

*Memoirs Volume 21(No. 3)*

# **ANIMAL REMAINS FROM BRAHMAGIRI ARCHAEOLOGICAL SITE (KARNATAKA) AND THEIR RELEVANCE TO THE ANCIENT CIVILIZATION**

**T. K. PAL and B. TALUKDER**

*Zoological Survey of India, M-Block, New Alipore, Kolkata-700 053, India*

*e-mail: tkpal51@rediffmail.com*

## **INTRODUCTION**

The archaeology of India south of the Vindhyas, the Deccan or peninsular India documented distinctive elements and that has revealed a chronology of cultures characteristically different from the prehistoric civilizations in other parts of the Indian subcontinent. Wheeler in 1940s, after recovery of interesting objects of hitherto unknown cultural phase in Arikamedu near Pondicherry, conceptualized a coordinated plan for 'opening up' the archaeology of South India and initiated the venture with the excavations at Brahmagiri and Chandravalli in Karnataka. This region has become the focus of the Neolithic archaeology in the post-Wheeler era and the 'Southern Neolithic' was considered to be a distinctive regional assemblage in India (Krishnaswami, 1959, 1960; Allchin & Allchin, 1968; Thapar, 1974, 1978; Sankalia, 1977; Settar and Korisettar, 2002). A characteristically distinctive aspect of this culture becomes the 'ashmound' sites which consist of large heaped accumulations of ash and vitrified material (Zeuner, 1959; Allchin, 1961, 1963a; Mujumder & Rajguru, 1966; Paddayya, 1973, 1991-92). These sites to some extent overlap in time with the 'Chalcolithic cultures' of the northern Deccan (Maharashtra).

During 1940s notable advances in the Neolithic archaeology was made through the first systematic excavation at Brahmagiri, Maski and Sanganakallu. The first account of excavation at Brahmagiri by M.H. Krishna came out in 1943 and the report of Wheeler's excavation was published in 1947.

## **LOCATION**

The ancient cultural site at Brahmagiri (12° 22' N and 75° 28' E) is situated at about 30 miles (48.28 km) south of Bellary in the Molakalmalu Taluk of Chitaldurg District of Karnataka State (see Text-Fig. 1). Brahmagiri is a granitic outcrop, rising about 600 ft. (182.88 m.) above the plain. At the foot of the granite outcrop in the vicinity of Asoka's Minor Rock Edict No. 1 had a township of **Isila**, mentioned in the edict. M.H. Krishna in 1940s carried out trial excavations not only in this township but also in the large number of Megalithic cists surrounding the old township in the plain. The northern slope of Brahmagiri, covered largely by a tumbled mass of granite boulders bore enough signs of ancient occupation comprising potsherds, fragmentary wall, remains of small terraced platforms and dry stone walling. A 200 yards (182.88 m.) wide long strip with a mass of occupation earth and sherds was noticed in the

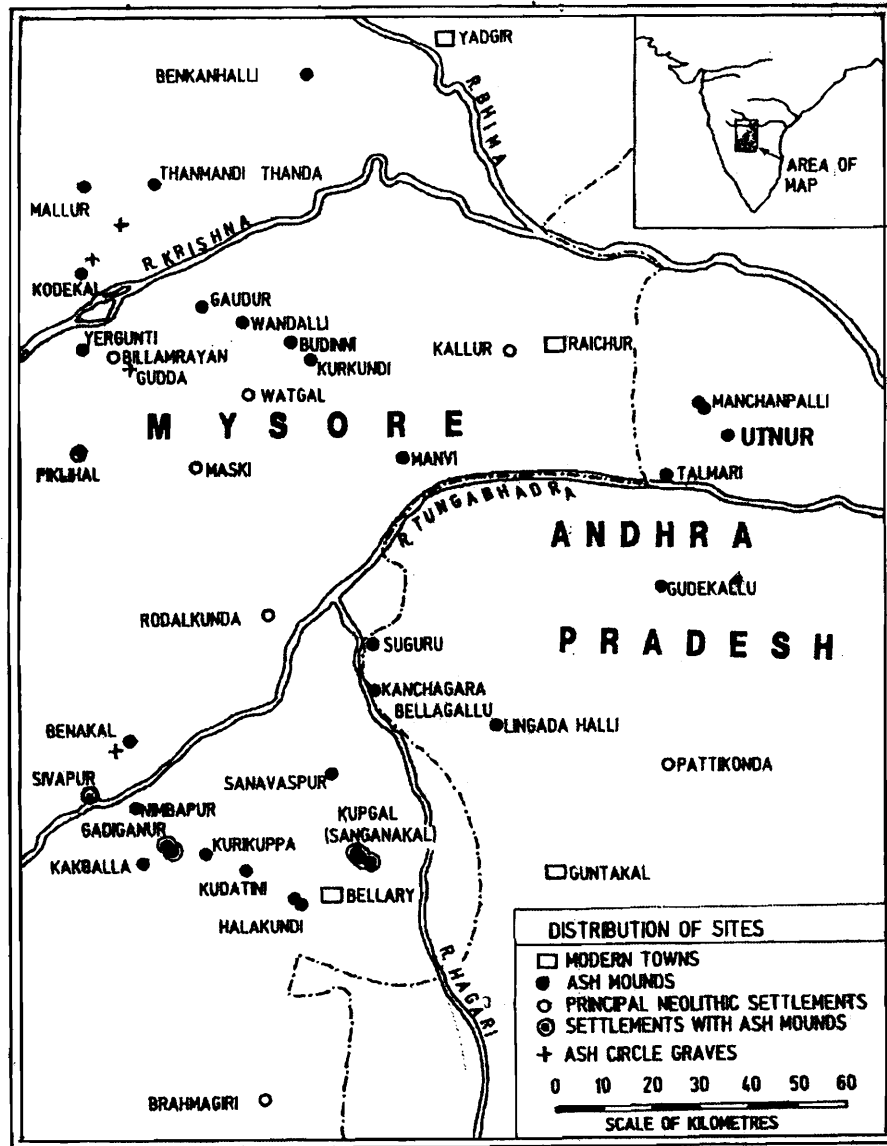


Fig. 1. Distribution of different Neolithic sites and ashmounds in Karnataka (Mysore) and adjacent areas (after Settar and Korisetar, 2002).

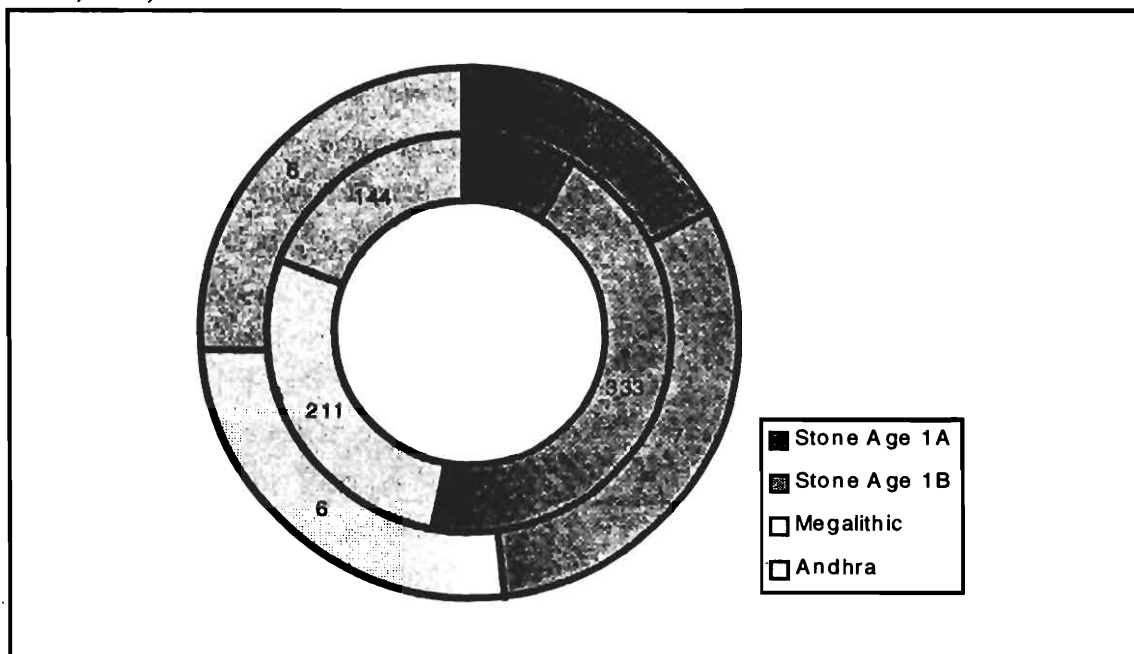


Fig. 2. Relative availability of animal remains (AAR) (inner circle) and number of animal species (NAS) (outer circle) in the Stone Age 1 A, Stone Age 1B, Megalithic, and Andhra cultures of Brahmagiri.

place. Apart from this structure cist tombs and Megalithic remains were found to a depth of about 500 yards (457.20 m.) for about a mile (1.60 km)

in this area. Many of these were removed for agricultural practices by the modern people but quite a few survived till Krishna's excavation.



**Fig. 3.** View of Brahmagiri Archaeological site; Foreground right hand corner : Cuttings Br. 21-23 (After Wheeler, 1959).

### **HISTORY OF EXCAVATION AND SUCCESSION OF HUMAN CULTURES**

In 1947 the Archaeological Survey of India (ASI) in collaboration with the Archaeological Department of Mysore state (earlier name of Karnataka) carried out more scientific at Brahmagiri subsequent to the primary excavation by the Archaeological Department of Mysore state. The main objective of the excavation was to find out the correlation of a typical Megalithic culture with the cultures of an adjacent urban site with a definable chronological datum-line. There was a brick chaitya on the hill side and that was

the most coherent surviving Megalithic monument of Isila township. This trial pits were sunk at the western foot but the most productive area was situated towards north-east, in sites, Br. 21, Br. 22 and Br. 23, where three main cultures *viz.*, (i) Brahmagiri stone Axe, (ii) Megalithic and (iii) Andhra cultures were found in distinct succession. In the site Br. 17, only Stone Axe phase was observed. To the east of these sites at least ten Megalithic structures were explored. The pits were dug mostly in the form of single or conjoined 20 ft. squares (1.85 sq. m.) or 400 sq. ft. (37.16 sq.m.) area.

The sequence of cultures revealed by these pits, from bottom to top, was as follows :

**I. The Brahmagiri Stone Axe culture**—A crude chalcolithic culture extending to a height of about 9 ft. (2.74 m.) from the natural surface. It was subdivided into IA (early) and IB (late).

**II. The Megalithic culture**—An Iron Age culture identical with that of the local Megalithic tombs and pit circles, extending to a further height of 3-4 ft. (0.91-1.21 m.).

**III. The Andhra culture**—The culture that extended from the surface, a further height of 2.5 to 3.5 ft. (0.76-1.06 m.).

The three cultures, I-III, were interlocked by marked overlaps.

#### AGE OF THE CULTURES AND THEIR CHARACTERISTIC FEATURES

Wheeler (1947) gave chronology and characteristics of the past occupation of the town-site at Brahmagiri as follows :

**I. The Brahmagiri Stone Axe Culture**—This culture was characterized by the presence of polished pointed-butt axes of Trap rock. These axes were associated with numerous crude microliths of jasper, flint, agate, common opal, rock crystal etc. No iron was recovered in association with this culture. The age of the culture was considered to be early First millennium B.C. to the beginning of the Second century B.C., continuing as a dwindling subculture through most of the succeeding Megalithic phase.

**II. The Megalithic Culture**—This culture was considered to be intrusive and first introduced iron-working in the human folk of the locality. These were represented with tools and weapons. Iron sickles, knives, swords, spears, arrow-heads and wedges were recovered amongst the cultural

equipments. Polished stone axes and microliths, recovered occasionally at this level, were probably the overlaps of the earlier culture. The age was considered to be after c.200 B.C. to the middle of the First century A.D., overlapping the Andhra culture.

**III. The Andhra Culture**—This culture was characterized by a far more sophisticated ceramics normally turned on fast wheels. Its most characteristic pottery was a range of types, occasionally salt-glazed with rectilinear decoration in white pigment under a wash of russet-coloured ochre. The age was considered to be about the middle of the First century A.D. to Third century A.D.

#### ANIMAL REMAINS RECOVERED FROM BRAHMAGIRI ARCHAEOLOGICAL SITE

Many animal remains along with the objects of archaeological importance were recovered from the excavations of 1947 by the ASI and the Archaeology Department of Mysore State. The animal remains were sent to the Zoological Survey of India (ZSI) for examination. Earlier, Nath (1963) worked out skeletal parts of some animals obtained during the excavations. Systematic inventories of the available animal remains preserved in the ZSI are documented here and their relevance in the past societies is discussed in the present paper.

The zoological-taxonomical analysis of the animal remains is presented in the Table 1.

#### SYSTEMATIC ACCOUNT OF ANIMAL REMAINS

The animal remains of Brahmagiri archaeological site are worked out and the result of it is presented in Table 1.

**Table 1. Systematic analysis of animal remains recovered from Brahmagiri archaeological site.****Culture : Early Stone Axe (1A)**

| Name of Species                 | No. of Material | Identity of Material                                                                                                                           | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material  |
|---------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------|
| <i>Equus</i> sp.                | 1               | 5 <sup>th</sup> cervical vertebra without transverse process                                                                                   | Br. 22; L-I-IV; S-15                | Sub adult              |
| <i>Lepus nigricollis</i> Cuvier | 1               | Proximal fragment of right tibia                                                                                                               | "                                   | Broken                 |
|                                 | 1               | Distal fragment of right humerus with medial and lateral condyles                                                                              | "                                   | "                      |
|                                 | 1               | Distal fragment of right tibia                                                                                                                 | "                                   | "                      |
| <i>Bos indicus</i> Linn.        | 1               | Proximal fragment of right metatarsus with fused scaphoid and cuboid of proximal tarsal and fused 2 <sup>nd</sup> and 3 <sup>rd</sup> cuniform | Br. 21; L-? S-19                    | "                      |
|                                 | 1               | Proximal fragment of right 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal                                                                      | "                                   | "                      |
|                                 | 1               | Distal fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                                                                              | "                                   | "                      |
|                                 | 1               | Neural arch of thoracic vertebra without spine                                                                                                 | "                                   | "                      |
|                                 | 1               | Right upper 3 <sup>rd</sup> premolar                                                                                                           | "                                   | "                      |
|                                 | 1               | Body of thoracic vertebra                                                                                                                      | "                                   | "                      |
|                                 | 5               | Fragments of ribs                                                                                                                              | "                                   | "                      |
|                                 | 1               | Body of thoracic vertebra with a portion of transverse process                                                                                 | "                                   | "                      |
|                                 | 1               | Fragment of shaft of ulna with part of radius                                                                                                  | "                                   | "                      |
|                                 | 1               | Proximal fragment of right ulna with olecranon process and semilunar notch                                                                     | Br. 21; L-IV-V; S-18a               | "                      |
|                                 | 1               | Distal fragment of shaft of left femur with supra-condyloid fossa                                                                              | "                                   | "                      |
|                                 | 1               | Left proximal fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal                                                                       | "                                   | "                      |
|                                 | 1               | Proximal fragment of right radius                                                                                                              | "                                   | "                      |
|                                 | 1               | Distal end of 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal                                                                                   | Br. 21; L-IV-V; S-18a               | "                      |
|                                 | 1               | Right upper 3 <sup>rd</sup> molar tooth                                                                                                        | "                                   | Complete and sub adult |
|                                 | 1               | Right lower 1 <sup>st</sup> molar tooth                                                                                                        | "                                   | "                      |
|                                 | 1               | Fragment of shaft of rib                                                                                                                       | "                                   | Broken                 |
|                                 | 1               | Distal fragment of shaft of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                                                                     | Br. 22; L- I-IV; S-15               | "                      |
|                                 | 1               | Left lower 3 <sup>rd</sup> molar tooth                                                                                                         | "                                   | Sub adult              |
|                                 | 2               | Fragments of ribs                                                                                                                              | "                                   | "                      |
|                                 | 1               | 1 <sup>st</sup> phalanx of fore-foot                                                                                                           | "                                   | "                      |
|                                 | 2               | 2 <sup>nd</sup> phalanx of fore-foot                                                                                                           | "                                   | Sub adult              |
|                                 | 2               | Right lower 2 <sup>nd</sup> premolar teeth                                                                                                     | "                                   | Complete               |
|                                 | 1               | Left lower 2 <sup>nd</sup> incisor tooth                                                                                                       | "                                   | "                      |
|                                 | 1               | Proximal fragment of right 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                                                                      | "                                   | Broken                 |
|                                 | 1               | Proximal fragment of left 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                                                                       | "                                   | "                      |
|                                 | 2               | Thoracic vertebra                                                                                                                              | "                                   | "                      |

| Name of Species             | No. of Material | Identity of Material                                                                                                 | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|-----------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bos indicus</i><br>Linn. | 1               | 3 <sup>rd</sup> phalanx of hind foot                                                                                 | Br. 22; L-I-IV;<br>S-15             | Broken                |
|                             | 1               | Right calcaneum with tuber calcis and without distal facet for cuboid                                                | "                                   | "                     |
|                             | 1               | Fragment of right ramus of lower jaw with 2 <sup>nd</sup> and 3 <sup>rd</sup> molar teeth                            | "                                   | "                     |
|                             | 1               | Fragment of right ramus of mandible with 1 <sup>st</sup> molar tooth                                                 | "                                   | Sub adult             |
|                             | 1               | Proximal fragment of thoracic rib                                                                                    | "                                   | Broken                |
|                             | 1               | 3 <sup>rd</sup> phalanx of hind limb                                                                                 | "                                   | "                     |
|                             | 1               | Distal fragment of femur with supra-condyloid fossa                                                                  | "                                   | "                     |
|                             | 1               | Right astragalus                                                                                                     | "                                   | Sub adult             |
|                             | 1               | Fragment of cervical vertebra with anterior and posterior articular processes                                        | "                                   | Broken                |
|                             | 1               | Fragment of lower jaw                                                                                                | "                                   | "                     |
|                             | 1               | Fragment of lateral condyle of femur                                                                                 | "                                   | "                     |
|                             | 1               | 2 <sup>nd</sup> phalanx of fore limb                                                                                 | "                                   | Sub adult             |
|                             | 1               | Right 1 <sup>st</sup> premolar tooth                                                                                 | "                                   | "                     |
|                             | 1               | Left 1 <sup>st</sup> premolar tooth                                                                                  | "                                   | "                     |
|                             | 1               | Left 1 <sup>st</sup> upper premolar tooth                                                                            | "                                   | "                     |
| <i>Ovis vignei</i><br>Blyth | 1               | Fragment of left horizontal ramus of mandible with 1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup> molar teeth | Br. 21; L- Nil ;<br>S -19           | Broken                |
|                             | 1               | Thoracic vertebra                                                                                                    | Br. 22; L- I –<br>IV ; S -15        | Complete              |
|                             | 1               | Fragment of lumbar vertebra with neural arch and post-articular process                                              | "                                   | Broken                |
|                             | 1               | Distal fragment of shaft of humerus                                                                                  | Br. 22; L- I-IV;<br>S- 15           | Broken                |
|                             | 2               | Fragments of shaft of radius                                                                                         | "                                   | "                     |
|                             | 4               | Fragments of femora                                                                                                  | "                                   | "                     |

**Culture : Late Stone Axe (1B)**

| Name of Species                  | No. of Material | Identity of Material                                                               | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|----------------------------------|-----------------|------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Canis familiaris</i><br>Linn. | 1               | Fragment of ramus of mandible with 1 <sup>st</sup> and 2 <sup>nd</sup> molar teeth | Br. 17; L -B1;<br>S -10             | Broken                |
| <i>Bos indicus</i><br>Linn.      | 1               | Proximal fragment of right femur with head                                         | Br. 17; L- C4;<br>S-5               | "                     |
|                                  | 1               | Fragment of shaft of left 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsals          | "                                   | "                     |
|                                  | 2               | Fragments of ribs                                                                  | "                                   | "                     |
|                                  | 1               | Left calcaneum without distal facet for cuboid                                     | Br. 17; L- A1;<br>S- 6              | "                     |

| Name of Species             | No. of Material | Identity of Material                                                                                                          | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|-----------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bos indicus</i><br>Linn. | 1               | Distal fragment of left 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal                                                        | Br. 17; L- A1; S-6                  | Broken                |
|                             | 1               | 1 <sup>st</sup> phalanx of left fore-foot                                                                                     | "                                   | Complete              |
|                             | 1               | 1 <sup>st</sup> left lower premolar tooth                                                                                     | "                                   | "                     |
|                             | 1               | 1 <sup>st</sup> left upper molar tooth                                                                                        | Br. 17; L-A1; S-7                   | Broken                |
|                             | 1               | Fragment of shaft of rib                                                                                                      | "                                   | "                     |
|                             | 1               | Proximal fragment of left tibia                                                                                               | Br. 17; L-A1; S-8                   | "                     |
|                             | 1               | Fragment of left ramus of mandible without teeth                                                                              | "                                   | Sub adult             |
|                             | 1               | Fragment of left ramus of mandible without teeth                                                                              | "                                   | Broken                |
|                             | 1               | Coronoid process of mandible                                                                                                  | "                                   | "                     |
|                             | 1               | Incisor tooth                                                                                                                 | "                                   | "                     |
|                             | 1               | Left astragalus                                                                                                               | Br. 17; L-B1; S-10                  | Complete              |
|                             | 1               | Left calcaneum without tuber calcis                                                                                           | "                                   | Broken                |
|                             | 1               | Fragment of illium of left pelvis                                                                                             | "                                   | "                     |
|                             | 1               | Distal fragment of right tibia                                                                                                | "                                   | "                     |
|                             | 1               | Right navicular and cuboid of scapula                                                                                         | Br.17; L-B1; S-10                   | Broken                |
|                             | 1               | Fragment of right upper jaw with 2 <sup>nd</sup> molar tooth                                                                  | "                                   | Sub adult             |
|                             | 1               | Fragment of illium of right pelvis                                                                                            | "                                   | Broken                |
|                             | 1               | Distal fragment of left humerus with medial and lateral condyle                                                               | "                                   | "                     |
|                             | 1               | Proximal fragment of right femur with head                                                                                    | "                                   | "                     |
|                             | 1               | 6 <sup>th</sup> cervical vertebra with body, transverse process, with articular surface and with a portion of spinous process | "                                   | Complete              |
|                             | 1               | Fragment of acetabulum with a portion of illium of left pelvis                                                                | "                                   | Broken                |
|                             | 1               | Body of cervical vertebra                                                                                                     | "                                   | Complete              |
|                             | 1               | Right astragalus                                                                                                              | Br. 17 L-B1; S-11                   | "                     |
|                             | 2               | Proximal fragments of right metatarsal                                                                                        | "                                   | Broken                |
|                             | 1               | Fragment of rib                                                                                                               | "                                   | "                     |
|                             | 1               | Fragment of left lower jaw with 1 <sup>st</sup> molar tooth                                                                   | "                                   | "                     |
|                             | 1               | Fragment of left 3 <sup>rd</sup> molar tooth                                                                                  | "                                   | "                     |
|                             | 1               | Left 1 <sup>st</sup> upper molar tooth                                                                                        | "                                   | Complete              |
|                             | 1               | Fragment of rib                                                                                                               | Br. 19; L-A1; S-4                   | Broken                |
|                             | 1               | Transverse process of lumber vertebra                                                                                         | "                                   | Sub adult             |
|                             | 1               | Fragment of right upper jaw with 3 <sup>rd</sup> premolar teeth                                                               | "                                   | Broken                |
|                             | 1               | Fragment of right upper jaw with 3 <sup>rd</sup> premolar tooth                                                               | Br.19; L-A1; S-4b                   | Broken                |
|                             | 6               | Fragments of shaft of thoracic ribs                                                                                           | "                                   | "                     |
|                             | 1               | 3 <sup>rd</sup> left phalanx                                                                                                  | "                                   | Complete              |
|                             | 1               | Fragment of acetabulum of left pelvis                                                                                         | "                                   | Broken                |
|                             | 1               | Right upper 1 <sup>st</sup> molar tooth                                                                                       | "                                   | "                     |

| Name of Species             | No. of Material                              | Identity of Material                                                                               | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|-----------------------------|----------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bos indicus</i><br>Linn. | 1                                            | Fragment of pelvis                                                                                 | Br.19; L-A1; S-4b                   | Broken                |
|                             | 1                                            | Fragment of proximal end of right radius                                                           | Br.19; L-A1; S-5                    | "                     |
|                             | 1                                            | Fragment of ulna with olecranon process and semilunar notch                                        | Br. 19; L-A1; S-5                   | "                     |
|                             | 2                                            | Distal fragments of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                                 | Br. 20; L-B2; S-4                   | "                     |
|                             | 1                                            | Right 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpals without distal end                           | "                                   | "                     |
|                             | 1                                            | Distal fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal                                  | Br. 20; L-B2; S-4                   | "                     |
|                             | 1                                            | Left 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal without distal portion                         | "                                   | "                     |
|                             | 1                                            | Distal fragment of left humerus with lateral and medial condyle                                    | "                                   | "                     |
|                             | 1                                            | Fragment of shaft of femur                                                                         | "                                   | "                     |
|                             | 1                                            | Proximal shaft of right tibia                                                                      | "                                   | Sub adult             |
|                             | 1                                            | 2 <sup>nd</sup> phalanx of left fore-foot                                                          | "                                   | Broken                |
|                             | 1                                            | Fragment of femur with supracondyloid fossa                                                        | "                                   | "                     |
|                             | 1                                            | Fragment of frontal bone                                                                           | "                                   | "                     |
|                             | 1                                            | 8 <sup>th</sup> cervical vertebra                                                                  | "                                   | Complete              |
|                             | 4                                            | Fragments of shaft of thoracic ribs                                                                | "                                   | Broken                |
|                             | 1                                            | Fragment of 1 <sup>st</sup> phalanx of hind foot                                                   | "                                   | "                     |
|                             | 2                                            | Fragments of body of thoracic vertebra                                                             | "                                   | "                     |
|                             | 1                                            | Lateral condyle of left tibia                                                                      | "                                   | "                     |
|                             | 1                                            | Fragment of thoracic vertebra with transverse articular process                                    | "                                   | "                     |
|                             | 1                                            | Fragment of ilium with a part of acetabulum                                                        | "                                   | Sub adult             |
|                             | 1                                            | Fragment of right molar with zygomatic and temporal process of skull                               | "                                   | Broken                |
|                             | 1                                            | Distal fragment of metacarpal                                                                      | "                                   | Sub adult             |
|                             | 2                                            | Distal fragments of left humerus                                                                   | Br. 20; L-B2; S-5                   | Broken                |
|                             | 1                                            | Proximal fragment of right radius                                                                  | "                                   | "                     |
|                             | 1                                            | Proximal fragment of left tibia                                                                    | "                                   | "                     |
|                             | 1                                            | Fragment of shaft of left femur                                                                    | "                                   | "                     |
|                             | 1                                            | Left calcaneum                                                                                     | "                                   | "                     |
|                             | 1                                            | Distal fragment of shaft of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal without distal condyles | Br. 20; L-B2; S-5                   | Broken                |
|                             | 1                                            | Fragment of distal condyle of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpals                      | Br. 20; L-B2; S-5                   | "                     |
|                             | 1                                            | Right astragalus                                                                                   | "                                   | Complete              |
|                             | 1                                            | 1 <sup>st</sup> phalanx of left hind foot                                                          | Br. 20; L-B2; S-5a                  | "                     |
|                             | 1                                            | Fragment of thoracic rib                                                                           | "                                   | Broken                |
|                             | 1                                            | Distal fragment of 1 <sup>st</sup> phalanx of left hind-foot                                       | "                                   | "                     |
| 1                           | Fragment of left scaphoid of proximal carpus | "                                                                                                  | "                                   |                       |
| 5                           | Fragment of shaft of thoracic rib            | Br. 20; L-B2; S-6                                                                                  | "                                   |                       |
| 1                           | Left astragalus                              | "                                                                                                  | Complete                            |                       |
| 1                           | Fragment of cervical vertebra without spine  | "                                                                                                  | Broken                              |                       |

| Name of Species             | No. of Material   | Identity of Material                                                                | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|-----------------------------|-------------------|-------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bos indicus</i><br>Linn. | 1                 | Fragment of shaft of left radius with a portion of shaft of ulna                    | Br. 20; L-B2; S-6                   | Broken                |
|                             | 1                 | Shaft of right calcaneum                                                            | "                                   | "                     |
|                             | 1                 | 3 <sup>rd</sup> phalanx of hind limb                                                | "                                   | "                     |
|                             | 2                 | Distal fragment of left radius                                                      | "                                   | "                     |
|                             | 1                 | Right fused navicular and cuboid of proximal tarsal bone                            | Br. 20; L-B2; S-7                   | "                     |
|                             | 1                 | Proximal fragment of right radius                                                   | "                                   | "                     |
|                             | 2                 | Fragments of ribs                                                                   | "                                   | "                     |
|                             | 1                 | Distal fragment of right femur without lateral condyle                              | Br. 20 ;L-B2; S-8                   | "                     |
|                             | 1                 | Fragment of shaft of thoracic rib                                                   | "                                   | "                     |
|                             | 1                 | Proximal fragment of right femur with trochanteric fossa                            | "                                   | "                     |
|                             | 1                 | Fragment of ischium with ischiatic spine of right pelvis                            | "                                   | "                     |
|                             | 1                 | Left lower 2 <sup>nd</sup> premolar tooth                                           | "                                   | Complete              |
|                             | 1                 | Right lower 2 <sup>nd</sup> premolar tooth                                          | "                                   | "                     |
|                             | 1                 | Right lower 3 <sup>rd</sup> premolar tooth                                          | "                                   | "                     |
|                             | 1                 | Left lower 1 <sup>st</sup> molar tooth                                              | "                                   | "                     |
|                             | 1                 | Left lower 2 <sup>nd</sup> molar tooth                                              | "                                   | "                     |
|                             | 1                 | Fragment of rib                                                                     | "                                   | Broken                |
|                             | 1                 | Proximal fragment of right ulna with semilunar notch and without olecranon process  | Br. 20; L-B2; S-8a                  | Broken                |
|                             | 1                 | Proximal fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> right metacarpal           | "                                   | "                     |
|                             | 1                 | Distal fragment of shaft of left 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal     | Br. 20; L-B2; S-7c                  | Sub adult             |
|                             | 1                 | Left lower proximal fragment of left 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal | "                                   | Charred               |
|                             | 1                 | Fragment of left ramus of mandible with dental foramina                             | "                                   | Broken                |
|                             | 1                 | Distal fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                   | "                                   | "                     |
|                             | 1                 | Fragment of distal end of radius                                                    | Br. 21; L-O-III; S-11               | "                     |
|                             | 1                 | Right upper molar tooth                                                             | "                                   | Complete, Sub adult   |
|                             | 1                 | Left upper molar tooth                                                              | "                                   | "                     |
|                             | 1                 | 1 <sup>st</sup> phalanx of hind- foot                                               | "                                   | Broken                |
|                             | 1                 | Proximal fragment of 1 <sup>st</sup> phalanx of fore-foot                           | "                                   | "                     |
|                             | 1                 | 2 <sup>nd</sup> phalanx of fore-foot                                                | "                                   | "                     |
|                             | 1                 | 2 <sup>nd</sup> phalanx of hind-foot                                                | "                                   | Sub adult             |
|                             | 2                 | Fragments of frontal bones of skull                                                 | "                                   | One charred; Broken   |
|                             | 1                 | Left cuniform bone of proximal carpus                                               | "                                   | Sub adult             |
| 2                           | Fragments of ribs | "                                                                                   | Broken                              |                       |

| Name of Species             | No. of Material | Identity of Material                                                                              | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|-----------------------------|-----------------|---------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bos indicus</i><br>Linn. | 1               | Fragment of distal end of right humerus without medial and lateral condyles                       | Br. 21; L-VI-IX;<br>S-12            | Broken                |
|                             | 1               | Distal fragment of right tibia                                                                    | "                                   | "                     |
|                             | 2               | Proximal fragments of right 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsals                       | "                                   | "                     |
|                             | 1               | Left navicular and cuboid bone (fused)                                                            | "                                   | "                     |
|                             | 1               | Right navicular and cuboid bone (fused)                                                           | Br. 21; L-VI-IX;<br>S-12            | Broken                |
|                             | 1               | Left calcaneum with tuber calcic and without distal facet for cuboid                              | "                                   | "                     |
|                             | 1               | Proximal fragment of shaft of left tibia                                                          | "                                   | "                     |
|                             | 2               | Lumber vertebra                                                                                   | "                                   | "                     |
|                             | 1               | Cervical vertebra without transverse process and spinous process                                  | "                                   | "                     |
|                             | 1               | Fragment of lumber vertebra                                                                       | "                                   | "                     |
|                             | 1               | Body of cervical vertebra with a bit of transverse process                                        | "                                   | "                     |
|                             | 1               | Posterior articular process with a portion of neural arch of lumber vertebra                      | "                                   | "                     |
|                             | 1               | Fragment of cervical vertebra with a portion of transverse process and anterior articular process | "                                   | "                     |
|                             | 1               | Left upper 1 <sup>st</sup> molar                                                                  | "                                   | Complete              |
|                             | 1               | Fragment of right upper jaw with 3 <sup>rd</sup> premolar and 1 <sup>st</sup> molar teeth         | "                                   | Sub adult             |
|                             | 1               | Left upper 2 <sup>nd</sup> molar tooth                                                            | "                                   | "                     |
|                             | 1               | Left lower 3 <sup>rd</sup> molar tooth                                                            | "                                   | "                     |
|                             | 1               | Left lower 1 <sup>st</sup> molar tooth                                                            | "                                   | "                     |
|                             | 1               | Fragment of lower jaw with 2 <sup>nd</sup> premolar tooth                                         | "                                   | Broken                |
|                             | 1               | Fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                                        | "                                   | "                     |
|                             | 1               | Proximal fragment of left ulna with semilunar notch                                               | "                                   | "                     |
|                             | 2               | Left calcanii with tuber calcis and without distal facet for cuboid                               | "                                   | "                     |
|                             | 1               | Distal extremity of left tibia                                                                    | "                                   | "                     |
|                             | 1               | Body of thoracic vertebra                                                                         | Br. 21; L-VI-IX;<br>S-12            | Broken                |
|                             | 1               | Fragment of medial condyle of humerus                                                             | "                                   | "                     |
|                             | 1               | Fragment of proximal extremity of left radius                                                     | "                                   | "                     |
|                             | 1               | Fragment of patella                                                                               | "                                   | "                     |
|                             | 2               | 1 <sup>st</sup> phalanx of fore-foot                                                              | "                                   | Sub adult             |
|                             | 1               | 2 <sup>nd</sup> phalanx of fore foot                                                              | "                                   | Broken                |
|                             | 1               | Left upper 1 <sup>st</sup> molar tooth                                                            | "                                   | "                     |
|                             | 1               | Lunate bone of proximal carpus                                                                    | "                                   | "                     |

| Name of Species             | No. of Material | Identity of Material                                                                  | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|-----------------------------|-----------------|---------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bos indicus</i><br>Linn. | 1               | Distal fragment of right humerus with medial and lateral condyles                     | Br. 21; L-DD;<br>S-10               | Broken                |
|                             | 1               | Fragment of distal extremity of left femur                                            | "                                   | "                     |
|                             | 1               | Fragment of left humerus with deltoid tuberosity                                      | "                                   | "                     |
|                             | 1               | Cervical vertebra without transverse process and spinous process                      | Br. 21; L-?;<br>S-10                | "                     |
|                             | 2               | Fragments of thoracic vertebrae                                                       | "                                   | "                     |
|                             | 1               | Distal fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal with condyle        | "                                   | "                     |
|                             | 1               | Fragment of horn core                                                                 | "                                   | "                     |
|                             | 1               | Orbital part of frontal bone with orbital opening                                     | "                                   | "                     |
|                             | 1               | Fragment of lumbar vertebra with posterior articular process and spinous process      | "                                   | "                     |
|                             | 2               | Fragment of lower jaw                                                                 | "                                   | Charred               |
|                             | 1               | Left lower 3 <sup>rd</sup> premolar tooth                                             | "                                   | Sub adult             |
|                             | 1               | 1 <sup>st</sup> phalanx of hind foot                                                  | "                                   | Broken                |
|                             | 1               | 1 <sup>st</sup> left upper premolar tooth                                             | "                                   | Complete              |
|                             | 1               | Right navicular and cuboid of proximal tarsal (fused)                                 | "                                   | Broken                |
|                             | 1               | Left navicular and cuboid of proximal tarsal (fused)                                  | Br. 21; L-?;<br>S-10                | Broken                |
|                             | 1               | Distal fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal with condyle        | "                                   | "                     |
|                             | 1               | Fragment of superior horizontal ramus with right mandible                             | "                                   | "                     |
|                             | 1               | Fragment of vertical ramus of mandible with a portion of coronoid process and condyle | "                                   | "                     |
|                             | 1               | Right upper 3 <sup>rd</sup> premolar tooth                                            | "                                   | Complete              |
|                             | 1               | Left upper 3 <sup>rd</sup> premolar tooth                                             | "                                   | "                     |
|                             | 1               | Right 2 <sup>nd</sup> molar tooth                                                     | "                                   | Sub adult             |
|                             | 1               | Left lower 3 <sup>rd</sup> molar tooth                                                | "                                   | "                     |
|                             | 1               | Right lower 2 <sup>nd</sup> molar tooth                                               | "                                   | Sub adult;<br>charred |
|                             | 1               | Right lower 1 <sup>st</sup> molar tooth                                               | "                                   | "                     |
|                             | 1               | Left lower 2 <sup>nd</sup> premolar                                                   | "                                   | Broken                |
|                             | 1               | Fragment of thoracic vertebra                                                         | "                                   | "                     |
|                             | 1               | Transverse process of cervical vertebra                                               | "                                   | Charred               |
|                             | 1               | Fragment of axis vertebra with odontoid process and anterior articular process        | "                                   | "                     |
|                             | 1               | Proximal fragment of left ulna with semilunar notch                                   | "                                   | Broken                |
|                             | 1               | Fragment of rib                                                                       | "                                   | Broken                |
|                             | 1               | Fragment of cervical vertebra with posterior articular process                        | "                                   | Charred               |

| Name of Species             | No. of Material                                               | Identity of Material                                                                          | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|-----------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bos indicus</i><br>Linn. | 2                                                             | 1 <sup>st</sup> phalanx of fore-foot                                                          | Br. 21; L-?; S-10                   | Sub adult             |
|                             | 3                                                             | 2 <sup>nd</sup> phalanx of hind-foot                                                          | "                                   | Complete              |
|                             | 1                                                             | 1 <sup>st</sup> phalanx of fore-foot                                                          | "                                   | "                     |
|                             | 1                                                             | Fragment of shaft of right radius with distal extremity                                       | "                                   | Sub adult             |
|                             | 1                                                             | Proximal fragment of left femur without head and tuberosity                                   | "                                   | "                     |
|                             | 1                                                             | 5 <sup>th</sup> cervical vertebra without transverse process                                  | "                                   | Broken                |
|                             | 1                                                             | Lumber vertebra without transverse process                                                    | "                                   | "                     |
|                             | 1                                                             | Proximal fragment of left 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                      | "                                   | Charred               |
|                             | 1                                                             | Fragment of left ramus of mandible with mental foraminas and without corpus                   | "                                   | Broken                |
|                             | 1                                                             | Distal fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                             | "                                   | "                     |
|                             | 1                                                             | Fragment of shaft of radius                                                                   | Br. 22; L-IV-VI; S-11               | "                     |
|                             | 1                                                             | Fragment of rib                                                                               | "                                   | "                     |
|                             | 1                                                             | 1 <sup>st</sup> phalanx of hind-foot                                                          | Br. 22; L-V-VIII; S-12              | Sub adult             |
|                             | 1                                                             | Proximal fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                           | "                                   | "                     |
|                             | 1                                                             | 1 <sup>st</sup> phalanx of fore-foot                                                          | "                                   | Complete              |
|                             | 1                                                             | Left upper 1 <sup>st</sup> molar tooth                                                        | "                                   | Sub adult             |
|                             | 2                                                             | Incisor teeth of lower jaw                                                                    | "                                   | Complete              |
|                             | 1                                                             | Fragment of shaft of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                           | "                                   | Sub adult             |
|                             | 1                                                             | Proximal fragment of right metacarpal                                                         | Br. 22; L-II-V; S-13                | Broken                |
|                             | 1                                                             | 2 <sup>nd</sup> phalanx of left fore-foot                                                     | "                                   | "                     |
|                             | 1                                                             | Left incisor tooth                                                                            | "                                   | Sub adult             |
|                             | 1                                                             | Fragment of left upper jaw                                                                    | "                                   | Broken                |
|                             | 1                                                             | Fragment of anterior portion of right ramus of mandible with mental foramina and without body | "                                   | Sub adult             |
|                             | 1                                                             | Proximal fragment of the medial condyle of                                                    | Br. 22; L-IV-V; S-14                | Broken                |
|                             | 1                                                             | Fragment of upper molar tooth                                                                 | "                                   | Sub adult             |
|                             | 1                                                             | Lower 1 <sup>st</sup> molar tooth                                                             | "                                   | "                     |
|                             | 1                                                             | Distal fragment of shaft of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                    | Br. 22; L-I-IV; S-15                | Broken                |
|                             | 1                                                             | Left lower 3 <sup>rd</sup> molar tooth                                                        | "                                   | "                     |
|                             | 2                                                             | Fragments of ribs                                                                             | "                                   | "                     |
|                             | 1                                                             | 1 <sup>st</sup> phalanx of fore-foot                                                          | "                                   | "                     |
|                             | 2                                                             | 2 <sup>nd</sup> phalanx of fore-foot                                                          | "                                   | Sub adult             |
|                             | 2                                                             | Lower 2 <sup>nd</sup> premolar tooth                                                          | "                                   | Broken                |
| 1                           | Proximal fragment of right metacarpal                         | "                                                                                             | "                                   |                       |
| 2                           | Thoracic vertebrae                                            | "                                                                                             | "                                   |                       |
| 1                           | Right calcaneum with tuber calcis and distal facet for cuboid | "                                                                                             | "                                   |                       |

| Name of Species             | No. of Material                   | Identity of Material                                                                      | Site (Br.) / Locus (L)/ Stratum (S)                             | Condition of Material |
|-----------------------------|-----------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-----------------------|
| <i>Bos indicus</i><br>Linn. | 1                                 | Fragment of right ramus of lower jaw with 2 <sup>nd</sup> and 3 <sup>rd</sup> molar teeth | Br. 22; L-I-IV;<br>S-15                                         | Broken                |
|                             | 1                                 | Fragment of right ramus of mandible with 1 <sup>st</sup> molar                            | "                                                               | Sub adult             |
|                             | 1                                 | Proximal fragment of thoracic rib                                                         | "                                                               | Broken                |
|                             | 1                                 | 3 <sup>rd</sup> phalanx of hind-limb                                                      | "                                                               | "                     |
|                             | 1                                 | Distal fragment of femur with supra-condyloid fossa                                       | "                                                               | "                     |
|                             | 1                                 | Right astragalus                                                                          | "                                                               | Sub adult             |
|                             | 1                                 | Fragment of cervical vertebra with anterior and posterior articular processes             | "                                                               | Broken                |
|                             | 1                                 | Fragment of lower jaw                                                                     | "                                                               | "                     |
|                             | 1                                 | Fragment of lateral condyle of femur                                                      | "                                                               | "                     |
|                             | 1                                 | 2 <sup>nd</sup> phalanx of fore-limb                                                      | "                                                               | Sub adult             |
|                             | 1                                 | Right 1 <sup>st</sup> premolar tooth                                                      | "                                                               | "                     |
|                             | 1                                 | Left 1 <sup>st</sup> premolar tooth                                                       | "                                                               | "                     |
|                             | 1                                 | 1 <sup>st</sup> upper premolar tooth                                                      | "                                                               | "                     |
|                             | 1                                 | Left astragalus                                                                           | Br. 23; L-IV-VI;<br>S-12                                        | Broken                |
|                             | 1                                 | Fragment of left calcaneum                                                                | "                                                               | "                     |
|                             | 1                                 | Fragment of rib                                                                           | "                                                               | "                     |
|                             | 1                                 | Fragment of shaft of humerus                                                              | "                                                               | "                     |
|                             | 1                                 | Distal fragment of radius with cuniform bone of proximal carpus                           | "                                                               | "                     |
|                             | <i>Bubalus bubalis</i><br>(Linn.) | 1                                                                                         | Distal fragment of left humerus with lateral and medial condyle | Br. 17; L-A1;<br>S-5  |
| 1                           |                                   | 2 <sup>nd</sup> phalanx of fore-foot                                                      | "                                                               | Complete              |
| 1                           |                                   | Fragment of ramus of mandible                                                             | "                                                               | Broken                |
| 1                           |                                   | Distal fragment of right humerus with medial and lateral condyles                         | Br. 21; L-DP;<br>S-10                                           | "                     |
| 2                           |                                   | Proximal fragments of humerus with head and without tuberosity                            | "                                                               | "                     |
| 2                           |                                   | Axis vertebra                                                                             | "                                                               | Complete              |
| 3                           |                                   | Fragments of ribs                                                                         | "                                                               | Broken                |
| 1                           |                                   | Fragment of shaft of humerus with deltoid tuberosity                                      | "                                                               | "                     |
| 1                           |                                   | Fragment of ilium near tubercalcis of pelvic girdle                                       | "                                                               | "                     |
| 1                           |                                   | Fragment of scapula                                                                       | "                                                               | "                     |
| 1                           |                                   | Neural arch of thoracic vertebra without spine                                            | "                                                               | "                     |
| 1                           |                                   | Fragment of blade of scapula                                                              | "                                                               | "                     |
| 1                           |                                   | Left fused navicular and cuboid of proximal tarsal                                        | "                                                               | "                     |
| 3                           |                                   | Proximal fragments of left humerus with head                                              | "                                                               | "                     |
| 1                           |                                   | Left tibia without distal portion                                                         | "                                                               | "                     |

| Name of Species                       | No. of Material | Identity of Material                                                                                  | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|---------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bubalus bubalis</i><br>(Linn.)     | 2               | Proximal fragments of left 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                             | Br.21; L-DP; S-10                   | Broken                |
|                                       | 1               | Fragment of left horizontal ramus of mandible with 2 <sup>nd</sup> and 3 <sup>rd</sup> premolar teeth | "                                   | "                     |
|                                       | 1               | Fragment of ilium of right pelvis                                                                     | "                                   | "                     |
|                                       | 1               | Fragment of right pelvis with a part of acetabulum and a portion of ischium                           | "                                   | "                     |
|                                       | 3               | Fragments of left upper jaw with 1 <sup>st</sup> and 2 <sup>nd</sup> premolar teeth                   | "                                   | "                     |
|                                       | 5               | Fragments of right upper jaw with 2 <sup>nd</sup> premolar teeth                                      | "                                   | "                     |
|                                       | 12              | Right upper 1 <sup>st</sup> molars                                                                    | "                                   | "                     |
| <i>Ovis vignei</i><br>Blyth           | 1               | Right scapula with glenoid cavity, coronoid process and a portion of spine blade                      | Br. 21; L-DD; S-10                  | "                     |
|                                       | 1               | Fragment of shaft of radius                                                                           | "                                   | "                     |
|                                       | 1               | Distal fragments of right humerus with medial and lateral condyles                                    | "                                   | "                     |
|                                       | 1               | Right scapula with glenoid cavity, coracoid process and a spine and blade                             | "                                   | "                     |
|                                       | 1               | Left lower 1 <sup>st</sup> molar teeth                                                                | "                                   | Sub adult             |
|                                       | 1               | Left loer 3 <sup>rd</sup> molar teeth                                                                 | "                                   | "                     |
|                                       | 1               | Shaft of 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal without proximal and distal epiphysis         | "                                   | Sub adult             |
|                                       | 1               | Fragment of shaft of femur                                                                            | Br. 21; L-O-III; S-11               | "                     |
|                                       | 1               | Distal fragment of shaft of humerus                                                                   | "                                   | "                     |
|                                       | 1               | Distal fragment of left humerus with head and tuberosity                                              | Br. 22 L-V-VII; S-12                | "                     |
|                                       | 1               | Lower right 1 <sup>st</sup> molar tooth                                                               | "                                   | Sub adult             |
| <i>Capra hircus aegagrus</i><br>Ersl. | 1               | Fragment of ramus of mandible with condyle and a part of coronoid process                             | Br. 17; L-B1 : S-10                 | Broken                |
|                                       | 2               | Fragments of shaft of left humerus without distal and proximal extremities                            | "                                   | "                     |
|                                       | 1               | Distal extremity of right radius                                                                      | "                                   | "                     |
|                                       | 3               | Fragments of shaft or femur                                                                           | "                                   | "                     |
|                                       | 1               | Fragment of shaft of radius                                                                           | "                                   | "                     |
|                                       | 2               | Fragments of left lower 3 <sup>rd</sup> molar tooth                                                   | "                                   | "                     |
| <i>Axis axis</i><br>Ersl.             | 2               | Fragments of antler                                                                                   | Br. 19; L-A1; S-5                   | "                     |
|                                       | 1               | Fragment of antler                                                                                    | Br. 21; L-DD; S-Nil                 | "                     |
| <i>Sus scrofa cristatus</i><br>Wagner | 1               | Fragment of right upper jaw without teeth                                                             | Br. 17; L-B1; S-11                  | "                     |
|                                       | 1               | 3 <sup>rd</sup> metatarsal of right hind-foot                                                         | "                                   | "                     |

**Culture : Megalithic**

| Name of Species             | No. of Material                 | Identity of Material                                                                           | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|-----------------------------|---------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Gallus sp</i>            | 1                               | Distal fragment of left tarsometatarsus                                                        | Br. 22;<br>L-IV-VIII; S-6d          | Sub adult             |
| <i>Bos indicus</i><br>Linn. | 2                               | Left astragalii                                                                                | Br. 17; L- A1;<br>S- 2A             | Sub adult             |
|                             | 1                               | Left calcaneum                                                                                 | "                                   | Complete              |
|                             | 1                               | Proximal fragment of right radius                                                              | "                                   | Broken                |
|                             | 1                               | Distal fragment of metacarpal                                                                  | "                                   | Sub adult and Charred |
|                             | 1                               | Thoracic vertebra                                                                              | "                                   | Complete              |
|                             | 1                               | Distal fragment of left tibia                                                                  | "                                   | Broken                |
|                             | 1                               | Fragment of rib                                                                                | "                                   | "                     |
|                             | 1                               | Thoracic vertebra                                                                              | "                                   | Sub adult             |
|                             | 1                               | Distal fragment of left tibia                                                                  | "                                   | Broken                |
|                             | 1                               | 1 <sup>st</sup> phalanx of left fore-foot                                                      | "                                   | "                     |
|                             | 1                               | 2 <sup>nd</sup> phalanx of fore-foot                                                           | "                                   | Sub adult             |
|                             | 1                               | Posterior articular process of lumbar vertebra                                                 | "                                   | Broken                |
|                             | 1                               | Distal extremity of left femur with medial condyle                                             | "                                   | "                     |
|                             | 1                               | Fragment of thoracic rib                                                                       | "                                   | "                     |
|                             | 3                               | Distal fragments of left humerii                                                               | Br.17; L-C1; S-3                    | "                     |
|                             | 1                               | Distal fragment of right humerus                                                               | "                                   | "                     |
|                             | 2                               | Proximal fragment of radius                                                                    | "                                   | "                     |
|                             | 4                               | Left astragalii                                                                                | "                                   | Complete              |
|                             | 2                               | Right astragalii                                                                               | "                                   | "                     |
|                             | 1                               | Left calcaneum with tuber calcis                                                               | "                                   | Broken                |
|                             | 1                               | Proximal fragment of left radius                                                               | "                                   | Sub adult             |
|                             | 1                               | Fragment of proximal end of left radius                                                        | "                                   | Broken                |
|                             | 1                               | Fragment of proximal shaft of left femur with trochanter minor                                 | "                                   | "                     |
|                             | 1                               | Proximal fragment of right ulna with semilunar notch and a portion of olecranon process        | "                                   | "                     |
|                             | 1                               | Proximal fragment of right 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal                      | "                                   | "                     |
|                             | 1                               | Left distal fragment of right 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal                   | "                                   | "                     |
|                             | 2                               | Proximal fragment of scapula with glenoid cavity tuber scapulae and a part of blade with spine | "                                   | "                     |
|                             | 1                               | Fragment of thoracic rib with neck and tubercle                                                | "                                   | "                     |
|                             | 1                               | Fragment of cervical vertebra with articular and transverse processes                          | "                                   | "                     |
|                             | 3                               | 2 <sup>nd</sup> phalanx of fore-foot                                                           | "                                   | Sub adult             |
|                             | 2                               | 1 <sup>st</sup> phalanx of fore-foot                                                           | "                                   | "                     |
|                             | 2                               | 1 <sup>st</sup> phalanx of hind-foot                                                           | "                                   | Broken                |
| 2                           | Fragments of molar teeth        | "                                                                                              | "                                   |                       |
| 1                           | Proximal fragment of metacarpal | "                                                                                              | "                                   |                       |

| Name of Species             | No. of Material                               | Identity of Material                                                                                | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|-----------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bos indicus</i><br>Linn. | 1                                             | Proximal fragment of left tibia                                                                     | Br. 17; L-A1; S-4                   | Sub adult             |
|                             | 1                                             | Fragment of rib                                                                                     | "                                   | Broken                |
|                             | 1                                             | Fragment of vertical ramus of left lower jaw with condyle and coronoid process                      | "                                   | "                     |
|                             | 1                                             | Fragment of cervical vertebra                                                                       | "                                   | "                     |
|                             | 1                                             | 2 <sup>nd</sup> right upper premolar tooth                                                          | "                                   | "                     |
|                             | 1                                             | Left latero-ventral arch of atlas vertebra with intervertebral and alar foramen                     | Br. 17; L-C1; S-4                   | "                     |
|                             | 1                                             | Proximal fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                                 | "                                   | "                     |
|                             | 1                                             | 1 <sup>st</sup> phalanx of fore-foot                                                                | "                                   | Sub adult             |
|                             | 10                                            | Fragments of shaft of thoracic rib                                                                  | "                                   | Broken                |
|                             | 1                                             | Head of right femur                                                                                 | "                                   | "                     |
|                             | 1                                             | Left calcanium                                                                                      | "                                   | "                     |
|                             | 1                                             | 2 <sup>nd</sup> phalanx of fore-foot                                                                | "                                   | Complete              |
|                             | 1                                             | Fragment of horn core                                                                               | "                                   | Broken                |
|                             | 1                                             | Coronoid process of right mandible                                                                  | "                                   | "                     |
|                             | 1                                             | Fragment of cervical vertebra with articular process and transverse process                         | "                                   | "                     |
|                             | 1                                             | Fragment of lumbar vertebra with neural arch process and without spinous and post articular process | "                                   | "                     |
|                             | 1                                             | Right upper 1 <sup>st</sup> molar                                                                   | Br. 17; L-C1; S-4                   | "                     |
|                             | 1                                             | Proximal fragment of right humerus with lateral and medial tubercosity                              | Br. 17; L-A1; S-A                   | "                     |
|                             | 2                                             | Proximal fragments of right tibia without proximal epiphysis                                        | "                                   | "                     |
|                             | 1                                             | Fragment of left scapula with glenoid cavity and tuber scapulae                                     | "                                   | "                     |
|                             | 1                                             | 3 <sup>rd</sup> phalanx of fore-foot                                                                | "                                   | "                     |
|                             | 1                                             | Fragment of horizontal ramus of mandible                                                            | "                                   | Sub adult             |
|                             | 1                                             | 1 <sup>st</sup> lower left premolar tooth                                                           | "                                   | Broken                |
|                             | 1                                             | Fragment of 1 <sup>st</sup> left lower molar tooth                                                  | "                                   | "                     |
|                             | 1                                             | Fragment of rib                                                                                     | "                                   | "                     |
|                             | 1                                             | 2 <sup>nd</sup> phalanx of fore-foot                                                                | "                                   | "                     |
|                             | 1                                             | Right astragalus                                                                                    | Br. 21; L-V-VII; S-7                | Complete              |
|                             | 1                                             | 2 <sup>nd</sup> phalanx of right fore-foot                                                          | "                                   | "                     |
|                             | 1                                             | Proximal fragment of left tibia                                                                     | "                                   | Broken                |
|                             | 1                                             | Proximal fragment of thoracic rib                                                                   | "                                   | "                     |
|                             | 1                                             | Fragment of 2 <sup>nd</sup> phalanx of fore-foot                                                    | "                                   | "                     |
|                             | 1                                             | 2 <sup>nd</sup> phalanx of fore-foot                                                                | "                                   | Sub adult             |
| 1                           | Right navicular and cuboid of proximal tarsal | Br. 21; L-VII-VIII; S-7                                                                             | Broken                              |                       |

| Name of Species             | No. of Material | Identity of Material                                                                                                    | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|-----------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bos indicus</i><br>Linn. | 1               | Distal fragment of shaft of right humerus with distal extremity                                                         | Br. 21; L-VII-VIII;<br>S-7          | Broken                |
|                             | 1               | Distal fragment of tibia, with a portion of shaft and lateral condyle                                                   | "                                   | "                     |
|                             | 3               | Proximal shaft of left tibia without distal extremity                                                                   | "                                   | "                     |
|                             | 1               | Distal fragment of right radius with a portion of shaft and lateral condyle                                             | "                                   | "                     |
|                             | 1               | Proximal fragment of shaft of 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal                                            | "                                   | "                     |
|                             | 1               | Fragment of medial condyle of humerus                                                                                   | "                                   | "                     |
|                             | 1               | 1 <sup>st</sup> phalanx of hind -foot                                                                                   | "                                   | Sub adult             |
|                             | 1               | 2 <sup>nd</sup> phalanx of hind-foot                                                                                    | "                                   | "                     |
|                             | 1               | Left upper 1 <sup>st</sup> molar tooth                                                                                  | "                                   | Complete              |
|                             | 1               | Right upper 3 <sup>rd</sup> premolar tooth                                                                              | "                                   | "                     |
|                             | 1               | Right upper 1 <sup>st</sup> premolar tooth                                                                              | "                                   | "                     |
|                             | 1               | Proximal fragment of rib with tubercle and neck to head                                                                 | "                                   | Broken                |
|                             | 1               | Fragment of shaft of left tibia                                                                                         | Br. 22; L-IV-VII;<br>S-6            | "                     |
|                             | 1               | Mandible with incisor teeth                                                                                             | "                                   | "                     |
|                             | 1               | Fragment of left ramus of mandible with 1 <sup>st</sup> and 2 <sup>nd</sup> premolar teeth                              | "                                   | "                     |
|                             | 1               | Fragment of rib                                                                                                         | "                                   | "                     |
|                             | 1               | Proximal fragment right ulna with semilunar notch and without olecranon process                                         | "                                   | Sub adult             |
|                             | 1               | 1 <sup>st</sup> phalanx of fore-foot                                                                                    | "                                   | "                     |
|                             | 1               | Fragment of molar tooth                                                                                                 | "                                   | Broken                |
|                             | 1               | Left upper 1 <sup>st</sup> molar tooth                                                                                  | "                                   | "                     |
|                             | 1               | Fragment of coronoid process of ramus of mandible                                                                       | "                                   | "                     |
|                             | 1               | Fragment of shaft of femur                                                                                              | "                                   | "                     |
|                             | 1               | Distal fragment of right humerus without medial condyle                                                                 | Br. 22;<br>L-IV-VIII; S-6b          | "                     |
|                             | 1               | Fragment of left radius with portion of ulna having semilunar notch and process anconaeus and without olecranon process | "                                   | "                     |
|                             | 1               | Distal fragment of left humerus with a part of medial condyle                                                           | "                                   | "                     |
|                             | 1               | Fragment of rib                                                                                                         | "                                   | "                     |
|                             | 1               | Proximal fragment of left 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal                                                | "                                   | "                     |
|                             | 1               | Fragment of shaft of femur                                                                                              | "                                   | "                     |
|                             | 1               | Fragment of cervical vertebra with post articular process                                                               | "                                   | "                     |

| Name of Species                   | No. of Material                           | Identity of Material                                                                                                              | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|-----------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bos indicus</i><br>Linn.       | 1                                         | Distal fragment of left radius                                                                                                    | Br. 22 L-O-IV;<br>S-9b              | Broken                |
|                                   | 1                                         | Left upper 2 <sup>nd</sup> molar tooth                                                                                            | "                                   | Sub adult             |
|                                   | 1                                         | Left upper 2 <sup>nd</sup> premolar tooth                                                                                         | "                                   | "                     |
|                                   | 1                                         | Fragment of ulna                                                                                                                  | "                                   | Broken                |
|                                   | 1                                         | Fragment of occipital with a portion of supra occipital condyles and paramastoid process with a portion of basioccipital of skull | Br. 22; L-VI-VII;<br>S-25(6)        | "                     |
|                                   | 1                                         | Fragment of hind frontal bone within parietal bone                                                                                | "                                   | "                     |
|                                   | 1                                         | Proximal fragment of left femur without head, trochanter and trochanteric fossa                                                   | "                                   | Sub adult             |
|                                   | 1                                         | Distal fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                                                                 | "                                   | Broken                |
|                                   | 1                                         | Shaft of 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal                                                                           | "                                   | "                     |
|                                   | 1                                         | Right calcaneum with a portion of tuber calcis                                                                                    | "                                   | "                     |
|                                   | 2                                         | Fragments of ribs                                                                                                                 | "                                   | "                     |
|                                   | 1                                         | Fragment of anterior horizontal left ramus of lower jaw                                                                           | "                                   | "                     |
|                                   | 2                                         | Fragments of vertical ramus with coronoid process and condyle                                                                     | "                                   | "                     |
|                                   | 1                                         | 2 <sup>nd</sup> phalanx of fore-foot                                                                                              | "                                   | "                     |
|                                   | 1                                         | Fragment of inferior border of horizontal ramus of lower jaw without teeth                                                        | "                                   | "                     |
|                                   | 1                                         | Fragment of scapula                                                                                                               | "                                   | "                     |
|                                   | 1                                         | Cuniform of distal tarsal                                                                                                         | "                                   | "                     |
|                                   | 1                                         | Fragment of head of femur                                                                                                         | "                                   | "                     |
|                                   | 1                                         | Fragment of left upper jaw with 2 <sup>nd</sup> and 3 <sup>rd</sup> molar teeth                                                   | "                                   | Sub adult             |
|                                   | 2                                         | Proximal fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpals                                                              | "                                   | Broken                |
| 1                                 | Left 3 <sup>rd</sup> upper premolar tooth | "                                                                                                                                 | Sub adult                           |                       |
| 1                                 | Left astragalus                           | "                                                                                                                                 | Charred                             |                       |
| <i>Bubalus bubalis</i><br>(Linn.) | 1                                         | Proximal fragment of left ulna with semilunar notch and process anconaeus and without olecranon process                           | Br. 17; L-A1;<br>S-4                | Broken                |
|                                   | 1                                         | Fragment of superior surface of horizontal ramus of right mandible without teeth                                                  | "                                   | "                     |
|                                   | 1                                         | Fragment of shaft of metatarsal                                                                                                   | "                                   | "                     |
|                                   | 1                                         | Fragment of vertical ramus of mandible with a part of coronoid process and condyle                                                | "                                   | "                     |
|                                   | 1                                         | Fragment of ilium of left pelvis                                                                                                  | "                                   | Charred               |
|                                   | 1                                         | 1 <sup>st</sup> phalanx of left hind-foot                                                                                         | "                                   | Complete              |
|                                   | 1                                         | Right zygomatic process of molar bone of skull                                                                                    | "                                   | Broken                |
|                                   | 1                                         | Fragment of thoracic rib                                                                                                          | "                                   | "                     |
|                                   | 1                                         | 2 <sup>nd</sup> phalanxes of fore-foot                                                                                            | "                                   | Sub adult             |

| Name of Species                | No. of Material | Identity of Material                                                                               | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|--------------------------------|-----------------|----------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bubalus bubalis</i> (Linn.) | 1               | Right upper 1 <sup>st</sup> premolar tooth                                                         | Br. 21; L-VII-VIII; S-7             | Complete              |
|                                | 1               | Distal fragment of left humerus with medial and lateral condyles                                   | Br. 22; L-IV-VIII; S-6d             | Broken                |
|                                | 1               | 1 <sup>st</sup> phalanx of fore-foot                                                               | "                                   | "                     |
| <i>Ovis vignei</i> Blyth       | 1               | Left astragalus                                                                                    | Br. 17; S-3                         | Sub adult             |
|                                | 1               | Distal fragment of shaft of tibia                                                                  | Br. 17; L-A1; S-4                   | Sub adult             |
|                                | 1               | Distal fragment of humerus                                                                         | "                                   | "                     |
|                                | 1               | Fragment of vertical ramus of lower jaw with coronoid process and condyle                          | Br. 17; L-A1; S-A(4)                | Broken                |
|                                | 1               | Fragment of left pelvis with a portion of shaft of ilium and acetabulum                            | "                                   | "                     |
|                                | 1               | Fragment of horizontal ramus of left mandible with 1 <sup>st</sup> and 2 <sup>nd</sup> molar teeth | "                                   | "                     |
|                                | 1               | Distal epiphysis of left tibia                                                                     | "                                   | Sub adult             |
|                                | 1               | Fragment of shaft of right tibia                                                                   | Br. 21; L-V-VII; S-7                | Broken                |
|                                | 1               | Fragment of proximal extremity of right femur with head and without greater trochanter             | "                                   | "                     |
|                                | 1               | Distal fragment of shaft of right tibia                                                            | "                                   | "                     |
|                                | 1               | Left astragalus                                                                                    | "                                   | Sub adult             |
|                                | 1               | Body of thoracic vertebra                                                                          | "                                   | Broken                |
|                                | 1               | Fragment of shaft of radius                                                                        | "                                   | Broken                |
|                                | 1               | Fragment of right vertical ramus of mandible with coronoid process and without condyle             | "                                   | "                     |
|                                | 1               | Thoracic vertebra with spinous process and transverse process                                      | Br. 21; L-VII-VIII; S-7             | "                     |
|                                | 1               | Proximal fragment of right radius                                                                  | "                                   | "                     |
|                                | 1               | Fragment of shaft of femur                                                                         | "                                   | "                     |
|                                | 1               | Fragment of left horizontal ramus of mandible                                                      | Br. 22; L-VIII; S-(6d)              | "                     |
|                                | 4               | Fragments of lower molar teeth                                                                     | "                                   | "                     |
|                                | 1               | Fragment of shaft of radius                                                                        | "                                   | "                     |
|                                | 1               | Proximal fragment of shaft of left femur without proximal extremity                                | "                                   | "                     |
|                                | 2               | Shaft of 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsals                                           | Br. 22; L-IV-VIII; S-6              | "                     |
|                                | 1               | Shaft of 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal without distal extremity                   | "                                   | Sub adult             |
|                                | 1               | Distal fragment of right humerus with medial and lateral condyle                                   | "                                   | Broken                |
|                                | 1               | Proximal fragment of shaft of right humerus without proximal extremity                             | "                                   | "                     |
|                                | 1               | Fragment of left pelvis with acetabulum and a part of pubis and ilium                              | "                                   | "                     |

| Name of Species                      | No. of Material | Identity of Material                                                                                                            | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|--------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Ovis vignei</i><br>Blyth          | 1               | Left lower 1 <sup>st</sup> molar tooth                                                                                          | Br. 22;<br>L-IV-VIII; S-6           | Sub adult             |
|                                      | 1               | Body of thoracic vertebra                                                                                                       | "                                   | Broken                |
|                                      | 4               | Fragments of ribs                                                                                                               | "                                   | "                     |
|                                      | 1               | Fragmrnt of shaft of tibia                                                                                                      | "                                   | Charred               |
|                                      | 1               | Fragment of right upper jaw with 1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup> premolar and 1 <sup>st</sup> molar teeth | "                                   | Sub adult             |
|                                      | 1               | Fragment of right horizontal ramus of mandible with 2 <sup>nd</sup> and 3 <sup>rd</sup> molar teeth                             | Br. 22;<br>L-IV-VIII; S-6           | Sub adult             |
|                                      | 1               | Fragment of shaft of tibia                                                                                                      | "                                   | "                     |
|                                      | 1               | Right lower molar tooth                                                                                                         | "                                   | Broken                |
|                                      | 1               | Left lower molar tooth                                                                                                          | "                                   | "                     |
|                                      | 1               | Distal fragment of left femur with medial and lateral condyle and intercondyloid fossa                                          | Br. 22;<br>L-IV-VII; S-6            | Broken                |
|                                      | 1               | Fragment of left frontal bone with horn core                                                                                    | Br. 22; L-VI-VII;<br>S-25(6)        | "                     |
|                                      | 1               | Fragment of horizontal ramus of mandible with 2 <sup>nd</sup> and 3 <sup>rd</sup> molar tooth                                   | "                                   | "                     |
|                                      | 1               | Spinous process of thoracic vertebra                                                                                            | "                                   | "                     |
|                                      | 1               | Fragment of rib                                                                                                                 | "                                   | "                     |
| <i>Capra hircus aegagrus</i><br>Exl. | 1               | Thoracic vertebra                                                                                                               | Br. 17; L-A1;<br>S-2a               | "                     |
| <i>Axis axis</i><br>(Exl.)           | 2               | Fragment of antler                                                                                                              | "                                   | "                     |
|                                      | 1               | Fragment of antler                                                                                                              | Br. 22; L-VI-VII;<br>S-25(6)        | "                     |

**Culture : Andhra**

| Name of Species                    | No. of Material | Identity of Material                                                                 | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|------------------------------------|-----------------|--------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Pila globosa</i><br>(Swainson)  | 1               | Shell                                                                                | Br. 18; L-A1;<br>S-4                | Broken                |
| <i>Lepus nigricollis</i><br>Cuvier | 1               | Fragment of right horizontal ramus of mandible with molar teeth                      | Br. 20; L-B2;<br>S-2                | "                     |
| <i>Bos indicus</i><br>Linn.        | 1               | Fragment of right lower 3 <sup>rd</sup> molar tooth                                  | Br. 18; L-A1; S-1                   | Broken                |
|                                    | 2               | Astragalii                                                                           | "                                   | Complete              |
|                                    | 1               | Fragment of frontal bone                                                             | "                                   | Broken                |
|                                    | 1               | Proximal fragment of right femur with head and trochanter minor and trochanter fossa | "                                   | "                     |
|                                    | 2               | Distal fragments of left humerus with medial condyle                                 | "                                   | "                     |

| Name of Species             | No. of Material                        | Identity of Material                                                                    | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|-----------------------------|----------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bos indicus</i><br>Linn. | 1                                      | Right astragalus                                                                        | Br. 18; L-A1; S-1                   | Broken                |
|                             | 1                                      | Distal end of right tibia                                                               | "                                   | "                     |
|                             | 1                                      | Neural arch of thoracic vertebra                                                        | "                                   | "                     |
|                             | 1                                      | Fragment of horizontal ramus of mandible                                                | "                                   | "                     |
|                             | 1                                      | Proximal fragment of 1 <sup>st</sup> phalanx of hind foot                               | "                                   | "                     |
|                             | 1                                      | Proximal fragment of right 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal               | Br. 18; L-A1; S-1B                  | Sub adult             |
|                             | 1                                      | Distal fragment of shaft of left humerus                                                | "                                   | Broken                |
|                             | 1                                      | Proximal fragment of left radius                                                        | Br. 18; L-A1; S-3a                  | "                     |
|                             | 1                                      | Fragment of thoracic rib                                                                | "                                   | "                     |
|                             | 1                                      | Fragment of left humerus                                                                | "                                   | "                     |
|                             | 1                                      | Fragment of thoracic vertebra                                                           | "                                   | "                     |
|                             | 1                                      | Distal fragment of left humerus with medial and lateral condyles                        | Br. 18; L-A1; S-3                   | "                     |
|                             | 1                                      | Shaft of 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal without proximal and distal end | "                                   | "                     |
|                             | 1                                      | Spinous process of thoracic vertebra                                                    | "                                   | "                     |
|                             | 1                                      | Fragment of shaft of ulna, semilunar notch and without olecranon process                | Br. 18; L-A1; S-3                   | "                     |
|                             | 1                                      | Fragment of acetabulum of pelvic girdle                                                 | "                                   | "                     |
|                             | 1                                      | Left astragalus                                                                         | "                                   | "                     |
|                             | 1                                      | Fragment of distal end of left tibia                                                    | "                                   | "                     |
|                             | 1                                      | Left fused navicular and cuboid bone of proximal tarsal                                 | Br. 18; L-A1; S-3                   | Broken                |
|                             | 2                                      | Fragments of scapula                                                                    | Br. 18; L-A1; S-3 B                 | "                     |
|                             | 2                                      | Fragments of thoracic vertebra with neural arch and spinous process                     | "                                   | "                     |
|                             | 2                                      | Distal fragments of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                      | Br. 18; L-A1; S-4                   | "                     |
|                             | 1                                      | Distal fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> metatarsal                       | "                                   | "                     |
|                             | 1                                      | Distal fragment of left tibia                                                           | "                                   | "                     |
|                             | 1                                      | Left navicular and cuboid bone ( fused)                                                 | "                                   | "                     |
|                             | 1                                      | 1 <sup>st</sup> phalanx of hind-foot                                                    | "                                   | Complete              |
|                             | 11                                     | Fragments of shaft of thoracic ribs                                                     | Br. 18; A-A1; S-4                   | Broken                |
|                             | 1                                      | Proximal fragment of left ulna without olecranon process                                | "                                   | "                     |
|                             | 1                                      | Left upper 1 <sup>st</sup> premolar tooth                                               | "                                   | "                     |
|                             | 2                                      | Fragment of molar tooth                                                                 | "                                   | "                     |
|                             | 2                                      | Right lower 3 <sup>rd</sup> molar teeth                                                 | "                                   | "                     |
|                             | 1                                      | Fragment of axis vertebra with anterior articular process                               | "                                   | "                     |
|                             | 1                                      | Distal fragment of right femur with medial condyle                                      | "                                   | "                     |
| 1                           | Fragment of acetabulum of right pelvis | "                                                                                       | "                                   |                       |
| 1                           | Left lunate bone of proximal carpus    | "                                                                                       | "                                   |                       |

| Name of Species                   | No. of Material                     | Identity of Material                                                                    | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|-----------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bos indicus</i><br>Linn.       | 1                                   | Fragment of blade of scapula with broken spine                                          | Br. 18; L-A1; S-5                   | Broken                |
|                                   | 1                                   | Proximal fragment of left 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                | "                                   | "                     |
|                                   | 3                                   | Fragments of thoracic ribs                                                              | "                                   | "                     |
|                                   | 1                                   | Fragment of left lower 3 <sup>rd</sup> molar teeth                                      | "                                   | "                     |
|                                   | 1                                   | Distal fragment of right humerus with medial condyle                                    | Br. 19; L-A1; S-2a                  | Broken                |
|                                   | 1                                   | Right calcaneum                                                                         | Br. 20; L-B2; S-1                   | Complete              |
|                                   | 2                                   | Left astragali                                                                          | "                                   | One sub adult         |
|                                   | 1                                   | Lumber vertebra with transverse process and neural spine                                | "                                   | Broken                |
|                                   | 1                                   | Fragment of right ventral arch of atlas vertebra                                        | "                                   | "                     |
|                                   | 1                                   | Distal fragment of shaft of humerus                                                     | "                                   | "                     |
|                                   | 1                                   | Distal end fragment of left humerus with medial condyle                                 | "                                   | "                     |
|                                   | 1                                   | Proximal fragment of 1 <sup>st</sup> phalanx of hind-foot                               | "                                   | "                     |
|                                   | 1                                   | Fragment of molar tooth                                                                 | "                                   | "                     |
|                                   | 10                                  | Fragments of thoracic ribs                                                              | "                                   | "                     |
|                                   | 1                                   | Distal fragment of left humerus with medial and lateral condyles                        | Br. 20; L-B S-2                     | "                     |
|                                   | 1                                   | Proximal and distal fragment of 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal (joined) | Br. 20; L-B2; S-3                   | "                     |
|                                   | 1                                   | Distal fragment of shaft of humerus                                                     | "                                   | "                     |
|                                   | 1                                   | Fragment of rib                                                                         | "                                   | "                     |
|                                   | 1                                   | Left astragalus                                                                         | "                                   | Complete              |
|                                   | 1                                   | Atlas vertebra                                                                          | Br. 21; L-Nil; S-2b                 | "                     |
|                                   | 1                                   | Right horizontal ramus of lower jaw without teeth                                       | "                                   | Broken                |
|                                   | 1                                   | Fragment of rib                                                                         | "                                   | "                     |
|                                   | 1                                   | Fragment of frontal bone with frontal sinuses                                           | "                                   | "                     |
|                                   | 1                                   | Fragment of horn core                                                                   | "                                   | "                     |
|                                   | 1                                   | Left lower zygomatic and temporal process of skull                                      | "                                   | "                     |
|                                   | 1                                   | Right upper 1 <sup>st</sup> molar tooth                                                 | "                                   | Complete              |
|                                   | 1                                   | Right upper 2 <sup>nd</sup> molar tooth                                                 | Br. 21; L-Nil;                      | "                     |
|                                   | 1                                   | Fragment of 3 <sup>rd</sup> upper premolar tooth                                        | "                                   | Sub adult             |
|                                   | 1                                   | Fragment of molar tooth                                                                 | "                                   | "                     |
|                                   | 1                                   | Right 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                                    | "                                   | Completer             |
| 1                                 | Right upper 1 <sup>st</sup> premola | Br. 21; L-VII-VIII S-7                                                                  | Broken                              |                       |
| <i>Bubalus bubalis</i><br>(Linn.) | 1                                   | Head of right femur                                                                     | Br. 18; L-A1; S-3                   | "                     |
|                                   | 1                                   | Right astragalus                                                                        | "                                   | Complete              |
|                                   | 1                                   | 3 <sup>rd</sup> phalanx of fore foot                                                    | "                                   | Broken                |
|                                   | 1                                   | Medial condyle of right femur                                                           | "                                   | "                     |
|                                   | 1                                   | Fragment of proximal shaft of left humerus with deltoid tuberosity                      | Br. 18; L-A1; S-3                   | "                     |
|                                   | 1                                   | Fragment of cervical vertebra with articular process and with broken transverse process | "                                   | "                     |

| Name of Species                    | No. of Material          | Identity of Material                                                                                                    | Site (Br.) / Locus (L)/ Stratum (S) | Condition of Material |
|------------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|
| <i>Bubalus bubalis</i> (Linn.)     | 1                        | Fragment of trochlea of right femur                                                                                     | Br. 18; L-A1; S-3                   | Broken                |
|                                    | 1                        | Head of right femur                                                                                                     | Br. 19; L-A1; S-1a                  | "                     |
|                                    | 1                        | Proximal fragment of right 3 <sup>rd</sup> and 4 <sup>th</sup> metacarpal                                               | "                                   | "                     |
|                                    | 1                        | Proximal fragment of scapula with glenoid cavity and coronoid process                                                   | "                                   | "                     |
|                                    | 1                        | Proximal fragment of left ulna without olecranon process                                                                | "                                   | "                     |
|                                    | 1                        | Fragment of head of humerus                                                                                             | "                                   | "                     |
|                                    | 1                        | Fragment of right pelvis with a portion of acetabulum and ischium                                                       | "                                   | "                     |
|                                    | 1                        | 1 <sup>st</sup> phalanx of left fore-foot                                                                               | "                                   | "                     |
|                                    | 1                        | Coronoid process of lower jaw                                                                                           | "                                   | "                     |
|                                    | 1                        | Right calcaneum without distal facet for cuboid and with sustentaculum                                                  | Br. 20; L-B2; S-2                   | "                     |
|                                    | 2                        | Fragments of ribs                                                                                                       | "                                   | "                     |
|                                    | 1                        | Neural arch of thoracic vertebra                                                                                        | "                                   | "                     |
|                                    | 1                        | Fragment of lower jaw                                                                                                   | "                                   | "                     |
|                                    | 1                        | Left astragalus                                                                                                         | Br. 20; L-B2; S-3                   | Complete              |
|                                    | <i>Ovis vignei</i> Blyth | 1                                                                                                                       | Distal fragment of shaft of tibia   | Br. 18; L-A 1; S-1    |
| 1                                  |                          | Distal fragment of left tibia                                                                                           | Br. 18; L-A1; S-3                   | "                     |
| 1                                  |                          | Shaft of right femur without proximal and distal extremities                                                            | "                                   | "                     |
| 1                                  |                          | Distal fragment of right femur with lateral condyle                                                                     | "                                   | "                     |
| 1                                  |                          | Fragment of distal extremity of left femur with medial condyle                                                          | Br. 18; L-A1; S-4                   | "                     |
| 1                                  |                          | Distal fragment of left humerus                                                                                         | "                                   | "                     |
| 1                                  |                          | Fragment of left pelvis with a portion of ilium and acetabulum                                                          | "                                   | "                     |
| 1                                  |                          | Fragment of left calcaneum                                                                                              | "                                   | Complete              |
| 1                                  |                          | Proximal fragment of right femur                                                                                        | Br. 19; L-A1; S-1A                  | Sub adult             |
| 1                                  |                          | Proximal fragment of left femur without head and trochanter                                                             | Br. 20; L-B2; S-2                   | Broken                |
| 1                                  |                          | Distal fragment of right humerus with medial and lateral condyles                                                       | "                                   | "                     |
| 1                                  |                          | Fragment of shaft of radius                                                                                             | "                                   | "                     |
| 1                                  |                          | Fragment of vertical ramus of right mandible with condyle and coronoid process                                          | "                                   | "                     |
| 1                                  |                          | Cervical vertebra with neural arch, spine                                                                               | "                                   | Sub adult             |
| 1                                  |                          | Proximal fragment of right femur arch, spine                                                                            | Br. 21; S-2B                        | Broken                |
| <i>Capra hircus aegagrus</i> Erxl. | 1                        | 1 <sup>st</sup> phalanx of right fore-foot                                                                              | Br. 19; L-B1; S-1                   | "                     |
|                                    | 1                        | Right upper 1 <sup>st</sup> molar tooth                                                                                 | Br. 21, S-?                         | "                     |
|                                    | 1                        | Fragment of left ramus of mandible with 2 <sup>nd</sup> and 3 <sup>rd</sup> molar teeth                                 | Br. 18; L-A2; S-3a                  | Broken                |
|                                    | 1                        | Fragment of left horizontal ramus of mandible with 2 <sup>nd</sup> , 3 <sup>rd</sup> and 4 <sup>th</sup> premolar teeth | "                                   | "                     |
|                                    | 1                        | Fragment of thoracic vertebra with neural arch and without neural spine                                                 | "                                   | "                     |
|                                    | 1                        | Fragment of left ramus of mandible with condyle                                                                         | "                                   | "                     |

### FAUNAL DIVERSITY

The animal species recovered from Brahmahiri archaeological excavation have been presented in Table 2 :

**Table 2 : Animal form recovered from Brahmagiri excavation and their present state of distribution**

| Group                                     | Scientific name                                                      | Common name                           | Present natural distribution                                                                                                                                                                                                                                                                                                                                             | Cultural stratum*                           |
|-------------------------------------------|----------------------------------------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Mollusca<br>Pilidae                       | <i>Pila globosa</i><br>(Swainson)                                    | Apple Snail                           | Widely distributed in India; in ponds, lakes and rivers, etc.                                                                                                                                                                                                                                                                                                            | A                                           |
| Aves                                      | <i>Gallus</i> sp.                                                    | Fowl                                  | Not ascertained                                                                                                                                                                                                                                                                                                                                                          | M                                           |
| Mammalia<br>Carnivora :<br>Canidae        | <i>Canis familiaris</i><br>Linn.                                     | Domestic Dog                          | World-wide due to transshipment by human                                                                                                                                                                                                                                                                                                                                 | S-1B                                        |
| Perissodactyla :<br>Equidae               | <i>Equus</i> sp                                                      | Donkey / Horse                        | Domestic form distributed in many parts of the world through human agency                                                                                                                                                                                                                                                                                                | S-1A                                        |
| Artiodactyla :<br>Suidae                  | <i>Sus scrofa cristatus</i><br>Wagner                                | Boar                                  | Throughout India; Pakistan; Sri Lanka; Nepal; Bangladesh; Myanmar; Indonesia; Malaysia and Vietnam.                                                                                                                                                                                                                                                                      | S-1B                                        |
| Artiodactyla :<br>Cervidae :              | <i>Axis axis</i><br>(Erxl.)                                          | Chital/<br>spotted deer               | Paninsular India, West Bengal, Sikkim northwards to Kumaon Himalaya; Nepal; Sri Lanka                                                                                                                                                                                                                                                                                    | S-1B, M                                     |
| Artiodactyla :<br>Bovidae :<br>Bovinae    | <i>Bos indicus</i><br>Linn.<br><i>Bubalus bubalis</i><br>(Linn.)     | Domestic cattle<br><br>Indian Buffalo | Distributed world-wide through human agency<br><br>Terai and plains of Brahamaputra valley in Assam, Orissa, Madhy Pradesh; and forest of the Nepal                                                                                                                                                                                                                      | S-1B,<br>M, A.<br>S-1A,<br>S-1B,<br>M, A    |
| Artiodactyla :<br>Bovidae :<br>Caprinae : | <i>Capra hircus aegagrus</i><br>Erxl.<br><i>Ovis vignei</i><br>Blyth | Goat<br><br>Sheep                     | India; Pakistan (Baluchistan); Iraq; Iran; Asia minor. Domestic form distributed in many parts of the world through human agency.<br>Wild form ranges from Giligit, Astar and Ladak in Kashmir, eastwaed to northern Tibet, Punjab; Pakistan (Sind, Baluchistan), and southern Persia (Iran). Domestic form distributed in many parts of the world through human agency. | S-1B,<br>M, A<br><br>S-1A,<br>S-1B,<br>M, A |
| Lagomorpha :<br>Leporidae:                | <i>Lepus nigricollis</i><br>Cuvier                                   | Indian hare                           | Peninsular India, Central India (Vidharabha region and Madhya Pradesh), Kachchha and Kathiawar of Gujarat, Rajasthan, Punjab, Sikkim, Duars area of Bengal, Assam plains; Nepal; Bhutan; Sri Lanka and Sind of Pakistan                                                                                                                                                  | S-1A, A                                     |

\*Cultures : Early Stone Axe (1A) = S1A; Late Stone Axe (1B) =S1B; Megalithic =M; Andhra =A

**Table 3 : Comparative availability of Animal Remains (specimens) in different Cultural phase at Brahmagiri**

| CULTURAL PHASE | ANIMAL GROUP      |                |                  |
|----------------|-------------------|----------------|------------------|
|                | Mollusca<br>(No.) | Birds<br>(No.) | Mammals<br>(No.) |
| Stone Axe-1A   |                   |                | 64               |
| Stone Axe-1B   |                   |                | 333              |
| Megalithic     |                   | 1              | 211              |
| Andhra         | 1                 |                | 144              |

**Total : 752**

### DISCUSSION

India south of the Vindhyas has long been believed to bear large number of Megalithic structures which differ in the types but have common features in that they consist of unhewn and roughly hewn slabs of stone supplemented by dry stone walling in instances. Wheeler (1947) conjectured the arrival of Brahmagiri Megalithic culture in northern Karnataka sometimes in the Third century B.C. This event has got considerable bearing in the expansion of Megalithism in southern India. While it was noticed that there is an overlap between the Stone Axes and the megaliths, there was no cultural transition from the earlier culture to the latter. On the other hand a culture richly provided with iron weapons and tools, well made ceramic potteries turned on wheels, beads of gold etc was witnessed. There was hardly any affinity between the two cultures and the sudden character of Megalith intrusion upon the Stone Axe of Brahmagiri is considerably evident. It may well be presumed that in Third or Second century B.C. there was a sudden extension of Megalith building folk from the peninsular India northwards into the Deccan. Robert Bruce Foote (1887-1916), a pioneering archaeologist of India recorded a large number of Neolithic and related

sites in different parts of South India including mid-eastern Karnataka. He organized his findings into a Three Age System of culture-historic sequence ( Paleolith-Neolith-Metal Age ). He threw light on the aspect of settlement archaeology on the basis of field explorations in Karnataka. He observed that archaeological sites grouped around granitic hills and the settlements usually captured commanding positions compared to the surrounding plains and cited criteria that influenced the location of the sites. Settar (1976) recognized contributions of R. Narsimhachar of the Mysore Archaeological Department for drawing archaeological potentials of Brahmagiri through his excavations and findings.

Brahmagiri was further studied by M.H. Krishna in 1940s who conducted excavations at the ancient town of **Isila** at the lower elevations of Brahamagiri hill. The recovered objects and artefacts from the site had put forward evidences towards the multi-period complexity of the site. Through the study of surface material and various objects at depths in vertical trenches Krishna (1943) depicted a stratified occurrence of later prehistoric cultures from Mesolithic to Early Historic through Neolithic and Megalithic stages. Krishna's findings (loc. cit.) focused Brahmagiri as an important site for understanding the

chronology of Southern India and thus made it one of the important sites for the subsequent systematic excavations.

Wheeler's excavations at Brahmagiri opened up the study of southern Neolithic in its broader geographical and chronological perspective. The Brahmagiri excavations revealed continuous occupation from Upper Neolithic through the Early Historic. Wheeler observed some sort of overlap between the Megalithic and Early Historic phases. This excavation provided a relative chronological sequence of cultural phases. He relied mostly upon estimation for assigning age and dating, and considered only a very limited time span of one millennium for the growths of these cultures. According to Wheeler the Neolithic culture was dated about early part of the First millennium B.C., Megalithic began around the Third century B.C., and which later on evolved into the Andhra culture in the First century A.D. Subsequent works and radiometric analysis have however, made considerable changes in the dates of the cultures. Allchin (1954, 1960, 1963a) had put forward justifications for dating the southern Neolithic to Second to Third millennium B.C. in contrast to the First millennium date opined by Wheeler (1947, 1959). Seshadri (1956) also expressed doubts about the dating by Wheeler. The radio-carbon analysis had presented a much clearer understanding about the dating and time span of the culture which date back to a much greater time depth, to at least the Third millennium B.C. (Allchin and Allchin, 1968; Paddayya, 1971, 1973; Agrawal, 1982). These studies also gave idea about the major pastoral component and agricultural practice of the southern Neolithic folk.

The study of the animal remains can contribute to the past ecological condition and human-animal relationships to certain extent. Animals with hard exoskeleton (Molluscs) and endoskeletons

(Vertebrates) have been recovered from the excavations. The skeletal remains of animals were mostly fragments of different bones. These remains were mineralized to a great extent and were somewhat fragile. The animal species recovered through skeletal remains were not quite extensive and mostly of the domestic animals (see Table 2). Maximum number of skeletal fragments were recovered from the Late Stone Axe culture (IB) followed by the Megalithic (M) and Andhra cultures (A) (see Table 3). Maximum number of animal species was also recovered from the Late Stone Axe culture (see Text-Fig. 2). Non-availability of the aquatic vertebrates and fishes and the absence of marine molluscan shells or shell artifacts in the recovered faunal remains are the noteworthy features.

Apart from simple zoological-taxonomical approach the dimension of human-animal relationships in the past human societies have also become the focus of archaeological studies in last three to four decades. The faunal analysis enabled us to understand about the most components of the human diet, nutritional enrichment and useable items through animal products and utility of animal as labour and protection forces (see Allchin, 1969, Allchin and Allchin, 1947; Alur, 1973a, 1973b; Thomas, 1974; Paddayya, 1975; Badam 1981; Thomas and Joglekar, 1994; Saha *et al.*; 2004; Pal *et al.*, 2004; Talukder and Pal, 2007 etc.). Animal hides were almost certainly in use though milking of the domestic Cattles by the Neolithic folk remains a doubtful matter (Simmons, 1970; Fuller, 1996).

A wide range of domestic animal forms have been recovered from the excavation in Brahmagiri (see Table 2). However, remains of a few species *viz.*, Indian buffalo and pig/wild boar were found in lesser number. The situation indicates to a possible wide natural distribution of buffalo in the

past which is not naturally occurring in the southern India in these days in wilderness. These animals were perhaps hunted by the earlier people. Indian hare and spotted deer were doubtlessly wild from and these species are still seen in wild in this part of India. The fowl appear to be the domesticated form of *Gallus gallus* and that has been recorded from several prehistoric sites of India. Cattle (*Bos indicus*) bones are nonetheless more prevalent amongst the recovered animal remains and virtually this species dominated in most of the southern Neolithic assemblages ( Allchin, 1963a,b; Paddayya, 1975; Clason, 1977; Thomas, 1984; Sahu, 1988; Venkatasubbaiah *et al.*, 1992; Thomas and Jogalkar, 1994; Allchin and Allchin (1974b; 1982; 1995) suggested that these cattles were indigenous breed domesticated local wild forms. Caprines (goat and sheep) bones were also encountered in large numbers. Sheep and goat are in fact not indigenous forms or native parts of the wild animal forms of the peninsular India and were primarily domesticated in Southwest Asia (Mason, 1984; Ryder, 1984; Davis, 1987; Legge, 1996; Meadow, 1996 ). These domesticated forms were obviously introduced by humans, either by migrating folks or through trade practices. It however poses a question regarding the antiquity of goat/sheep herding and how this developed in the peninsular India. This may either be through the immigration of pastoral folks or acquired specialization within the local agro-pastoral communities once the animals had been introduced. This aspect needs to be better understood. Although a horse donkey (*Equus* sp.) has been reported from the Early Stone Axe culture the presence of true domestic horse has been a controversial matter.

Significantly, the types of Megalithic found in Brahmagiri are analogous to many of these found in Nagarjunakonda, Maski, Hasmatpet etc. The occurrence of red and black ware in earlier periods in the north substantiates the origin there. The

knowledge and method somehow traveled from north towards south through central India which was adopted by the Megalithic builders in Brahmagiri. The changing human population size and activity had impact upon the vegetation cover, opening up of pastoral land and introduction and replacement of biota. Till now, we have only limited knowledge about the changing wild fauna in Karnataka and parts of the peninsular India during the prehistoric human cultures and civilization.

### SUMMARY

Brahmagiri, situated at a distance of about 48.2 km. south of Bellary town in Chitaldurga District of Karnataka is a granitic outcrop about 183 m. high and the ancient township of Isila, mentioned in Asoka's rock edict, was located at the foot of this outcrop. The Archaeological Survey of India (ASI) and the State Archaeological Department of Mysore (presently Karnataka) carried out an organized systematic excavation in 1947 after a primary investigation by the State Archaeology Department in 1942, which projected a multi-period complexity and chronological sequence of cultural phases of the site. These cultures *viz.*, (i) Stone Axe, (ii) Megalithic, and (iii) Andhra were found in succession and spanning an age between the Third millennium B.C. to about the First century B.C. Polished pointed-butt axes of trap rocks associated with crude microliths of the stone axe cultural phase was followed by iron tools and weapons of the Megalithic culture. and sophisticated ceramics and potteries of the Andhra culture. The analysis of animal remains ( 752 specimen/fragments from different cultural phases) comprising mostly of hard exoskeletons of mollusks and endoskeletons of vertebrates revealed the presence of 1 species of Mollusca, 1 species of Aves and 9 species of Mammalia. Animal remains were mostly of different domestic animals and in

which cattle bones outnumbered others. Various aspects, like, past ecological set-up, human-animal relationships, importance of the animal in subsistence and economy of the past human societies, major pastoral components, immigration of pastoral folks, agricultural practice of the southern Neolithic folk, etc. have been assessed through the analysis of animal remains and information out of the archaeological studies.

### ACKNOWLEDGEMENTS

The authors are indebted to the Director, Zoological Survey of India (ZSI) for providing all necessary facilities for carrying out the work. The

Director-General, Archaeological Survey of India (ASI) had placed the animal remains of the excavations from Brahmagiri in the repository of ZSI, which is gratefully acknowledged. They owe to the Director, Centre for Archaeological Studies and Training (CAST), Kolkata for allowing them to use their library. Smt. Supriya Nandy, Shri B. Baraik of ZSI and Shri Kaushik Ganguli of CAST extended various supports in course of this study. Special thanks are due to Shri Tapan Bhattacharyya of ZSI for helping in preparation of one text-figure incorporated in this document. They owe to the reviewer of the paper for offering constructive opinions and useful changes for its improvement.

### REFERENCES

- Agrawal, D. P. 1982. *The Archaeology of India*. Scandinavian Institute of Asian Studies, Copenhagen, Monograph Ser. No. 46.
- Allchin, B. Allchin, F. R. 1968. *The Birth of Indian Civilization*, Penguin, Harmondsworth.
- Allchin, B. and Allchin, F. R. 1974. Some new Thoughts on Indian Cattle. In : J.E. van Lohuizen-de Leeuw and J.N. Ubaghs eds. *South Asian Archaeology 1973* pp 71-77; E.J. Brill, Leiden.
- Allchin, B. and Allchin, F. R. 1982. *The Rise of Civilization in India and Pakistan*. Cambridge Univ. Press, Cambridge.
- Allchin, B. and Allchin, F. R..1995. Rock Art of North Karnataka. *Bull. Deccan Coll. Res. Inst.*, **54** (5):313-338
- Allchin, F. R. 1954. The Development of Early Cultures in the Raichur District of Hyderabad. Ph. D. Thesis, London University, London.
- Allchin, F. R. 1960. *Piklihal Excavations*. Hyderabad : Andhra Pradesh Government Publ., Archaeological series, No. 5.
- Allchin, F. R. 1961. *Utnoor Excavations*. Hyderabad : Andhra Pradesh Government Publ., Archaeological Series, No. 5.
- Allchin, F. R. 1963a. *Neolithic Cattle Keepers of South India: A Study of the Decan Ashmounds*. Cambridge Univ. Press, Cambridge
- Allchin, F. R. 1963b. Cattle and Economy in Neolithic South India. In ; A. Mourant and F. E. Zeuner (eds.) *Man and Cattle*, pp. 149-155; Royal Anthropological Institute of Great Britain and Ireland, Glasgow.

- Allchin, F. R. 1969. Early Domestic Animals in India and Pakistan. **In** : P. J. Ucko and G.W. Dimbleby (eds.) *The Domestication and Exploitation of Plants and Animals*, pp 317-322; Duckworth, London.
- Alur, K. R. 1973a. Significance of Animal Remains in Archaeological studies. **In** : D. P. Agarwal and A. Ghosh (eds.) *Radiocarbon and Indian Archaeology*, pp 111-117; Tata Institute of Fundamental Research, Bombay.
- Alur, K. R. 1973b. The Faunal studies in Archaeology. *Indian J. Hist. Sci.* **8** (1-2): 99-113.
- Badam, G. L. 1984. Holocene Faunal Remains from India with special reference to Domesticated Animals. **In** : J. Clutton-Borck and C. Grigson eds. *Animal in Archaeology*, Vol. III. *Early Herders and their Flocks*, pp. 339-353; British Archaeological Reports, Oxford, International Ser. 202.
- Clason, A.T. 1977. Wild and Domestic Animals in Prehistoric and Early Historic India. *The Eastern Anthropologist*, **30**:241-289
- Davis, S. M. 1987. *The Archaeology of Animals*. Batsford, London.
- Foote, Robert Bruce, 1887a. Notes on some recent Neolithic and Palaeolithic Finds in the South. *J. Asiatic Soc. Beng.* **56** (2): 259-282
- Foote, Robert Bruce, 1887b. Notes on Prehistoric Finds in India. *J. anthropol. Inst. Gr. Brit. & Ireland.*, **16** : 70-75
- Foote, Robert Bruce, 1895. The Geology of the Bellary District, Madras Presidency. *Mem. Geol. Surv. India*, **25** (1): 1-216.
- Foote, Robert Bruce, 1914. *Prehistoric and Protohistoric Antiquities of India*. Govt. Museum, Madras.
- Foote, Robert Bruce, 1916. *The Foote collection of : Indian Prehistoric and Protohistoric Antiquities : Notes on their Age and Distribution*. Govt. Museum, Madras.
- Fuller, D. Q. 1996. The Emergence of Agricultural Economies in India : Reconsideration of the Bioarchaeological Evidence. M. Phil. Dissertation, Department of Archaeology, Cambridge University.
- Krishna, M.H. 1943. Annual report of the Mysore Archaeological Survey for the Year 1942. Directorate of Archaeology & Museums, Mysore.
- Krishnaswami, V. D. 1959. The Neolithic pattern of India. Presidential Address, Anthropology and Archaeology Section, Indian Science Congress, 46<sup>th</sup> Session, Delhi :1-26 pp.
- Krishnaswami, V. D. 1960. The Neolithic Pattern of India. *Ancient India*, **16**: 25-64.
- Legee, A. J. 1996. The Beginning of Caprine Domestication in Southwest Asia **In**: D. R. Harris ed. *The Origins and spread of Agriculture and Pastoralism in Eurasia*. pp. 238-262; UCL Press, London.
- Mason, I.L. (ed.) 1984. *Evolution of Domesticated Animals*. Longman scientific, London.
- Meadow, R. 1996. The Origins and Spread of Agriculture and Pastoralism in Northwestern South Asia. **In** : D. Harris (ed.) *The origin and spread of Agriculture and Pastoralism in Eurasia*, pp. 390-412; UCL Press, London.

- Mujumder, G. G. and Rajguru, S. N. 1966. *Ashmound Excavations at Kupgal*. Deccan College, Poona.
- Nath, B. 1963. Animal remains from Brahmahiri (Mysore State, India). *Rec. zool. Surv. India*, **61** (1 & 2):65-88.
- Paddayya, K. 1971. Radiocarbon Dates and South Indian Neolithic Culture. *Antiquity*, **45**:134-138.
- Paddayya, K. 1973. *Investigations into the Neolithic Culture of the Shorapur Doab, South India*. E. J. Brill, Leiden.
- Paddayya, K. 1975. The Faunal Background to the Neolithic Culture of South India. In : A. T. Clason(ed.) *Archaeozoological Studies*, pp. 329-334; North Holland Publishing Co., Amsterdam.
- Paddayya, K. 1991-92, The Ashmounds of South India : Fresh Evidence and Possible Implications. *Bull. Decan Coll. P.G. & Res. Instt.* **51** (2) : 573-626.
- Pal, T. K., Talukder, B., RAY, S. K. and BARAIK, B. 2004. Animal remains excavated from Nagda Archaeological site ( Madhya Pradesh ) and their relevance to the Chalcolithic Civilization of the place. *Rec zool. Surv. India*, **103** (3-4):1-32 + 2 pls.
- Ryder, M. L. 1984. Sheep. In : J. L. Mason (ed.) *Evolution of Domesticated Animals*; pp. 63-85, Longman Scientific, London.
- Saha,U., Ghosh, M. and Pal, T. K. 2003. Animal remains excavated from Lothal Archaeological site (Gujarat) and relevance of the fauna in this Ancient Civilization. *Rec. zool. Surv. India, Occ. Pap. No. 222* : 1-162.
- Sahu, B. P. 1988. *From Hunters to Breeders (Faunal Background of Early India)*. Araunika Prakasam, Delhi.
- Sankalia, H. D. 1977. *Prehistory of India*. Munshiram Manoharlal, New Delhi.
- Seshadri, M. 1956. *Stone Using Cultures of Prehistoric and Protohistoric Cultures of Mysore*. University of Mysore, Mysore.
- Settar, S. 1976. *Archaeological Survey of Mysore Annual Reports : A study*. Department of History and Archaeology, Karnatak University, Dharwad.
- Settar, S. and Korisetar, R, (eds.) 2002. *Prehistory : Archaeology of South India. Indian Archaeology in Retrospect, vol. I*, Indian Council of Historical Research, Manohar, New Delhi.
- Simoons, F. J. 1970. The Traditional Limits of Milking and Milk Using in South Asia. *Anthropos*, **65**: 547-593.
- Talukder, B. and Pal, T.K. 2007. Animal remains from Nagarjunakonda archaeological site (Andhra Pradesh) and their relevance to the ancient civilization. *Rec. zool. Surv. India, Occ. Pap. No. 264* : 1-92.
- Thapar, B. K. 1974. Problems of the Neolithic Cultures in India : A Retrospect. *Puratattva*, **7**: 61-65.
- Thapar, B. K.1978. Early Farming Communities in India. *J. Human Evol.* **7** : 11-12.
- Thomas, P. K. 1974. Zoological Evidence from Prehistoric India with special reference to Domestication. *Bull. Decan Coll. P. G. & Res. Instt.* **34**: 195-210.

- Thomas, P. K. 1984. Faunal Assemblage of Veerapuram. In: T.V. G. Sastri, N. Kasturi Bai and J Varaprasad Rao (eds.) *Veerapuram : A Type site for Cultural Study in the Krishna Valley*, pp. i-ix ; Birla Archaeological and Cultural Research Institute, Hyderabad.
- Thomas, P. K. and Joglekar, P. P. 1994. Holocene Faunal Studies in India. *Man & Env.*, **19** (1-2): 179-223.
- Venkatasubbaiah, P. G., Pwankar, S. J. and Joglekar, P. P. 1992. Neolithic Faunal Remains from the Central Pennar Basin, Cuddapah District, Andhra Pradesh. *Man & Env*, **17** (1): 55-59.
- Wheeler, R. E. M. 1947. Brahmagiri and Chandravalli 1947 : Megalithic and other Cultures in Mysore State. *Ancient India*, **4** : 180-230.
- Wheeler, R. E. M. 1959. *Early India and Pakistan* Thames & Hudson, London.
- Zeuner, F. E. 1959. On the Origin of the Cinder Mounds of the Bellary District. *Bull. Inst. Archaeol.* **1** : 37-44.