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Faunal Remains Reported from the Excavated Harappans Site of the Region of Haryana (India): Zooarchaeological Perspective

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Abstract: This study synthesizes zooarchaeological evidence from excavated Harappan sites in the Ghaggar-Saraswati basin of Haryana. It compiles data on animal remains recovered from sites such as Kunal, Bhirrana, Balu, Banawali, Madina, Farmana, Rakhigarhi, and others, drawn from excavation reports with scientific analyses. Faunal assemblages indicate extensive animal husbandry (domestic cattle, buffalo, sheep, goats, pigs, dogs) supplemented by sporadic hunting of wild species (deer, antelope, wild pig, etc.). The frequent occurrence of animal figurines and motifs reflect the cultural and religious significance of fauna. These findings demonstrate sophisticated livestock strategies adapted to the local environment and monsoonal climate. Overall, the Harappan communities of Haryana appear ecologically perceptive and economically advanced. The ecological and cultural data from these sites thus provide critical insights into the Eastern domain of the Harappan civilization.

Keywords: *Faunal remains, Harappan Civilization, Haryana archaeology, Pastoral economy, Zooarchaeology*.

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Introduction

From the dawn of civilization, animals have sustained human societies in multiple ways providing food resources such as meat, milk, and eggs, raw materials like hides and wool, and essential labour in agriculture and transport. Beyond these utilitarian roles, they contributed to social and cultural life as companions, protectors, and symbolic figures. Even their by-products, particularly dung, were recycled as fuel, fertilizer, and construction material. The archaeological record captures these varied relationships, offering direct and indirect evidence that allows modern researchers to reconstruct palaeodiets, subsistence strategies, trade and exchange systems, settlement organization, and ritual practices involving animals. Zooarchaeology, the discipline that studies animal remains from archaeological contexts, initially focused on diet and palaeoeconomy (Reitz & Wing, 2008; Isaac, 1971; Dennell, 1979; Binford, 1985; Hublin & Richards, 2009). Over time, the scope expanded

as scholars recognized the limitations of purely economic interpretations, moving toward a broader reconstruction of human–animal interactions in the past (Russel, 2012).

Within Harappan archaeology, faunal studies have been central to reconstructing subsistence and ecological strategies, from the first analyses at Mohenjo-daro and Harappa in the 1930s to recent multidisciplinary reviews. The discovery of the civilization in the 1920s was a landmark in South Asian archaeology, bridging the Stone Age with the Early Iron Age.

Spanning the 3rd–2nd millennium BCE, the Harappan cultural sphere extended over more than 1.5 million km², from the Afghan highlands in the northwest to the Yamuna plains in the east, and from the Beas valley to the Deccan plateau. Following Partition in 1947, when most major sites fell within Pakistan, Indian archaeologists defined the culture's extent within Indian territory, eventually reporting over a thousand sites nearly double the number in Pakistan.

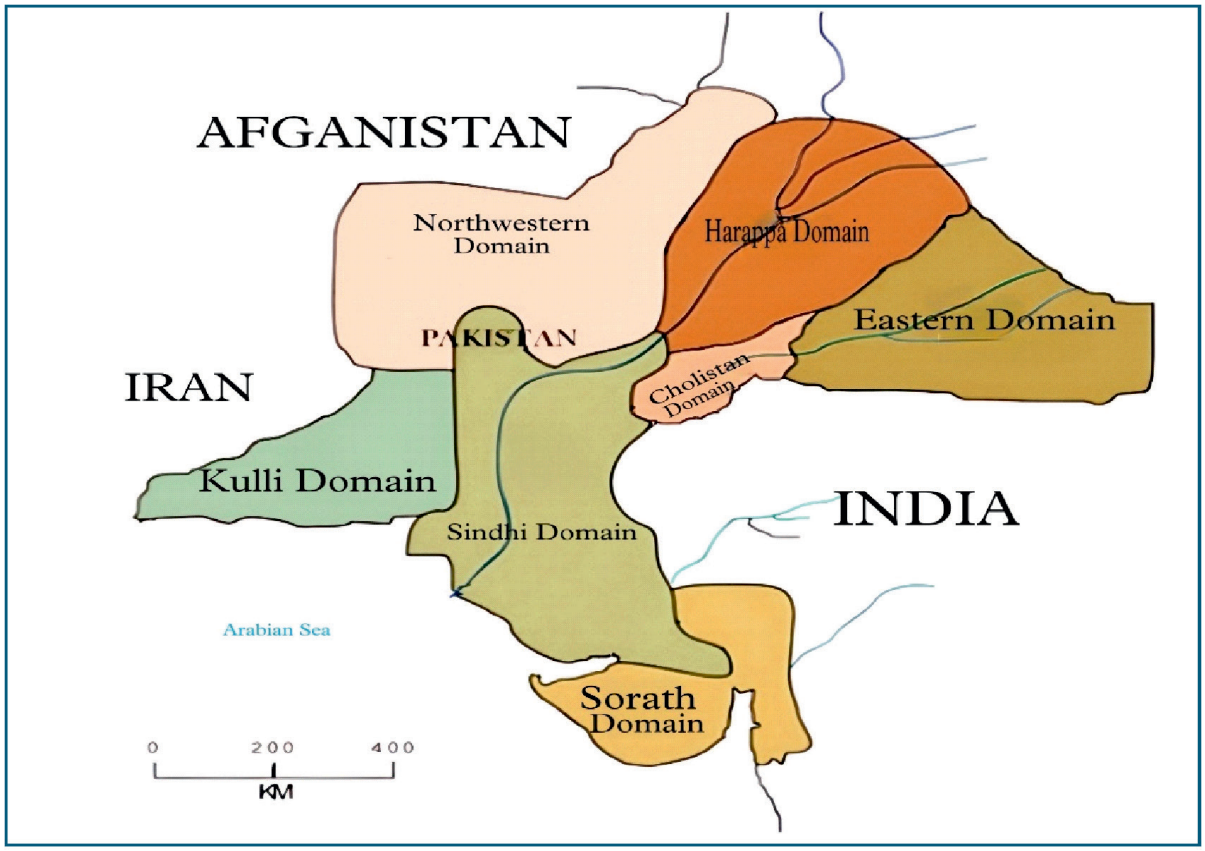


Fig. 1: Domains of Harappan Civilization (Courtesy Possehl 2002)

Possehl (Possehl, 1997, p. 438) divided the civilization's realm into seven provinces or domains based on characteristic regional differences, primarily variable ceramic traditions in its material culture. The most common version associates these regions with five of the largest Harappan settlements. These domains are: Northwestern Domain, Kulli Domain, Sindhi Domain (Mohenjo-daro), Harappa Domain (Harappa), Cholistan Domain (Ganweriwala), Sorath Domain (Dholavira), and Eastern Domain (Rakhigarhi). Among these, a close examination of the distribution pattern of Harappan sites in India reveals that Haryana, corresponding to the Ghaggar plains and often identified with the Saraswati River, falls within the Eastern Domain and has the highest number of Harappan sites, including both large urban centres and smaller rural settlements numbering above one thousand.

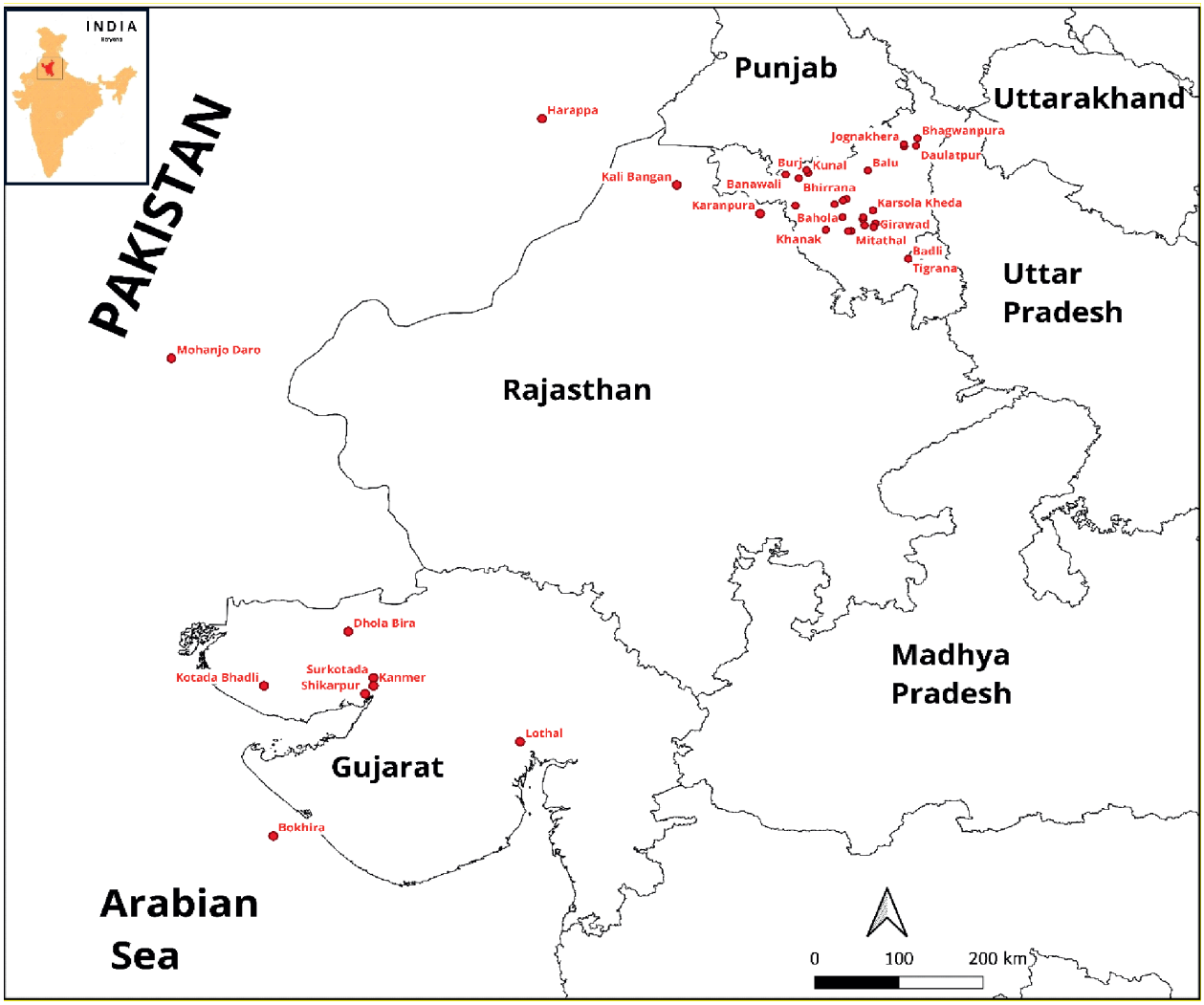


Fig. 2: Excavated Harappans site of the region of Haryana

Haryana, while widely recognized today for its agrarian economy, also sustains a remarkable faunal diversity that stretches back to the time of the Harappan Civilization but archaeozoological record from Harappan sites in Haryana was scanty, limiting our knowledge of how Indus populations in this area subsisted and interacted with their environment (Joglekar et al., 2013).

Until roughly a decade ago, almost no faunal reports were available from Haryana, apart from a few isolated identifications from older excavations. In recent years, this situation has improved, numerous sites such as Bhirrana, Kunal, Farmana, Girawad, Mitathal, Rakhigarhi, Masudpur (I and VII), Karsola, Lohat, Bahola, and others have been excavated, and their animal remains have been studied, at least preliminarily, by archaeozoologists (Joglekar et al., 2013). These investigations have begun to illuminate the nature of human–animal interactions in the Haryana plains during the Pre-Harappan, Early, Mature, and Late Harappan phases. Notably, the Harappan communities in this region utilized a range of domestic mammals, including cattle, water buffalo, sheep, goat, and pig, while also exploiting wild fauna and other resources such as birds, fish, and molluscs (Joglekar et al., 2013).

Despite the rich archaeological potential of this region, systematic zooarchaeological investigations remain remarkably limited. The available evidence related to faunal exploitation is scattered and has

largely been examined on a site-specific basis, preventing the development of a holistic understanding of human–animal relationships in the Harappan context. To date, approximately twenty-four sites in Haryana have been excavated; however, detailed faunal analyses have been conducted at only seven to eight of these locations. Consequently, the broader picture of subsistence strategies, resource utilization, and the cultural significance of fauna remains are incomplete.

Aim and Objective of the Research

The present research seeks to synthesize faunal evidence from excavated Harappan sites in Haryana in order to develop a comprehensive zooarchaeological perspective on the role of animals within the Eastern Domain. By consolidating scattered site-wise data, the study addresses existing gaps and provides a regional framework for understanding subsistence, economy, and cultural practices.

Objectives

(i) To identify and classify the faunal species represented across different Harappan sites in Haryana, spanning the Pre-Harappan, Early, Mature, and Late Harappan phases.

(ii) To distinguish between domestic and wild species in order to reconstruct patterns of animal husbandry, hunting, fishing, and exploitation of natural resources.

(iii) To analyse the cultural and ritual importance of animals as reflected in symbolic representations, figurines, and associated deposits.

(iv) To integrate site-wise findings into a cumulative framework, thereby establishing regional trends and variations in human–animal interactions across Haryana.

Zooarchaeological Perspectives on Harappan Subsistence

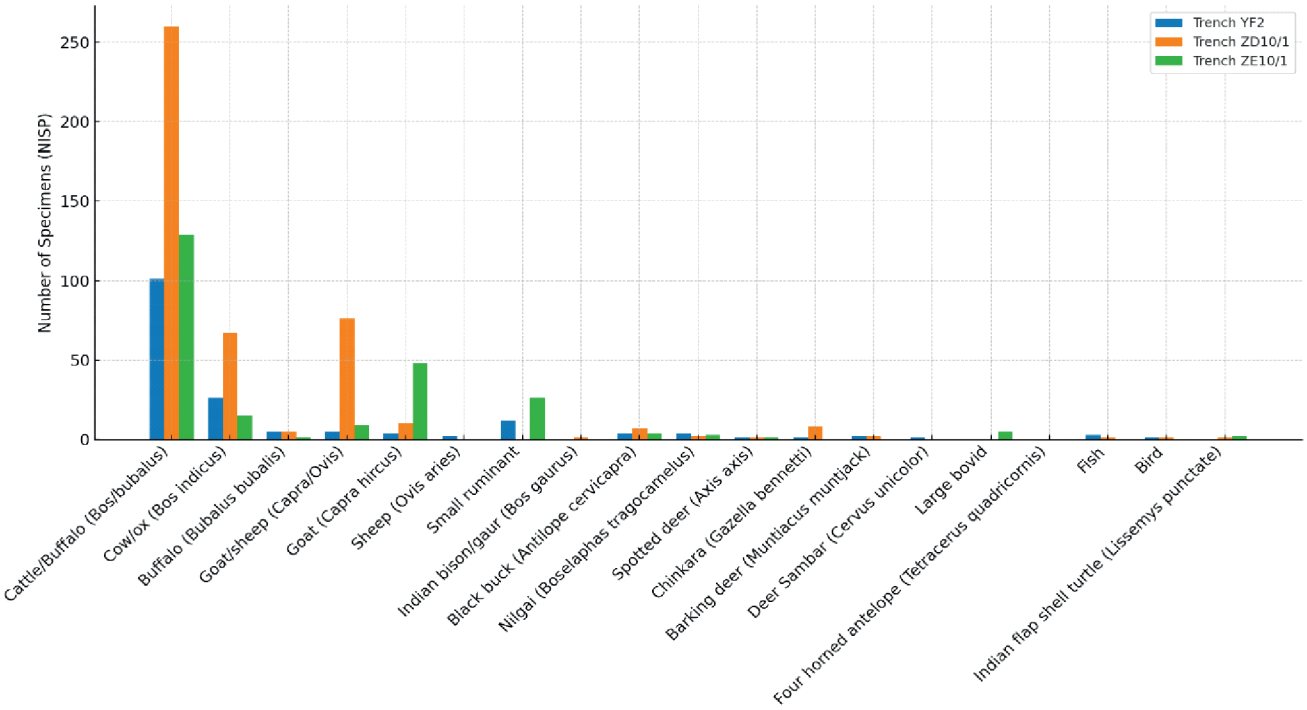
The development of the Indus Valley civilization was fostered by an active monsoon system, favourable climate, technological innovations, as well as long-distance trade and agriculture (Madella & Fuller, 2006; Misra, 1984; Possehl, 2002; Sarkar et al., 2016; Singh, 1971; Wright, 2010). An important part of its rich cultural growth was the animal husbandry practices adopted by the Harappans. These are evident from the large quantities of mammalian skeletal remains recovered from Indus Valley civilization sites, particularly of domestic cattle (*Bos indicus),* buffalo (*Bubalus bubalis),* goats and sheep *(Capra hircus/Ovis aries),* along with those of wild sambar deer (Channarayapatna, 2018; Chattopadhyay, 2002; Deshpande-Mukherjee, 2010; Goyal, 2011; Joglekar et al., 2013a; Meadow, 1991; Patel, 1997; Thomas, 2002; Thomas & Joglekar, 1994; Thomas et al., 1997). Material culture from the Harappan period such as painted pottery, terracotta objects, metal and bone items, ivory figurines, and engraved seals—offers valuable insights not only into faunal usage but also into the broader social and economic structures of the time.

The identification of domestic catle in the earliest phase suggests that the predecessors of the Harappan people at Bhirrana were already using cattle prior to the establishment of the Harappan cultural periods at the settlement. Similar early levels of the Indus Valley civilization have also been revealed at other excavated Harappan sites such as at the sites of Kalibangan, Kunal, Rakhigarhi, and Girawad in Haryana region (Dikshit and Mani, 2012).

Bhirrana (Fatehabad District)

The faunal sequence at Bhirrana (Rao, 2005) illustrates the gradual transformation from a broad-spectrum subsistence economy in the Hakra phase to specialized pastoralism in the Mature Harappan period.

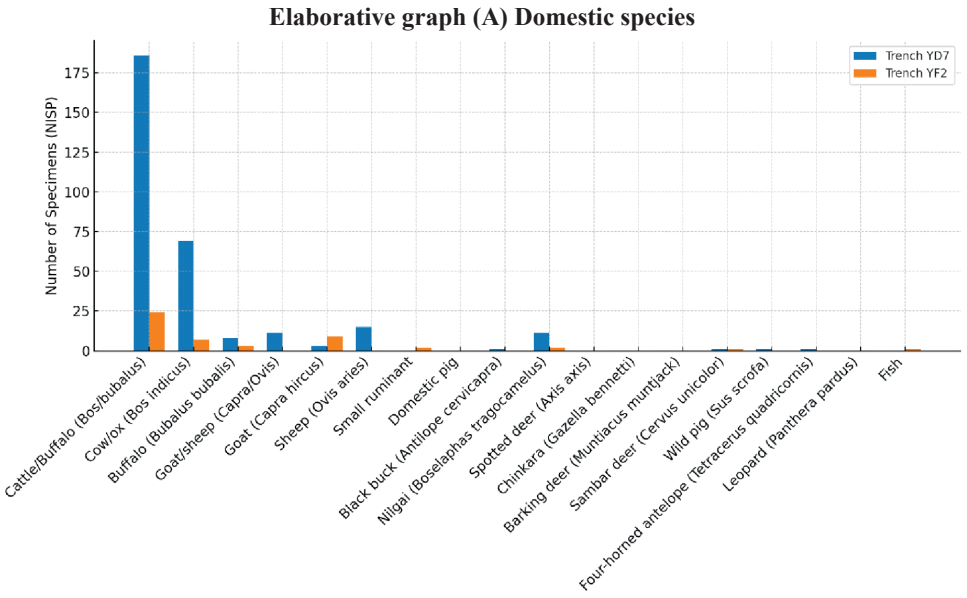
Hakra Ware Period (IA): The assemblage shows a mixed subsistence base. Domestic bovids Bos indicus and Bubalus bubalis were important, but wild animals remained significant, including blackbuck (Antilope cervicapra), nilgai (Boselaphus tragocamelus), chinkara (Gazella bennetti), spotted deer (Axis axis), barking deer (Muntiacus muntjak), and sambar (Cervus unicolor). Remains of fish, birds, and turtle (Lissemys punctata) also appear(Deshpande-Mukherjee & Goyal, 2022, p. 72). This pattern, illustrated in Graph 1 (NISP distribution for IA), indicates an early stage of agro pastoralism where herding was practiced but hunting and fishing still contributed notably to diet.

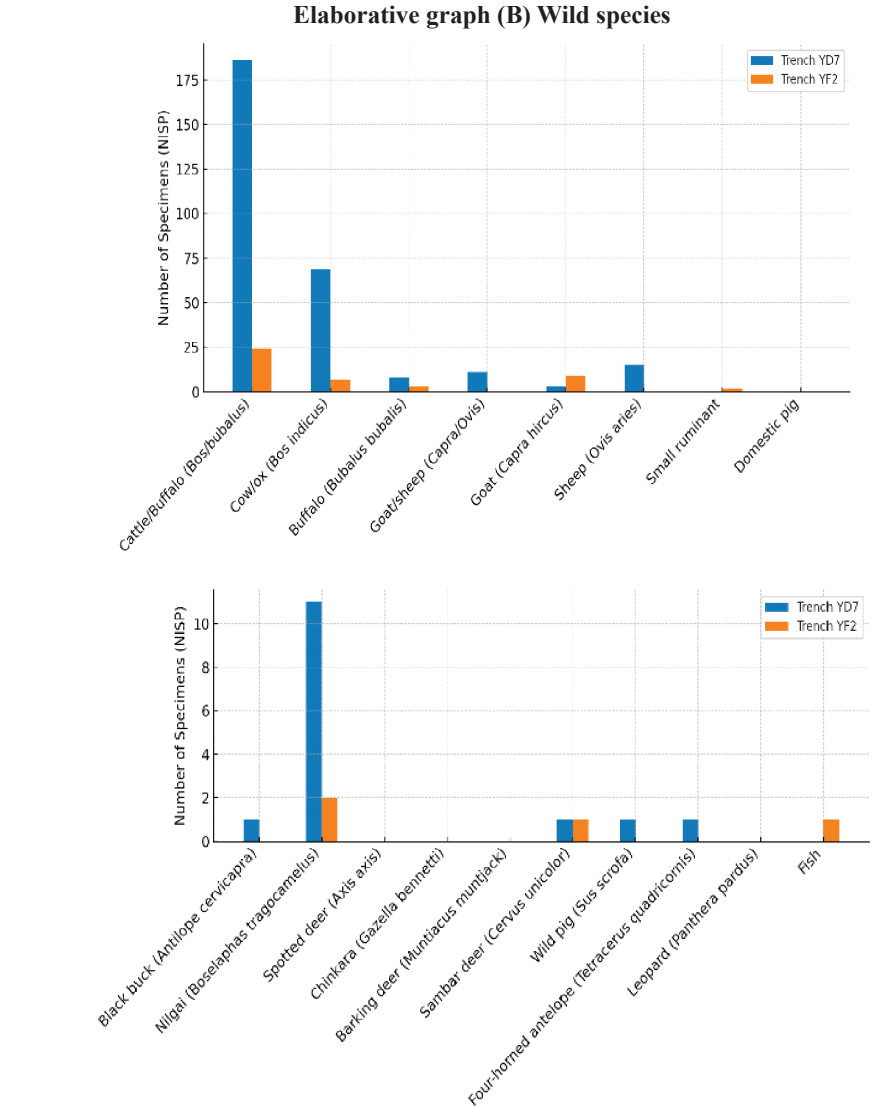


Graph 1: NISP distribution of Faunal Remains during the Hakra Ware period Bhirrana (IA), by trench

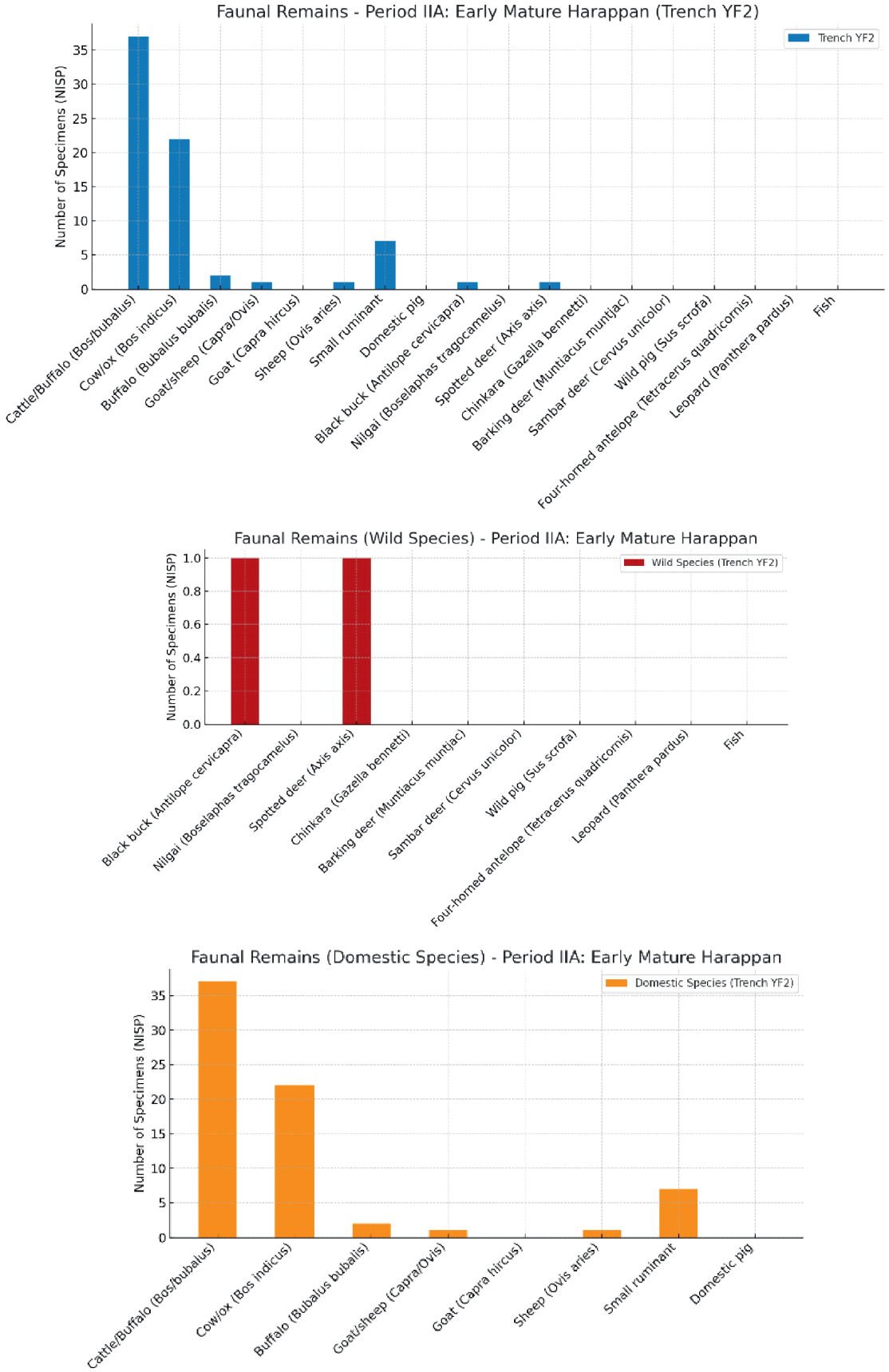
Early Harappan Period (IB): Evidence suggests a consolidation of pastoralism. Cattle (Bos indicus, Bos/Bubalus), sheep (Ovis aries), and goats (Capra hircus) dominate the record. Wild species such as blackbuck, nilgai, and sambar continue but in reduced numbers. This trend is reflected in Graph 2 (NISP distribution for IB), which highlights the growing dominance of domesticates. While hunting declined, its persistence reflects continuity of cultural or supplementary practices. (Deshpande-Mukherjee & Goyal, 2022, p. 77)

Mature Harappan Period (IIA–IIB): By this stage, pastoralism had become specialized. Cattle remained the principal economic animals, supplemented by sheep, goats, and domestic pig (Sus domesticus). Wild taxa blackbuck, nilgai, chinkara, spotted deer, barking deer, sambar, and four-horned antelope (Tetracerus quadricornis) appear in much smaller proportions. Graphs 3 and 4 (NISP distributions for IIA–IIB) illustrate this marked dominance of domestic livestock, underscoring the marginal role of hunting in a fully developed pastoral economy (Deshpande-Mukherjee & Goyal, 2022, p. 77).

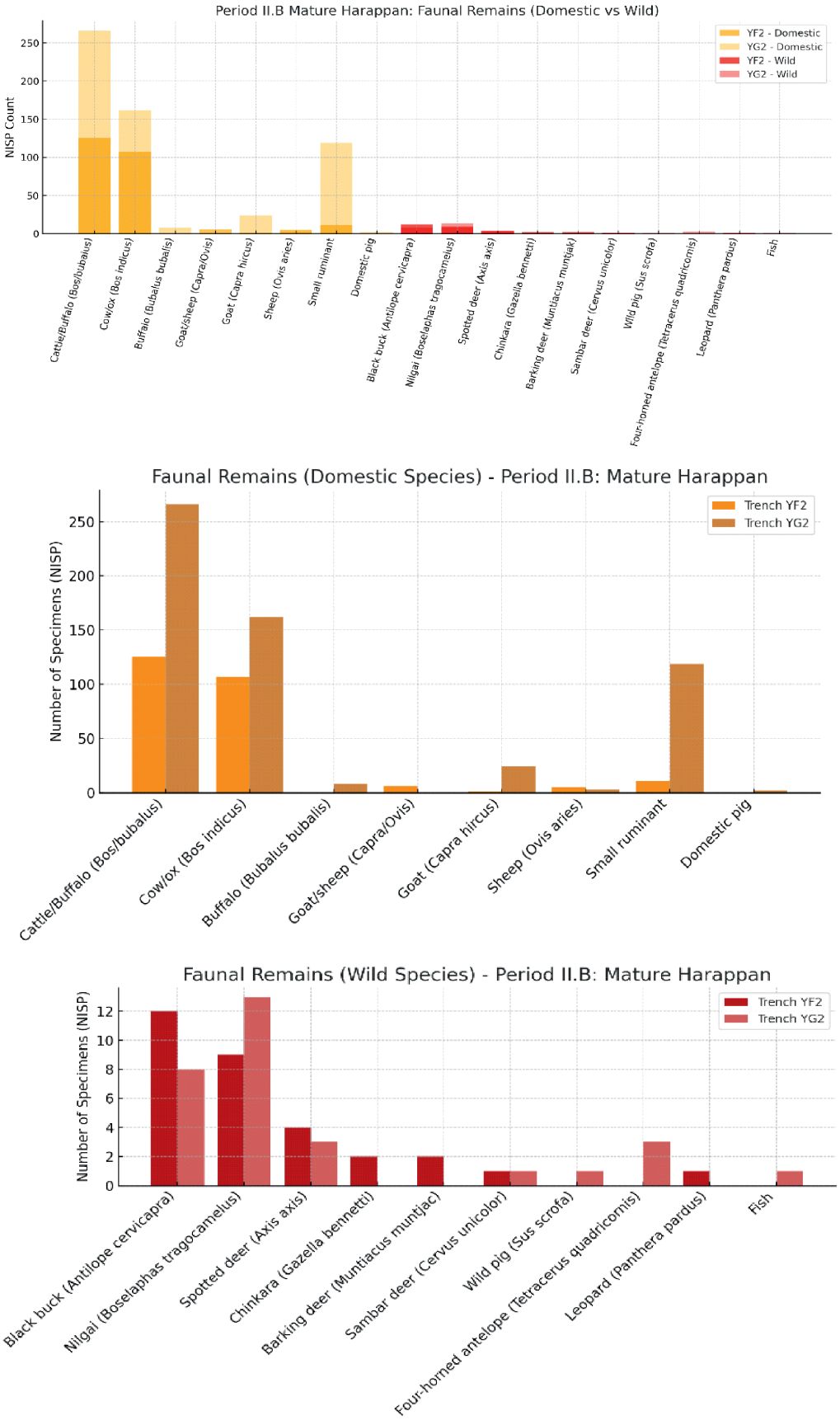




Graph 2: NISP Distribution of Faunal Remains during the Early Harappan Period (IB) Bhirrana by Trench



Graph 3: NISP distribution of Faunal Remains during the Early Mature period Bhirrana (IA), by trench



Graph 4: NISP Distribution of Faunal Remains during the Mature Harappan Period (IB) by Trench

Fig. 3: A) Proximal metatarsal of gaur from Bhirrana (Indian bison). B) Metatarsal of gaur (Indian bison). (Deshpande-Mukherjee & Goyal, 2022 p. 75)

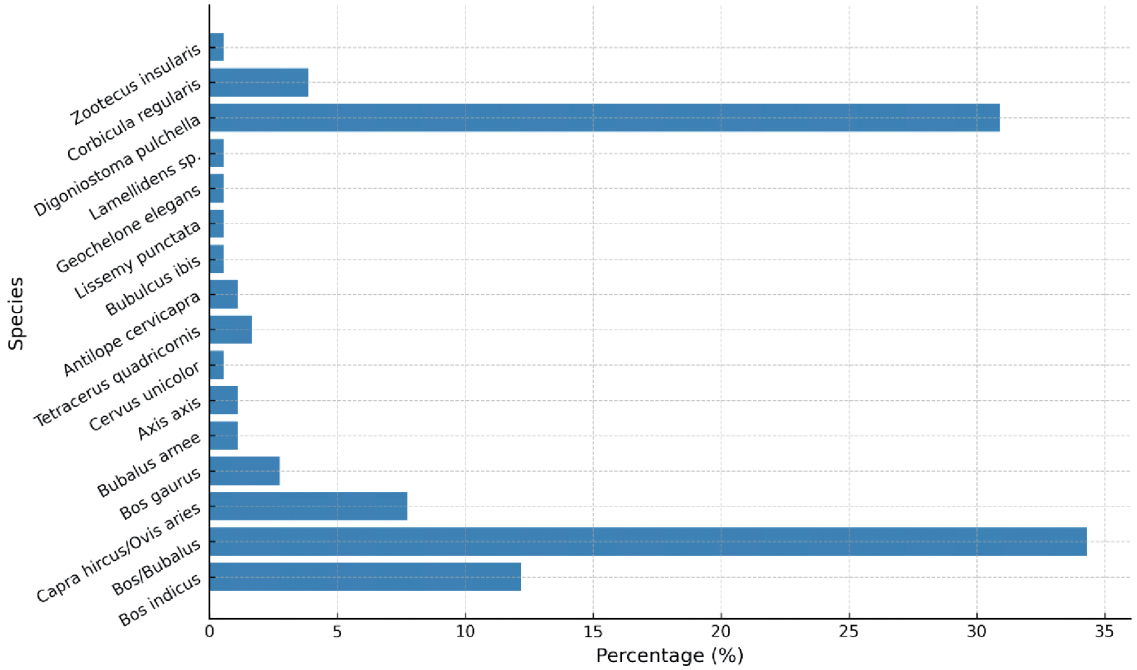
Beyond subsistence, the faunal record at Bhirrana also reveals cultural and symbolic practices. The presence of leopard (Panthera pardus) is notable; while it may represent natural deposition, its inclusion hints at possible ritual or symbolic significance. Aquatic resources such as fish continued to be exploited in limited measure.

Kunal (Fatehabad District)

Kunal (29°30′N; 75°41′E), located in Ratia Tehsil of Hisar district, Haryana, has been systematically excavated since 1986 by the Department of Archaeology and Museums, Government of Haryana, Chandigarh (Khatri & Acharya, 1995). The analysis of faunal remains recovered from stratified levels from the site are associated with the Pre-Harappan (Hakra phase) and the Early Harappan phase reveals a varied pattern of animal utilisation. The material examined came primarily from Stratum II (Hakra/ Pre-Harappan context) and Stratum I (Early Harappan context) of Trench 2, yielding a total of 134 faunal fragments, out of which 84 (62.68%) were securely identified (Joglekar, 2018).

In the Pre-Harappan (Hakra) phase, the assemblage was dominated by domesticated animals, especially cattle *(Bos indicus*), which accounted for a significant proportion of the identified bones. These included metapodia, vertebrae, and mandibular fragments bearing cut marks, indicating butchering for meat (Joglekar 2018). Alongside cattle, the remains of sheep and goat (*Ovis aries / Capra hircus),* grouped as Capra/Ovis, were frequently observed. The skeletal elements of caprines included phalanges and dental fragments, pointing to their consistent role in animal husbandry. Domestic pig *(Sus domesticus*) was identified from dental remains, although in lesser frequency, suggesting a minor role in the overall subsistence strategy (Joglekar, 2018).

The wild fauna from the Hakra context included large herbivores such as gaur (*Bos gaurus*) and wild water buffalo *(Bubalus arnee),* as well as deer species like spotted deer (*Axis axis)* and sambar (Cervus unicolor), and antelopes such as blackbuck *(Antilope cervicapra)* and fourhorned antelope *(Tetracerus quadricornis)* (Joglekar, 2018). Their presence reflects opportunistic hunting and the availability of wild ungulates in the open woodland landscape surrounding Kunal. The avifaunal remains from the same layer included bones of the cattle egret *(Bubulcus ibis),* possibly collected from



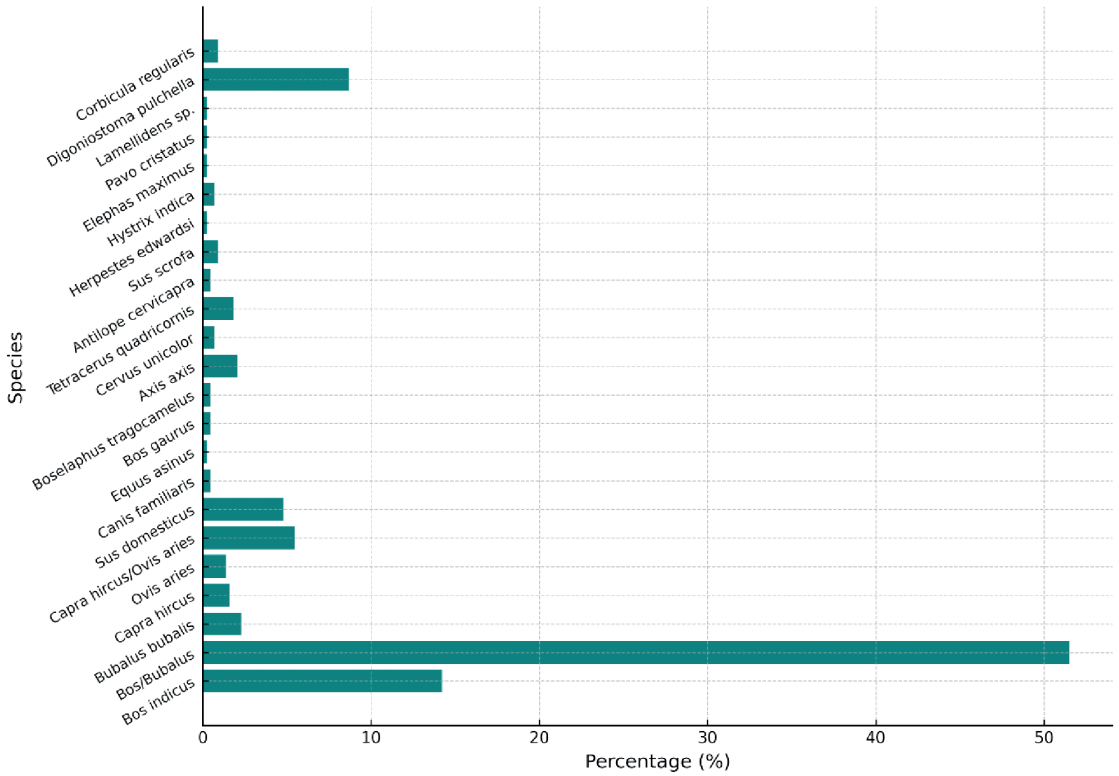
Graph 5: NIPS Animal remains from Pre Harappan at Kunal

the nearby wetland environment, although evidence of direct exploitation is limited. Among reptiles, a mud turtle *(Lissemys punctata)* and an Indian star tortoise (*Geochelone elegans)* were identified. Their carapaces were found complete and without cut or burn marks, indicating these may have been natural intrusions rather than consumed remains. The aquatic component was represented by a substantial number of freshwater molluscan shells, particularly in the Pre-Harappan layers. Species such as *Digoniostoma pulchella* and *Zootecus insularis*, both terrestrial and freshwater snails, were recovered in considerable quantities.

In contrast, edible bivalves like *Lamellidens sp.* (freshwater mussel) and *Corbicula regularis* (clam) showed signs of human use, such as charring and breakage, suggesting deliberate collection and consumption of aquatic resources during this period (Joglekar, 2018, pp. 20–22). In the Early Harappan phase (Stratum I), the dominant domesticated species remained cattle and sheep/goat, similar to the earlier phase. However, a greater degree of bone fragmentation and butchery marks was noted in this upper level. Cattle bones were more fragmented, suggesting increased intensity in processing or possibly changes in dietary patterns. *Caprines* continued to be present, and domestic pigs were still found in small numbers. (Joglekar, 2018, pp. 24-26).

Burj (Fatehabad District)

The ancient mound of Burj, situated near Bhirrana and Kunal (at 29°39′18″N, 75°38′24″E), offers insight into later phases of the Harappan culture in the region. The site is partially covered by the modern village of Burj, and prior surveys suggested occupations dating to the Late Harappan and subsequent Painted Grey Ware periods (Suraj Bhan, 1975). Small-scale excavations at Burj in 2009 by a joint Indian team (BHU and University of Cambridge) confirmed a stratigraphic sequence including Early Harappan levels, as well as later PGW and early Historic deposits (Singh et al., 2010). For the Early Harappan phase at Burj, about 411 animal bone fragments were recovered, of which a significant number could be identified to species (Kaul, 1984; Joglekar, 2012 [Unpublished report]; Joglekar



Graph 6: NIPS Animal remains from Early Harappan Period (IB) at Kunal

et al., 2013; Sharada, 2015). The faunal spectrum from Early Harappan Burj closely resembles that of contemporary sites like Kunal, indicating a diversified economy incorporating domestic herding, opportunistic hunting, and exploitation of aquatic resources. Table 1 summarizes the archaeozoological remains from the Early Harappan levels at Burj, categorized by animal type:

Table 1: Archaeozoological Remains from Early Harappan phase Burj

Category	Identified Taxa
Domestic Mammals	Cattle (*Bos indicus*); Water buffalo (*Bubalus bubalis*); "Cattle/Buffalo" (*Bos/Bubalus* fragments); Sheep (*Ovis aries*); Goat (*Capra hircus*); Sheep/Goat (*Ovis/Capra* indeterminate); Domestic pig (*Sus domesticus*)
Wild Mammals	Nilgai (*Boselaphus tragocamelus*); Spotted deer or Chital (*Axis axis*); Blackbuck (*Antilope cervicapra*); Wild boar (*Sus scrofa*); Indian gray mongoose (*Herpestes auropunctatus*); Indian crested porcupine (*Hystrix indica*); Indian hare (*Lepus nigricollis*)
Molluscs	Freshwater mussels (*Lamellidens* spp.); Snails (*Digoniostoma pulchella*); Freshwater clams (*Corbicula regularis*)
Birds	Common teal (wild duck, *Anas* sp.)
Fish	Rohu (carp fish, *Labeo rohita*)

Source: Kaul (1984); Joglekar et al. (2013); Sharada (2015).

The assemblage from Burj demonstrates a pattern in line with other Early Harappan communities of the Ghaggar basin. Cattle and buffalo remain dominate the domestic mammals, underlining that pastoralism centered on large bovines was crucial. The presence of numerous *Bos/Bubalus* bone fragments that could not be definitively assigned to either cattle or water buffalo suggests both species were present in the herd. Sheep and goats were also part of the domestic stock, as evidenced by Ovis and Capra bones, though in lesser quantities than cattle. A small number of domestic pig bones indicates

that pigs were kept, albeit not in large numbers. The broad range of wild mammals identified—from large antelopes like nilgai to small game like hare—shows that the Burj inhabitants made use of the natural fauna around them. Wild herbivores such as nilgai, blackbuck, chital, and wild boar would have been hunted in the nearby grasslands or woodland patches. The Indian gray mongoose and porcupine could have been either incidentally caught or simply part of the local fauna; their bones might indicate scavenging around the site. The discovery of mongoose and hare remains hints that small animals were occasionally processed, possibly for their meat or pelts. Importantly, like Kunal, Burj yielded evidence of aquatic resource use. Freshwater mollusk shells (mussels, clams, snails) are present in the faunal assemblage in significant quantities. Many of these shells show signs of having been cracked or charred, implying they were collected as food (Kaul, 1984; Joglekar et al., 2013, pp. 267). Burj is located near paleo-river channels of the Ghaggar, so it's likely that residents regularly harvested shellfish from the river or marshes for consumption. Additionally, fish remains specifically bones of a carp fish (probably Rohu, *Labeo rohita*) were recovered. This provides direct evidence of fishing or fish procurement by the Early Harappans at Burj, using either nets, traps, or hooks in local water bodies. Lastly, a bird bone identified as belonging to a common teal (a kind of wild duck) was found, indicating that waterfowl were part of the local ecosystem and possibly hunted or scavenged. (Kaul, 1984; Sharada, 2015, pp. 41).

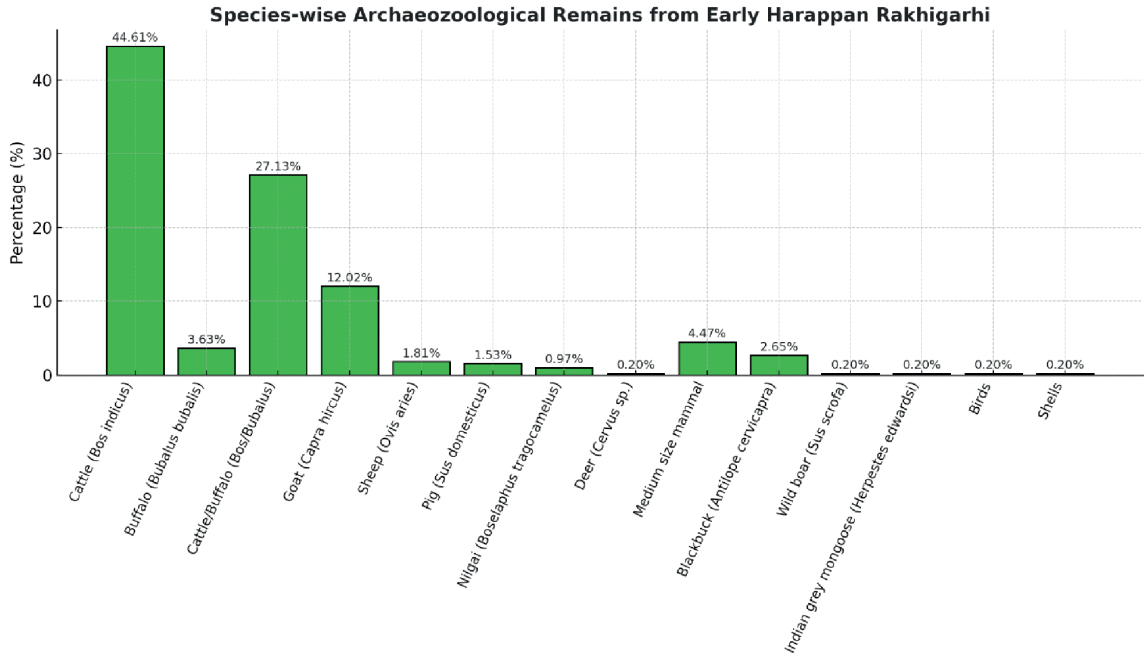
Rakhigarhi (Hisar District)

Rakhigarhi is the largest Harappan site in Haryana and one of the most extensive Indus Civilization urban centers known, covering roughly cross seven mounds (designated RGR-1 through RGR-7). Of these, RGR 1, RGR 2 and RGR 6 were revealed to have, in addition to Harappan Period occupation, a formative stage followed by an Early Harappan settlement stage. RGR 7 is a necropolis (Nath et al., 2014). Zooarchaeological studies at the site have been less extensive. P. K. Thomas made preliminary observations on Rakhigarhi's faunal remains in the 1990s, and more systematic analysis was undertaken on a sample of bones from mound RGR-6 by U. Uparathana (2011).

This study mainly from RGR-6 provides insight into animal usage at Rakhigarhi, particularly during the Early Harappan levels of that mound. The identified species from Uparathana's analysis include a range of domestic and wild animals. According to Uparathana (2011), the faunal assemblage from RGR-6 at Rakhigarhi contained remains of cattle and water buffalo as the most common elements. This aligns with the general Harappan pattern where *Bos indicus* (zebu cattle) and *Bubalus bubalis* (domestic buffalo) were primary domesticated species for meat, dairy, and labor. Also present were bones of sheep and goat, indicating these smaller livestock were part of the economy.

Notably, the sample included remains of domestic pig as well, showing that pigs were kept at Rakhigarhi (at least in certain areas or phases). Among wild fauna, nilgai (blue bull antelope) and wild boar bones in the Rakhigarhi sample. Additionally, references to "*Cervus* deer" likely denote *sambar* or a related deer species, implying that large deer were hunted occasionally.

A fragment of mongoose was also noted, which could be the Indian gray mongoose, suggesting small wild carnivores were present (whether as pests around habitations or as part of the fauna collected). The presence of these wild species suggests that even a large urban site like Rakhigarhi had an element of hunting or at least processing of wild game, though perhaps on a limited scale compared to smaller rural sites. The urban population could have obtained wild animal products through trade



Graph 7: Archaeozoological remains from Early Harappan Rakhigarhi (Deshpande-Mukherjee et al., 2018)

with villagers or short forays into the hinterland (Uparathana, 2011; Joglekar et al., 2013, p. 270; Deshpande-Mukherjee et al., 2018)

Girawad (Rohtak District)

The archaeozoological analysis of Girawad has yielded a comprehensive picture of subsistence practices during the Early Harappan phase in the Ghaggar Basin. The assemblage is dominated by domesticates, notably Bos indicus (zebu cattle) and Bubalus bubalis (domestic water buffalo), which together form the bulk of the identified specimens and underscore the primary role of large bovids in animal husbandry.

Other domestic species such as *Ovis aries* (sheep), *Capra hircus* (goat), *Sus domesticus* (domestic pig) and *Canis familiaris* (dog) are present in smaller numbers, pointing to a mixed herding strategy in which cattle and buffalo were central, while small ruminants and pigs provided supplementary resources. The wild component of the assemblage, although numerically marginal, reflects occasional exploitation of the local environment, with species such as *Boselaphus tragocamelus (nilgai), Axis axis* (spotted deer), *Antilope cervicapra* (blackbuck), *Gazella bennettii* (chinkara)*, Sus scrofa cristatus* (wild boar), *and Bubalus arnee* (wild water buffalo), alongside commensal species like *Rattus rattus* (house rat) and *Bandicota indica (*bandicoot rat).

Aquatic resources were also incorporated into the subsistence regime, as evidenced by the presence of fish, including *Siluridae (*catfish family), and freshwater molluscs such as *Pila globosa, Zootecus insularis, Lamellidens sp., and Digoniostoma pulchella.*

The recovery of avian remains, albeit few in number and some showing traces of charring, further broadens the spectrum of exploited fauna. It is significant that the Mature and Late Harappan phases at Girawad are represented archaeologically only through ceramics retrieved from surface deposits, with no faunal material securely attributable to these later occupations. (Sharada, Joglekar & Shinde, 2014).

Table 2: Faunal Evidence from Girawad (Early Harappan Phase)

Harappan Phase	Scientific Name	Common Name
EARLY HARAPPAN	*Bos indicus*	Zebu cattle
	Bubalus bubalis	Domestic water buffalo
	Ovis aries	Sheep
	Capra hircus	Goat
	Sus domesticus	Domestic pig
	Canis familiaris	Dog
	Boselaphus tragocamelus	Nilgai (blue bull)
	Axis axis	Spotted deer
	Antilope cervicapra	Blackbuck
	Gazella bennettii	Chinkara
	Sus scrofa cristatus	Wild boar
	Bubalus arnee	Wild water buffalo
	Rattus rattus	House rat
	Bandicota indica	Bandicoot rat
	Family Siluridae	Catfish
	Pila globosa	Freshwater snail
	Zootecus insularis, Lamellidens sp., Digoniostoma pulchella	Small land snail / Freshwater mussel / Estuarine snail
	Unidentified (burnt)	Bird remains
MATURE HARAPPAN *LATE HARAPPAN*	No faunal remain, only ceramics recorded.	

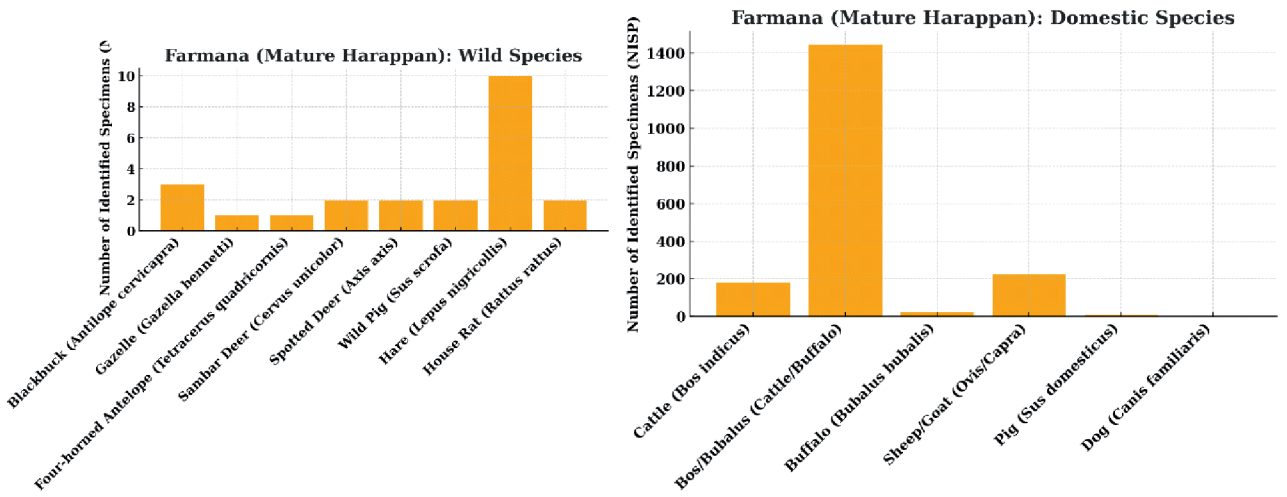
Banawali (Fatehabad District)

At Banawali (Fatehabad, Haryana) abundant animal bones across occupational levels, indicating a meat-based dietary component, and a fishhook attesting to fishing. The site also produced terracotta figurines of bulls, deer, dogs, rhinoceroses, buffaloes, and birds, and **seals** depicting wild ungulates materials that illuminate the symbolic and ecological animal sphere (Bisht, 1993).

Farmana (Rohtak District)

The site of Farmana, located in the Ghaggar–Hakra valley of Haryana (Shinde, 2008, p. 4), has produced a substantial collection of faunal material that contributes significantly to the understanding of Harappan subsistence strategies. Excavations at the site have yielded nearly 30 identified taxa, representing domestic and wild mammals, reptiles, birds, and molluscs, together with a few fish remains. A preliminary study of this material was undertaken by Dr. P. P. Joglekar and Ms. S. Sharada during the course of the excavation. The study was conducted both in the field where two bone packets from each of the 51 trenches were examined—and later in the Archaeozoological Laboratory at Deccan College, Pune, where additional specimens were re-analysed for confirmation of identifications.

The wild fauna from Farmana includes Sus scrofa (wild pig), Gazella sp. (gazelle), Antilope sp. (antelope), Axis axis (chital), Rattus sp. (rat), Lepus nigricollis (Indian hare), Tetracerus quadricornis (four-horned antelope), and Boselaphus tragocamelus (nilgai), along with reptilian evidence of turtle remains.



Graph 8: Animal remains from Mature Harappan Farmana (A)Wild species (B)Domestic species

Fig. 4: (A) Cattle Tibia at Farmana, Haryana (Joglekar et al., 2013) (B) Mandible recovered at Lohat Haryana, (Joglekar et al., 2013).

The domestic component is represented by Bos indicus (cattle), Bubalus bubalis (buffalo), Ovis aries (sheep), Capra hircus (goat), Sus domesticus (pig), and Canis familiaris (dog).Among these, cattle and buffalo are the most dominant, indicating their crucial role in the Mature Harappan economy, not only as sources of meat but also for dairying, traction, and possibly ritual activity.

Mitathal (Bhiwani District)

The Late Harappan faunal assemblage recovered from the site of **Mitathal**, located in Bhiwani District, Haryana, offers critical insights into the animal-based subsistence strategies of post urban Harappan communities in the eastern domain of the civilisation. Excavated as part of the Ghaggar Project in 2006–2007, the site yielded a total of 674 skeletal fragments from Trench A1. Of these, 439 were securely identified to taxon level, reflecting a high degree of preservation and sufficient morphological visibility (Sharada, Joglekar & Shinde, 2012, p. 34). The zooarchaeological data

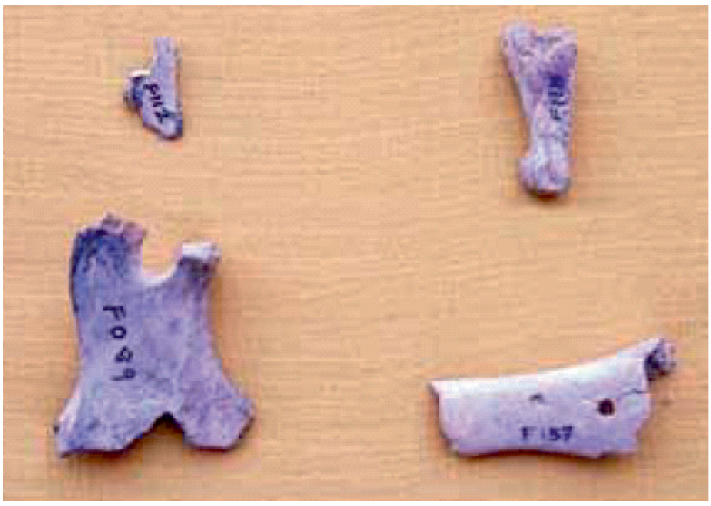


Fig. 5: Bones of domestic goats

Fig: 6 Bones of cattle, Farmana

is based on analysis conducted at the Deccan College Archaeozoology Laboratory adhered to internationally established procedures published in "Faunal Remains from Late Harappan Phase at Mitathal, Bhiwani District, Haryana" by C.V. Sharada, P.P. Joglekar and V.S. Shinde. Each fragment was subjected to detailed morphological identification, measurement, and taphonomic assessment, including the recording of cut marks, charring, gnawing, and surface modifications (Sharada et al., 2012, pp. 33–34).

The assemblage is overwhelmingly dominated by domesticated animals, especially cattle (Bos indicus) and buffalo (Bubalus bubalis), which together account for about 67% of the identified remains (Sharada et al., 2012, pp. 307–309). Sheep and goats *(Ovis aries and Capra hircus*) represent about 14% of the faunal material; while some bones were charred, suggesting occasional meat consumption, their role appears more aligned with milk, wool, and secondary products (Sharada et al., 2012, pp. 310). Domestic pig *(Sus domesticus*) and dog *(Canis familiaris)* are rare, together representing less than 2% of the assemblage, while an isolated equid cranial fragment indicates the occasional presence of horse, donkey, or wild ass (Sharada et al., 2012, pp. 311–312).

Wild fauna form only a minor component, underscoring that hunting was supplementary. These include wild pig *(Sus scrofa),* spotted deer *(Axis axis),* barking deer *(Muntiacus muntjak),* blackbuck (*Antilope cervicapra),* and Indian porcupine *(Hystrix indica),* each represented by one or two bones (<1% each) (Sharada et al., 2012, pp. 312–314). Indian hare *(Lepus nigricollis)* and rodent remains were also found but are considered intrusive burrow deposits rather than Harappan food remains (Sharada et al., 2012, p. 314).

The inhabitants also made limited use of aquatic and avian resources. Fish bones (cranial parts, vertebrae, and spines) and turtle *(Lissemys punctata)* carapace fragments, some charred, demonstrate deliberate exploitation of riverine fauna (Sharada et al., 2012, pp. 315–316). Bird bones (medium- and large-sized species) were present but not identified to species. Mollusc shells of *Lamellidens, Pila globosa, Indoplanorbis exustus, and Digoniostoma pulchella* were recovered, though many may be later intrusions rather than Harappan subsistence remains. Morphometric analysis of cattle bones revealed smaller body size compared to both modern zebu and contemporaneous Harappan cattle at Farmana and Masudpur, suggesting either local breed variation or environmental stress (Joglekar, 2012b; Sharada et al., 2012, pp. 317–319)

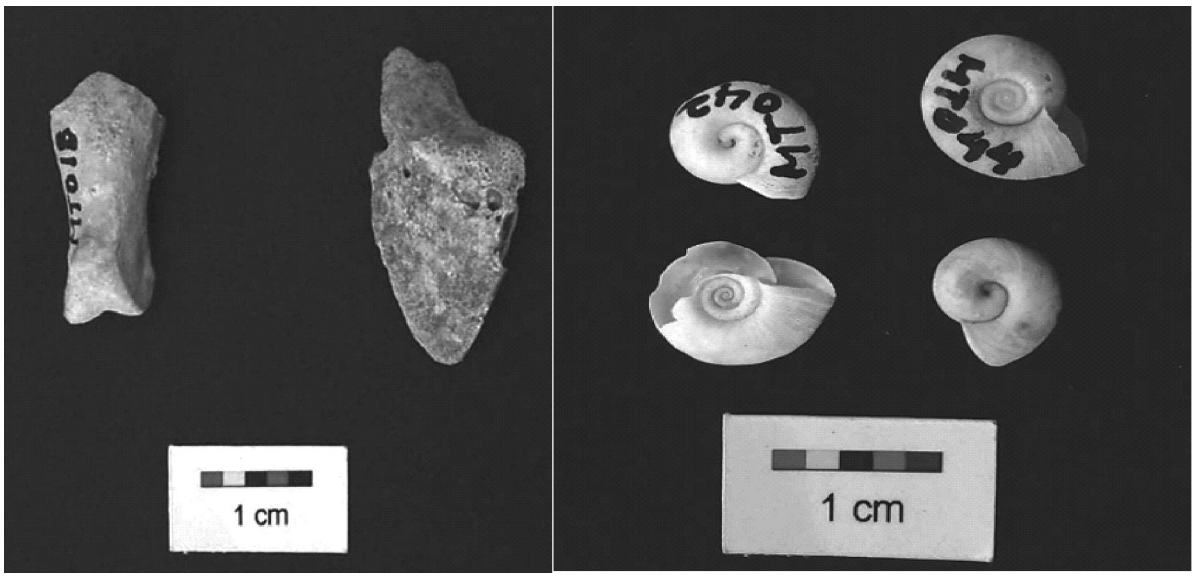


Fig. 7: Barking deer (Muntiacus muntjak) second phalanx and spotted deer (Axis axis) third phalanx (from L to R) (B) Indoplanorbis exustus shells from Mitathal (Sharada et al., 2012, p. 38)

Masudpur I (Sampolia Khera, Hisar District)

The site of Masudpur I (Sampolia Khera), located in the eastern domain of the Harappan civilization near Rakhigarhi, offers crucial zooarchaeological data that deepens our understanding of subsistence and resource use among rural Harappan populations (Singh et al., 2009). Excavated in 2009, the site revealed evidence of Early, Mature, and Late Harappan occupation levels, and yielded a significant faunal assemblage analysed using rigorous archaeozoological protocols.

In the Early Harappan phase at Masudpur, the faunal evidence includes both domesticated and wild species. Among the domesticates, remains of *Bos indicus* (zebu cattle), *Bubalus bubalis* (water buffalo), and *Capra hircus* (domestic goat) were clearly identified. Several bone fragments were broadly classified as *Bos/Bubalus* and *Capra/Ovis,* indicating either cattle or buffalo, and goat or sheep respectively, due to the fragmentary nature of the material. Wild species were also represented in this phase. These included *Tetracerus quadricornis* (four horned antelope), *Sus scrofa* (wild pig), and notably *Elephas maximus* (Asian elephant). The presence of elephant ivory bearing cut marks is especially significant, suggesting the possible use of exotic materials, although no workshop activity was observed in the excavated area (Joglekar, Singh & Petrie, 2017, pp. 28–31).

Elephas maximus has been attested at two Harappan sites in Haryana, Farmana and Masudpur, alongside evidence from Gujarat and Rajasthan (Kalibangan). At these sites, the species is represented primarily through ivory fragments, rather than complete skeletal remains. This indicates that elephants were not part of the immediate habitat around these settlements, but their ivory was procured as a valued raw material for the production of decorative objects and ornaments. A parallel example comes from Lothal in Gujarat, where an area has been identified as an ivory workshop during the Mature Harappan phase, demonstrating the significance of this craft within Harappan society. The evidence from Farmana and Masudpur thus suggests that ivory reached Haryana settlements through long-distance exchange networks rather than local hunting, highlighting the specialized use of elephants in the spheres of craft production and trade rather than in subsistence. (Joglekar & Goyal, 2013, p. 195)

The Early/Mature Harappan mixed phase revealed a continuation of domestic animal exploitation, with an overwhelming presence of *Bos indicus* (zebu cattle), *Bubalus bubalis* (water buffalo), and *Capra hircus/Ovis aries* (goat or sheep). The only wild species documented in this phase was *Boselaphus tragocamelus* (nilgai or blue bull), India's largest antelope.

This assemblage, showing extensive butchering and charring evidence, suggests increased dependence on controlled animal resources and decreased interaction with wild fauna (Joglekar, 2017, pp. 31–34).

Table 3: Faunal Species from Masudpur (Sampolia Khera): Early, Mature, and Late Harappan Phases

Harappan Phase	Scientific Name	Common Name
EARLY HARAPPAN	*Bos indicus*	Zebu cattle
	Bubalus bubalis	Water buffalo
	Capra hircus	Domestic goat
	Tetracerus quadricornis	Four-horned antelope
	Sus scrofa	Wild boar
	Elephas maximus	Asian elephant
	Anas sp.	Dk (common teal)
	Labeo rohita	Rohu (carp fish)
	Lamellidens sp.	Freshwater mussel
	Diginostoma pulchella	Freshwater snail
	Corbicula sp.	Freshwater clam
MATURE HARAPPAN	*Bos indicus*	Zebu cattle
	Bubalus bubalis	Water buffalo
	Capra hircus	Domestic goat
	Ovis aries	Domestic sheep
	Canis familiaris	Domestic dog
	Sus scrofa domesticus	Domestic pig
	Sus scrofa	Wild boar
	Tetracerus quadricornis	Four-horned antelope
	Rusa unicolor	Sambar deer
	Antilope cervicapra	Blackbuck antelope
	Boselaphus tragocamelus	Nilgai (blue bull)
	Axis axis	Chital (spotted deer)
	Canis lupus	Wolf
	Vulpes sp.	Fox
	Hystrix indica	Indian crested porcupine
	Lepus nigricollis	Indian hare
	Rattus rattus	House rat
	Catla catla	Catla fish
	Pavo cristatus	Indian peafowl
	Lamellidens sp.	Freshwater mussel
	Diginostoma pulchella	Freshwater snail
LATE HARAPPAN	*Bos indicus*	Zebu cattle
	Bubalus bubalis	Water buffalo
	Ovis aries	Domestic sheep
	Equus asinus	Domestic donkey
	Boselaphus tragocamelus	Nilgai (blue bull)
	Antilope cervicapra	Blackbuck antelope
	Herpestes edwardsii	Indian gray mongoose
	Lepus nigricollis	Indian hare

The Mature Harappan phase at Masudpur (Singh, 2009) was the most faunally rich and diverse, offering insights into both domesticated and wild animal use. The domesticated species include Bos indicus (zebu cattle), *Bubalus bubalis* (water buffalo), *Capra hircus* (goat), *Ovis aries* (sheep), *Capra/Ovis* (goat or sheep), and *Sus domesticus* (domestic pig). Wild mammals identified during this period encompass *Tetracerus quadricornis* (four-horned antelope), *Antilope cervicapra* (blackbuck), *Axis axis* (spotted deer or chital), *Boselaphus tragocamelus* (nilgai), *Cervus unicolor* (sambar deer), *Sus scrofa* (wild pig), *Lepus nigricollis* (Indian hare), *Vulpes bengalensis* (Bengal fox), and *Hystrix indica* (Indian crested porcupine).

The avian species *Pavo cristatus* (Indian peafowl) was also recorded. In addition, aquatic resources were exploited as evidenced by *Catla catla* (a large freshwater carp), *Lamellidens* sp. (freshwater mussel), and *Digoniostoma pulchella* (freshwater gastropod). This remarkable faunal diversity, along with high frequencies of cut marks, charring, and crafted bone tools, indicates an integrated subsistence economy that combined herding, hunting, fishing, and tool production (Joglekar, 2017, pp. 35–50).

Fig. 8: (A)Wild pig mandible from the Early Harappan phase at Masudpur-I (B) Bubalus bubalis astragalus and second phalanx from the Early/Mature Harappan phase at Masudpur-I (Courtesy Modified after P.P Joglekar)

The Late Harappan phase presents a narrowed spectrum of faunal use compared to earlier periods. Domesticated species such as *Bos indicus* (zebu cattle), *Bubalus bubalis* (water buffalo), and *Capra hircus/Ovis aries* (goat or sheep) remained dominant. A unique find from this phase was a tarsal bone of *Equus asinus* (domestic ass), pointing towards the use of pack or transport animals in the post-urban phase.

Wild animals continued to be exploited in a limited capacity, with remains of *Boselaphus tragocamelus* (nilgai), *Antilope cervicapra* (blackbuck), *Lepus nigricollis* (Indian hare), and *Herpestes edwardsii* (Indian grey mongoose) recovered from the stratified deposits. These remains often showed evidence of butchering or charring, reflecting a continued, albeit reduced, interaction with wild fauna for dietary or ritual purposes (Joglekar 2017, pp. 50–52).

Madina (Rohtak District)

Dr. P. P. Joglekar's examination of the faunal assemblage from the site of Madina has brought to light a considerable variety of species, encompassing cattle, buffalo, sheep, goat, dog, peafowl, deer, wolf, antelope, tortoise, horse, pig, and bandicoot. This spectrum of remains indicates a mixed subsistence economy, with domesticated animals forming the backbone of pastoral activities, while the occasional presence of wild taxa such as wolf, deer, and antelope suggests that hunting supplemented daily

food procurement strategies (Joglekar & Sharada, 2016). The site yielded notable terracotta figurines and toys, shedding light on the symbolic and cultural aspects of Harappan life. These include a bull fragment and two caparisoned horses with riders—a larger male and a smaller female marked by long tails and perforations. Such depictions highlight both artistic expression and the social value of domesticated animals. Additionally, toy-cart wheels, including a single-hubbed specimen and two crafted in red ware, reflect the community's technological skill and recreational practices.

Bhagwanpura (Kurukshetra District)

Excavations at Bhagwanpura have yielded thirty-five hand-modelled terracotta figurines of animals and birds from Sub-periods IA and IB. Bulls appear as the dominant motif in Sub-period IA, whereas rams are more frequent in Sub-period IB; additionally, a distinctive figurine representing a dog's face was recovered. Faunal remains from the Late Harappan levels reveal a reliance on domesticated species, notably cattle, buffalo, sheep, goat, and dog, with the conspicuous absence of domestic pig. Wild species are represented in small numbers, including chital, wild pig, and an unidentified turtle. The scarcity of wild fauna led Sharma (1993, p. 147) to infer that hunting played only a minor role in local subsistence.

Mirzapur (Kurukshetra District

The Late Harappan levels at Mirzapur (Kurukshetra) have yielded a diverse assemblage of faunal remains that reveal a mixed pastoral and hunting-based subsistence economy (Sharma, 1996). The bones are dominated by Bos indicus *(zebu cattle)*, represented by ribs and long bones often marked by butchery cuts, showing that cattle provided both meat and were important as draught and dairy animals.

Bubalus bubalis (water buffalo) occurs less frequently and shows no signs of slaughter, indicating use mainly for milk and labour. Remains of *Capra hircus* (goat) and *Ovis vignei* (domestic sheep) are also significant, many from young animals and often charred, suggesting that small ruminants were an important source of meat and wool.

The assemblage also includes a few bones of Equus caballus (horse), a small variety used for transport; one charred and abraded canine points to a ritual or medicinal use. *Canis familiaris* (dog) is present as medium-sized pariah-type animals, kept for herding and guarding, while *Sus scrofa cristatus* (Indian pig) is rare and appears not to have been an important domestic species. Among wild fauna, *Axis axis* (spotted deer) is second only to cattle in abundance; numerous antlers and bones with cut-marks and heavy charring confirm that deer were hunted and roasted. Minor wild taxa include *Lepus nigricollis* (Indian hare).

Table 4: Faunal Species Identified from Late Harappan Levels at Mirzapur (Kurukshetra)

Scientific Name	*Common Name*	*Key Evidence / Notes*
Bos indicus	Zebu cattle	Most abundant species: butchery marks on ribs and long bones indicate meat use; also used for traction and milk.
Bubalus bubalis	Water buffalo	Less frequent; no butchery marks; primarily for milk and labour.
Capra hircus	Domestic goat	Charred bones: unfused epiphyses show slaughter of young animals for meat.
Ovis vignei (domesticus)	Domestic sheep	Bones of young animals; slaughtered for meat; also valued for wool.

Scientific Name	*Common Name*	*Key Evidence / Notes*
Equus caballus	Horse	Few remains; small-sized breed used for transport; a charred tooth shows ritual/medicinal use.
Canis familiaris	Domestic dog	Medium-sized pariah type; not eaten; used for herding and guarding.
Sus scrofa cristatus	Indian pig	Very limited remains: pork rarely consumed.
Axis axis	Spotted deer (Chital)	Second most abundant species; antlers and bones with cut marks and charring; hunted and roasted.
Lepus nigricollis	Indian hare	Occasional hunting of small game.
Cyprinidae	Fish (carp)	Vertebrae of carp-type fish; fishing contributed to diet.
Lamellidens marginalis	Freshwater mussel	Shells collected from nearby water bodies; consumed as food.
Rattus rattus	House rat	Commensal rodent species found in habitation debris.

Aquatic resources were also exploited, as shown by vertebrae of Cyprinid fish and shells of *Lamellidens marginalis* (freshwater mussel), indicating that fishing and collection of molluscs supplemented the diet. This faunal assemblage demonstrates that the Late Harappan inhabitants of Mirzapur relied on a combination of herding, hunting, and riverine resource exploitation, with cattle and deer forming the core of their animal economy.

The report on **Jognakhera** (Late Harappan site in Kurukshetra) provides information on cultural deposits, structural remains, pottery assemblages, and other material culture, but it contains no reference to faunal remains or zooarchaeological material. The text is silent on the recovery of animal bones, species identifications, or any faunal quantification. Therefore, while Jognakhera is significant for understanding the cultural sequence of the region, especially in relation to its settlement features and artefactual assemblages, the published excavation note does not provide explicit faunal evidence. In the context of a zooarchaeological study, Jognakhera thus represents a data gap when compared with other Harappan sites in Haryana that have yielded clear evidence of animal remains.

Bahola Khalsa (Karnal district)

The Bahola Khalsa site (29°4′00″N, 76°4′00″E) in Karnal District was first noted by Suraj Bhan (1975, p. 125). Later, limited excavations were undertaken in 2012 by Banaras Hindu University in collaboration with the University of Cambridge under the Land, Water and Settlement Project led by R. N. Singh. These investigations revealed successive occupations ranging from the Late Harappan and Painted Grey Ware horizons to the Early Historic period. Zooarchaeological study of 417 faunal specimens from these levels identified domestic cattle, buffalo, sheep, goats, and dogs, along with wild species such as pig, four-horned antelope, hare, and a bird, the common teal (Anas crecca) (Singh et al., 2013; Joglekar, 2012a; Sharada, 2015).

Karsola Kheda (Jind District)

Site of Karsola Kheda (29°09′02.9″N, 76°25′36.3″E), located about 2 km northeast of Julana in Jind District, was explored in 2010–11 through joint excavations by Deccan College, Pune, and the Archaeological Survey of India. Stratigraphy revealed two distinct cultural horizons: Period I, linked to the Late Harappan phase, and Period II, associated with the Painted Grey Ware culture, separated by a clear occupational gap (Shinde & Sengar, 2011).

Faunal remains from Karsola Kheda reflect a wide range of taxa. Domestic animals include cattle, buffalo, sheep, goats, pigs, dogs, and cats. Wild species are also well represented, with deer (chital,

sambar), antelopes (blackbuck, gazelle), and smaller mammals such as wild pig, hare, porcupine, mongoose, and jungle cat. Notably, bones of the giant squirrel (*Ratufa ratufa*) were also identified (Abhayan & Joglekar, 2012 [Unpublished report]).

Equally significant is the recovery of numerous non-mammalian taxa. Avifaunal remains include domestic fowl, peafowl, the Saras crane, and cattle egret. Reptilian evidence comes from Ganges soft-shell turtle, Indian mud turtle, and lizards such as the monitor and the garden lizard. Aquatic and molluscan resources were also part of the assemblage, represented by freshwater mussels, money cowrie shells, freshwater crabs (Paratelphusa sp.), and a few varieties of fish (Joglekar et al., 2013, p. 268; Sharada, 2015, pp. 44–45).

Taken together, the evidence from Karsola suggests a mixed subsistence economy in which cattle and other domesticates formed the economic core, while a wide range of wild animals, birds, reptiles, fish, and molluscs supplemented the diet and perhaps held cultural or ritual significance.

Animal Symbolism and Cultural Representations

Beyond the direct faunal remains, Harappan sites in Haryana have yielded a variety of artefacts that highlight the symbolic and cultural importance of animals. At Bhirrana (K. Krishnan, L. S. Rao. 2012) and Banawali, pottery motifs depicting fish, antelope, and peacock reflect the integration of fauna into decorative and ideological spheres, while Madina produced remarkable terracotta horse figurines with riders, bull models, and toy-cart wheels that underscore symbolic or ceremonial uses.

Fig. 9: Animal Terracotta Figurines, Mature Harappan phase – Rakhigarhi

At Rakhigarhi, a steatite seal depicting a one-horned rhinoceros was discovered; since no rhinoceros bones have been reported from the site, the motif likely represents either a symbolic recollection of distant fauna or cultural and trade links with regions where rhinoceroses survived during the Harappan period.

Excavations at Farmana also yielded classic Harappan seals depicting the humped bull (zebu) and the unicorn motif, reinforcing both the centrality of cattle and the cultural role of mythical forms in Harappan iconography and administration.

Bone artefacts, tools, and ornaments from Farmana, Masudpur, and Balu further demonstrate the technological and craft use of animal resources beyond subsistence. From the Late Harappan levels at Bhagwanpura, thirty-five hand-modelled terracotta figurines of animals and birds, with bulls dominating Sub-period IA, rams in Sub-period IB, and a distinctive dog's face figurine also present. The associated faunal record from Bhagwanpura indicates reliance on cattle, buffalo, sheep, goat, and

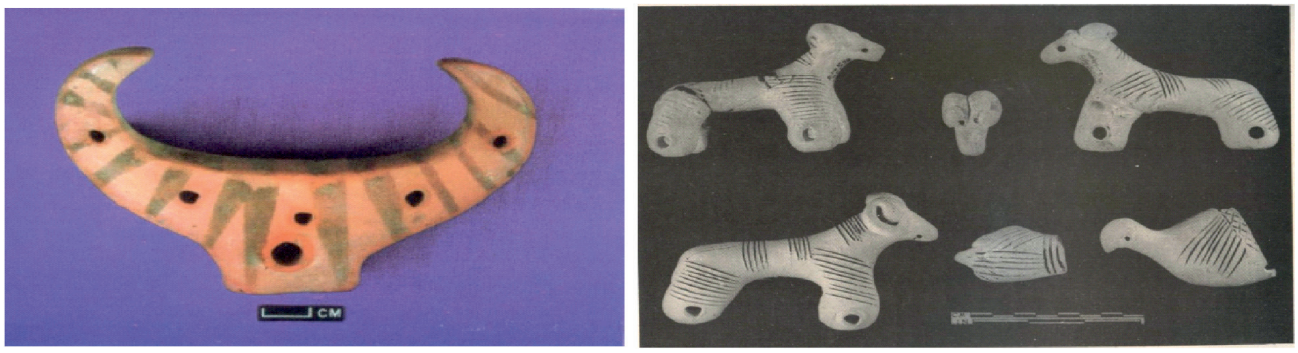


Fig. 10: T.C. stylized painted animal head horn from Bhirrana (after Rao, & other, 2005-06)
(B)Terracotta bull figurines from Bhagwanpura

dog, with the notable absence of domestic pig, while wild species such as chital, wild pig, and turtle occur only in small numbers, leading Sharma (1993, p. 147) to conclude that hunting was of marginal importance. Taken together, these motifs, seals, figurines, and bone artefacts demonstrate that animals in Harappan Haryana were not only vital to diet and economy but also deeply embedded in symbolism, ritual practice, and material culture across all phases of occupation.

Conclusion

The faunal evidence from excavated Harappan sites in the region of Haryana demonstrates a clear trajectory of subsistence development across the cultural sequence from the Pre-Harappan to Late Harappan phases. Period-wise analysis highlights both continuity and transformation in the utilization of animals, reflecting ecological adaptation, economic reorientation, and cultural symbolism.

Earliest levels of the Pre-Harappan (Hakra Phase) at sites such as Bhirrana and Kunal reveal a broad-spectrum subsistence economy. Domesticated cattle (Bos indicus), buffalo (Bubalus bubalis), sheep (Ovis aries), and goat (Capra hircus) were already established as the foundation of herding practices. Yet, hunting of wild animals such as nilgai (Boselaphus tragocamelus), blackbuck (Antilope cervicapra), spotted deer (Axis axis), sambar (Cervus unicolor), barking deer (Muntiacus muntjak), and wild pig (Sus scrofa) remained significant. Aquatic resources including fish, molluscs, and turtles supplemented the diet. This indicates an early agro-pastoral stage in which herding was important but hunting and foraging still played a major role.

In the Early Harappan phase, sites like Kunal, Burj, Girawad, and Rakhigarhi show a marked consolidation of pastoralism. Cattle and buffalo dominate the assemblages, supplemented by sheep and goat, while pigs and dogs appear in smaller numbers. The range of wild fauna narrows in comparison to the earlier Hakra phase, though species such as blackbuck, nilgai, and spotted deer continue to be exploited occasionally. The presence of fish, molluscs, and bird remains reflects the continued use of aquatic and avian resources. This period represents a shift from a mixed hunting herding economy to a more livestock-centered pastoral strategy.

During the Mature Harappan phase, exemplified at Farmana, Masudpur, Banawali, and Rakhigarhi, faunal evidence reflects a fully developed, specialized pastoral economy. Cattle and buffalo formed the economic backbone, valued for meat, milk, and traction, while sheep, goat, pig, and dog added supplementary resources. Hunting declined significantly, with wild species such as blackbuck, nilgai, chital, and sambar present in only small numbers. Aquatic exploitation fish and molluscs continued but played a minor role. The appearance of ivory from Elephas maximus at Masudpur and Farmana points

to long-distance exchange networks rather than local hunting. Symbolic and ritual roles of animals also became prominent, reflected in terracotta figurines, seal motifs, and ritual deposits, particularly of cattle and bulls.

In the Late Harappan phase, as seen at Mitathal (Bhiwani), Mirzapur (Kurukshetra), Bhagwanpura (Kurukshetra), Bahola (Karnal), and Karsola (Jind), the faunal spectrum narrows further. Cattle and buffalo remain dominant, while sheep, goat, and dog continue in smaller numbers. Domestic pigs decline markedly and are absent at some sites. New additions include equids, with donkeys (Equus asinus) and horses (Equus caballus) appearing for the first time in Haryana's archaeological record, indicating changing patterns of mobility and external cultural influences. Wild animals contribute very little: only occasional remains of spotted deer, blackbuck, hare, porcupine, or wild pig occur, suggesting hunting was no longer central to subsistence. At Mirzapur (Kurukshetra), however, spotted deer were still hunted in considerable numbers, showing that local ecology sometimes shaped practices. Aquatic resources fish and molluscs remained in limited use. Overall, Late Harappan economies became localized and heavily reliant on managed herds.

The long-term record shows remarkable continuity in the central role of cattle (Bos indicus) and buffalo (Bubalus bubalis), which persisted throughout all phases as the primary economic and cultural animals. Sheep and goat also remained consistent contributors. Pigs and dogs appear intermittently, with fluctuating significance, while equids were introduced only in the Late phase. Wild fauna, abundant in the Pre-Harappan and still moderately present in the Early Harappan, declined progressively through the Mature period and became marginal by the Late Harappan. Large wild herbivores such as gaur, wild buffalo, sambar, and four-horned antelope vanish altogether, while deer and antelope survive only in trace numbers. The disappearance of many wild species reflects both environmental stress on the Ghaggar–Saraswati system and a cultural shift toward a fully pastoral economy.

The faunal assemblage from Haryana reflects a progressive shift in subsistence patterns, moving from a diversified strategy that combined hunting, pastoral herding, and aquatic exploitation during the Pre-Harappan phase, to a more specialized cattle-dominated pastoral economy in the Mature Harappan period, and ultimately to a restricted and localized subsistence system in the Late Harappan phase. The enduring centrality of cattle and buffalo underscores the resilience of pastoralism, while the decline of wild species highlights ecological and cultural transformation. The appearance of equids in the Late phase signals new external interactions and adaptive strategies. Collectively, these findings reveal the ecological adaptability, and symbolic significance of animals in the Harappan communities of Haryana.

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