Chadic West	Hausa Dera (=Kanakuru)	tàantabà̀raa	< Twareg
		múukù pl. múukh̄yán	Dove (cf. ßə̀na 'pigeon')
	Ngizim	bà̀rì	? < Kanuri
Central	• Bura-Higi	Huba (=Kilba)	mbâaví ?
		Margi Babal of Lassa	ambudla masar mbə̀dla masar
• Mandara	Mandara Glavda Guduf Taghwa (=Zə̀ləd̀və̀) Mafa	takala masar	'cock of Egypt'
		kakura	?
		kakure	?
		bobwa	?
		kúúghwàm	?
• Bata	Njanyi	tatabara	< Hausa