

## A Preliminary study on the Ashmound sites in the Lower Tungabhadra Region of Andhra Pradesh

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### *Abstract*

*The present paper deals with the preliminary observations made on two ash mound sites, Kambadahal and Tsallakudluru, located during the recent field investigations carried out as part of ICHR project in the months of May-June, 2009., along the banks of river Tungabhadra and its many affluents covering the eastern part of Yemmiganur, western part of kurnool taluk and eastern part of Kodumur taluks of Kurnool district. It also gives a brief account of the main character of the Neolithic culture of the area along with the inferences made on the evidence of ash mound sites.*

### **Introduction**

Ash mounds are one of the important issues dealing with the archaeological remains related to Neolithic culture in South India. It attained the most debatable topics among the archaeologists as it essentially resulted either due to an economic activity or religiously significant that began in the second half of 3<sup>rd</sup> Millennium BCE. Ever since the first discovery of ash mounds by Colonel Colin Mackenzie in 1952, including the famous ash mound at Kudatini on the Bellary-Hospet road, several individual scholars and institutions (Foote 1887,1916; Munn 1934-1936; Zeuner 1960;Allchin 1960,1961; Majumdar and Rajaguru 1966;Sundara 1968,1970,1971; Paddayya 1973;RamiReddy 1976; Sundara 1985,1987;Paddayya 1993a,1993b;Deotare and Kshirsagar 1993; Paddayya and others 1995;Paddayya 1995a,1995b,1998; Khrisat Bilal 1999; Deotare and others 1999; Paddayya 2001,2002a) have brought to light over a hundred such sites: for the list of sites see Rami Reddy 1990:63), both partially disturbed with mound features to a meager extent or completely erased to a greater extent leaving behind only the sub-surface features with traces of the original spot by shifting the vitrified lumps of ash to the field boundaries and intact mounds. All the literature dealt with the formation of these specific archaeological sites and material culture, thereof by exposing different opinions and tentative conclusions and hence still remained as an unsolved problem.

However, Prof. Paddayya's recent observations at one of the major habitation-cum-ashmound sites, Budihal located in the Gulbarga district of Karnataka, under gone for scientific excavation between 1990-91 to 1996-97 (earliest date ranging from 2565 to 2540 BCE calibrated from vitrified Upper layers of the ashmound:Paddayya 2001:215) which in fact once again revived the problem of ashmounds. His work along with visiting several such sites over a vast areas of Raichur,Bellary, Gulbarga, Belgaum and Bijapur districts of Karnataka and Mahabubnagar, Ananatapur districts of Andhra Pradesh made him to put forward the following four specific aspects dealing with the formation of ashmounds in a landscape approach looking into this problem as (Paddayya 2002a:86):

1. Concentration of ash mounds in the hilly tracts occupied by the Archaean granite-gneiss formations which support plentiful pasture but are ill-suited for agricultural purposes on account of poor, sandy soils;
2. Location of sites close to perennial water sources (large or small rivers, ephemeral nullahs with year-round water pools and natural springs);
3. Availability of large stretches of open land around ashmounds, ideally suited for purposes of human occupation;
4. And the presence of thick and extensive occupation deposit in the open area around ash mounds, yielding rich Neolithic cultural material of various kinds.

More recently, Paddayya (2004-05:1-6), by taking the evidence of thick habitation around the ashmound at Budihal with all culturally determined activities of Neolithic period, visualized that the ashmounds basically formed the symbolic representation of periodic regional congregations for both functional and ceremonial transactions and hence served as a regional centre of Neolithic groups inhabiting a vast area of similar landscape. But this may not be applicable to all ashmound sites due to lack of thick cultural deposits. But the present author during 1990 observed thick Neolithic habitation deposits at Palavoy where four ashmounds are located at the same place and hence there is a need for further field investigations in view of the above interpretation. Johansen (2004:309-330), looking at the formation processes of these ash mounds on the basis of different aspects i.e., landscape, monumental architecture, ritual or ceremonial and overall location pattern, etc. tentatively deduced that “Ashmounds have formed an integral part of the experience and perception of those inhabiting the cultural landscapes of the South Deccan/North Dharwar region from the Neolithic and Iron-Age through to the present day. The archaeological evidence for Iron-Age incorporation of the space and material of Neolithic ash mound monuments into similar and very different forms of landscape production demonstrates a spatial and temporal continuity of social importance associated with very special places in very differently constituted social orders. The continuity of ritual and monumental emphasis on special points on the cultural landscape demonstrates the fluid nature of cultural change in this dynamic regional landscape”.

In view of the above derivative hypotheses in the formation of ashmounds, the present evidence of ash mounds at Kambadahal and Tsallakudluru has been focused to look at the south-eastern extension of Southern Neolithic culture through the occurrence of a large number of habitation sites in the Lower Tungabhadra Region.

### **The Area**

The area under discussion forms part of the proposed ICHR Major Research Project covering the western half of the present Kurnool district of Andhra Pradesh. However, an area of 1000 sq. km. lying between the Northern Latitudes of 15° 30' and 16° 00' and the Eastern Longitudes of 77° 45' and 78° 00' including both banks of Tungabhadra river and its affluents flowing in the Yemmiganur, Kodumur and western part of Kurnool taluks has been surveyed by following village-to-village survey. Physiographically the area comprises of granitic outcrops with boulders intervened with black and red loamy soils and patches of sandy and brownish soils derived from traps and granite overlooking the fields under dry farming. It is an open country from the plains of which rise a number of granite outcrops with intervening dolerite formation at

regular interval. The open stretches of land is devoid of trees but along the stream banks thick vegetation of grass, date palm trees are seen. The elevation of the region gradually falls into the Tungabhadra valley and Handri ranges between 300-600 m. The chief geological formations being the Archaean, the Dharwarian, the Kadapa and Kurnools comprising crystalline rocks such as quartz, granite, gneiss, dolerite, schists, ferruginous quartzite, amphibolite, metadolerite, basic dykes, etc. The major rivers that flow in the region are the Tungabhadra and its tributary Handri along with many local nullahs. The area is strewn with Tropical dry deciduous, Thorny scrub and *Hardwickia binata* type of vegetation covering the hills, hillocks, along the stream and river banks and foot hill regions supporting wild fauna of both small and big game. It experiences an average rainfall ranging from 620 to 675 mm.

Recently the author surveyed parts of Gudur, K.Nagalapuram and Belagal mandals of Yemmiganur taluk and western part of Kurnool taluk and located 28 Neolithic habitations such as A.Gokulapadu (15° 47' 05" N ;77° 56' 05"E), Bastipadu(15° 47' 20"; 77° 58' 20 " ), Budidapadu(15° 44'10" ;77° 54' 20"), Daivamdinne(15° 49';77° 35' 25"), Doddipadu(15° 44' 40";77° 55' 58"), Enugubala(15° 48'; 77° 36' 10"), Gudipadu-east(15° 46'; 77° 52'), Gudur-West and Gudur-northeast(15° 46' 30';77° 48' 15'), Gorantla(15° 38' 15";77°49'30"), Julakallu(15° 48' 10";77° 46'), K.Nagalapuram(15° 45' 35";77° 55' 10"), Kalugotla(15° 53' 35";77°58' 05"), Kanakavidu (15° 51'; 77° 33'50"),Kanakavidupeta (15° 51' 45";77° 34'), Mallapuram(15° 49';77° 49'), Mittasomapuram(15° 53';77° 35'), Neravada(15° 47' 30"; 77° 58' 05"), Nidzuru(15° 52';77° 59'), Parla((15° 47' 30"; 77° 58' 05"), Pandipadu(15° 45' 05"; 78° 00'), Penchikalapadu (15° 45' 05";77° 53' 45"), Ponnekallu(15°47'10";77°46'45"), Ponakaladinne(15°50'30";77°36'), Paramata Singavaram (15°52'05";77°47'10"), Remaduru(15°40';77°54'50"), Remata-South (15°49'30";77°51'15"),Remata-Northeast (15°50'15";77°51'45"), and Suguru(15° 49'; 77° 31' 05") apart from locating two sites, Tsallakudluru (Habitation-cum-ashmound) and Kambadahal( only ashmound).

The sites with thick habitation are less in number as most of them are subjected to dry farming and hence modified in their physical features but retaining considerable sub-surface habitation debris ranging from 30 cm. to 1 m. thickness and 0.25 to 0.5 hectares in extent, except at Tsallakudluru where it exhibited a mound of 1.5 hectares, 1.5 to 2 m. thick, 1.5 m. height from the surrounding fields. The Neolithic material composed of pecked and ground stone tools and objects such as querns, rubber stones, hammer stones, axes, axe-hammers, anvils, sling balls, pallets, etc);pottery of grey, red, brown, buff, black wares representing the bowls, pots, dishes, vases with secondary devices such as lugs, lips, spouts, channel spouts and the fabric is coarse to fine; animal bones of sheep/ goats, cattle, buffalo along with wild fauna of deer species; blade tools of quartz, chert, flakes of dolerite and granite, etc.

### **Ashmound sites**

1. Kambadahal (15°49'40"N;77° 37' 30" E) is a hamlet situated 52 km. south-west of Kurnool town and 14 km. north-east of Yemmiganur town, on the Kurnool-Yemmiganur road at a distance of 12 km. west of Belagal. Peddavanka, an affluent of river Tungabhadra flows in a south-north direction to the west of present hamlet located on its right bank. The ashmound (Fig.1 & 2) is located 100 m. east of the right bank of the stream mentioned above. The mound

has an elevation of 2 m. with vitrified ash layer on top and series of soft ash down below as seen in the dug out sections(Fig.3). It is locally called ‘Gumma’, which is more or less circular in plan but slightly vary in dimensions of 40 m. east-west, 35 m. north-south with a height ranging from 2-1.5 m.



Figure 1. Ash mound at Kambadahal



Figure 2. Kambadahal, General view of the mound from north



Figure 3. Kambadahal, Central feature (soft ash content)of the ash mound



Figure 4. Kambadahal, Vitrified ash layer of the mound facing south (dug out section with soft ash down below )



Figure 5. Kambadahal, General view of the mound from south with habitation debris lying east of the mound and stone objects visible strewn along the field boundary

The village people have been quarrying the central part leaving behind the circular body of 2.5 m. wide and hence exposed sections facing all directions (Fig.8) with thick vitrified upper layer approximately 60-70 cm. thick (Fig. 4) followed by less vitrified but hardened ash layer of 20 cm. thick, followed by 4 to 5 layers of soft ash each measuring 10 to 15 cm. thick (Fig.7) bluish grey and grayish white in color. As a result of removing the upper vitrified ash layer and bottom soft ash in the centre resulted in leaving a central portion of bottom soft ash measures 10 X 10(Fig.3). The bottom part of the quarried central part has red murram soil of foreign origin, perhaps brought from the outcrop of dolerite/trap formation located on the right bank of the local nullah situated 250 m. north-west of the mound proper. The upper vitrified ash layer is covered with lots of dolerite and granite (Fig.11) boulders, rubber stones, hammer stones perhaps lifted and thrown on the surface while quarrying the soft ash. The author noticed Neolithic habitation debris of 20 m. wide, especially in the east (Fig.5) but comparatively low on the southern side and absent on the other two directions, exposing pottery, stone objects and animal bones (well burnt and heavy in weight) less in quantity unlike noticed at the regular habitations. The author also noticed broken querns, hammer stones, rubber stones, sling balls, animal bones (Fig.6) from the dugout area of the mound perhaps the collection from soft ash layers while quarrying operation by the village folk.



Figure 6. Kambadahal, Neolithic pecked and ground stone tools ( broken querns, hammer stones, broken axes), potsherds, animal bones, etc

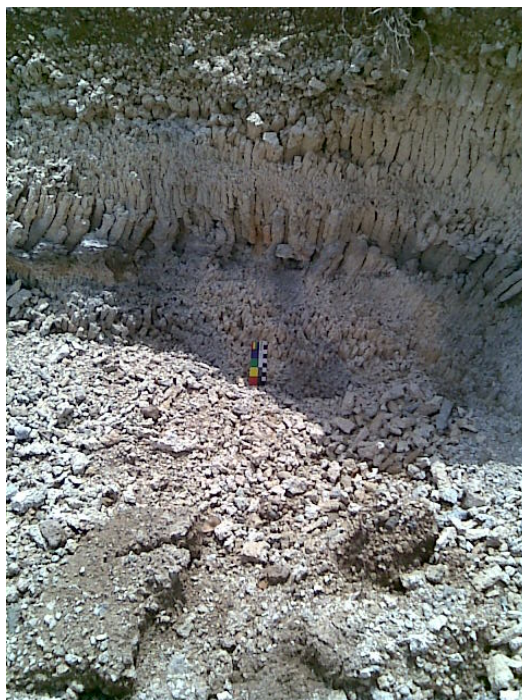


Figure 7. Kambadahal, Soft ash section facing north (soft ash formation with distinguished layers of each 10 to 15 cm. thickness)



Figure 8. Kambadahal, View of the Ash mound from north-east corner showing the overall dug out portion in the centre leaving the vitrified ash layer in a circular fashion



Figure 9. Neolithic habitation mound at Tsallakudluru. View from east

2. Tsallakudluru (15°49'05"N; 77°32' E) is a village situated 9.5 km. north-east of Yemmiganur town and 2 km. north of Timmapuram village which is situated on the Yemmiganur-Kurnool main road. The Neolithic-Early historic habitation (Fig.9) is a mound of 2.5 m. in height from the surrounding fields. At present it measures nearly 100 m. north-south, 110 m. east-west with a



thickness of 2 m. exposing lots of pottery, stone objects, tools, animal bones, etc noticed in the plough zone upper surface as it is under dry-land cultivation. It was, originally, a circular mound. However, its western part, about 2 acres all along north-south has been cut down to a depth of 1.5 m. leaving a section facing west (Fig.10), on which lying the vitrified ash lumps, giving a longitudinal cut of the mound proper. The mound has slope surface towards east and its southern part also brought under cultivation by cutting up to a depth of 1.5 m. The north-western corner perhaps possessed the ashmound, has been completely ploughed and hence erased off from its original position. It has resulted in exposing soft ash



Figure 10. Tsallakudluru Neolithic mound with vitrified ash lumps lying on the field boundary (as the western portion of the mound has been brought under dry land cultivation)

layer in the plough zone which is pulverized completely ( Fig. 12). pottery, stone objects and tools, shell bangle pieces, animal bones, etc. were found from ploughed zone and other material from the surface of the mound. The occurrence of Neolithic pottery, soft ash, vitrified ash and stone objects and tools from the low-lying ploughed zone indicate the limited occupation of Neolithic horizon belonging to lower layers of the mound.



Figure 11. Kambadahal ash mound : view from the upper part of the Vitrified ash layer with pecked and ground stone objects, dolerite raw material and the dug out central portion upto the bottommost part of soft ash

The Neolithic habitations, so far found in the concerned area, measure range between 1-3 hectares in size and at certain sites the sparse representation of habitation along with meager remnant of cultural material suggests a satellite settlements attached to main sites indicate that the Neolithic populations had vigorous movement between their settlements and hence lot of information and material flow might had been possible. The cultural material consists of pottery of different fabrics, pecked and ground stone and blade tool industry, especially made on chert. The yellowish-brown chert nodules found at several of these sites show that the raw material was procured from river-born pebbles as nodules derived either from the limestone formation of Kurnool-Kadapa system of rocks or from other source. The Neolithic populations exploited the dyke formation and dolerite outcrops for the edge tool manufacturing as it is found exposed intervening black soils and granite boulders are seen as outcrops every where perhaps served for the ground stone objects. Earlier, perhaps, from the same site pottery, iron slag, animal bones, broken pieces of stone objects were reported besides finding grey ware, dull red ware, red ware, black ware, Russet-coated-painted ware, Black and red ware, a fragment of each of a ring stone and a neolithic celt were collected in addition to the shell bangles, terracotta beads and iron objects (IAR 1992-93:2-3). However, it is claimed that the cloddy and scoriacious type of grey soil was noticed in an area of 250 sq.m adjacent to the mound perhaps been the exact location of the ash mound. The material collection from this site shows a mixture of neolithic and early historic cultures and hence it is clear that the lower levels belong to Neolithic as there is evidence of soft ash and exactly similar situation has been noticed by the present author. This plough zone may coincide with the Neolithic habitation at the lower levels which may be of 0.5 to 1 meter thick and the upper layers belong to early historic which cannot be seen at the moment lying west to the mound. Even though Neolithic habitations with the presence of ashmounds are comparatively less in number such as Piklihal (Allchin 1960) and Budihal (Paddayya 1993a, 1993b) but are good examples of pastoral settlements where dumping of cow-dung along with the admixture of daily refuse followed by periodic burning was perhaps prevalent.



Figure 12. Tsallakudluru (Neolithic-EH site?), Neolithic habitation layer showing the soft ash lumps in the ploughed zone (from the western part of the mound low-lying )

## Locational Analysis

Environmental analysis invariably lies in the material culture of a settlement at micro level and overall data from settlements inhabiting a geographical region or zone at macro level. This may also include the study of a specific character of the culture that signify its importance concerning the research looking into the causative factor for which a scientific approach is essential. Scholar working on this aspects may draw useful meanings of the pattern of cultural behavior by applying the available data through testing hypothesis that may or may not give a definite answer. Many traditional questions in social sciences may not be answerable nevertheless there is a need for reformulation of approach through the corresponding units of analysis which concert the behavioral framework. As it is known that cultural variation, either micro or major, in the form of site location with material culture primarily depends on the interaction of people with the environment, arrangement of artifacts, architecture, cultural deposits, etc., an outcome of living system and hence in an archaeological record it is the result of the product of human behavior (controlling for non-cultural formation processes). It is virtually any aspect of human life which is open to scientific scrutiny and explanation so long as questions can be framed in terms of people-object interactions (LaMotta and Schiffer 2001).

From the above phenomena of cultural behavior the ashmound site at Kambadahal stands as a best example when we look at its location amidst many Neolithic settlements recently located which are located along the river system in a ribbon band fashion. The present ashmound at Kambadahal is located 100 m. away from the right bank of a local nullah, Peddavanka indicate its attachment to water source which is seasonal at present but had been active during Protohistoric period, i.e., around 2<sup>nd</sup> Millennium B.C. It can be well compared to that of Utnur ashmound and its location exemplifies the feasibility of resource potential which is culturally determined. The availability of raw material for pecked and ground stone tools in the form of granite and dolerite outcrops, water source, arable land for cattle pastoralism signify its locational importance. The absence of any other cultural material in (Neolithic material found in the exposed sections of the vitrified and soft ash layers) and around this mound indicate its basic Neolithic character. As noticed at Budihal, Utnur and other sites, the present ashmound also contains upper vitrified ash layer followed by soft but hardened ash divisible into 3-4 bands each measuring 10-15 and 15-20 cm. thick. The composition of vitrified upper ash layer indicate the dumping activity of these people (the cow-dung accumulation out of daily clean or collection of cow-dung from daily pastoral activity). The selective objects such as broken querns, rubber stones, grinding stones, potsherds of limited shapes, animal bones and thin habitation debris found on its eastern side indicate that it is a pastoral camp which might have also been acted as a nodal point for the congregation of Neolithic people where some sort of material exchange or information flow was possible. As the author did not notice any artificially made platform (as noticed at Malnur and Palavoy) at the bottom part of the present ashmound suggest that it was not a regular camp, whenever possible, the Neolithic pastoralists gathered themselves and hence it did not grew into a massive structure like that of Wandalli, Kudatini, etc. Looking at the overall distribution of Neolithic settlements in the area it is certain that there existed a net work of settlements, probably flourished around 2500 B.C. as indicated by the evidence of ash mound at Utnur located within a radius of 15-20 km. north of the present Kambadahal and Tsallakudluru ashmound sites and also to that of Gudekallu and Suguru ashmounds located within a radius of 10 km and 35 km. respectively to the west and south-west of the present ash mounds of the same region.

## Bibliography

- Allchin, F.R. 1960 *Piklihal Excavations*. Hyderabad: Government of Andhra Pradesh
- Allchin, F.R. 1961. *Utnur Excavations*. Hyderabad: Government of Andhra Pradesh.
- Allchin, F.R. 1963. *Neolithic Cattle-Keepers of South India: A Study of the Deccan Ashmounds*. Cambridge: Cambridge University Press.
- Deotare, B.C. and A.A. Kshirsagar 1993. Ashmound at Budihal, Karnataka: A Chemical Approach. *Bulletin of the Deccan College Research Institute*. 53:39-48.
- Deotare, B.C., A.A.Kshirsagar and V.D.Gogte 1999. Chemistry of Activity Areas from Neolithic Budihal, Gulbarga District, Karnataka. *Bulletin of the Deccan College Research Institute*. 58-59(1998-99): 49-67
- Foote, R.B. 1887. Notes on Some Recent Neolithic and Palaeolithic Finds in South India. *Journal of the Asiatic Society of Bengal* 46(2): 259-282.
- Foote, R.B. 1916. *The Foote Collection of Indian Prehistoric and Protohistoric Antiquities: Notes on Their ages and Distribution*. Chennai: Government Museum.
- IAR: *Indian Archaeology a Review*. New Delhi: Archaeological Survey of India.(1992-93),Pp.2-3.
- Johansen, G. Peter. 2004. Landscape, Monumental Architecture and ritual: a reconsideration of the South Indian Ashmounds. *Journal of the anthropological Archaeology* 23:309- 330.
- Khrist, Bilal R. 1999. *Geoarchaeology of the South Indian Neolithic Sites With Special Reference to Budihal, Shorapur Doab, Karnataka*. Unpublished Ph.D.Thesis. Pune: University of Poona.
- Mackenzie, W.C. 1952. *Colonel Colin Mackenzie: First surveyor-General of India*. Edinburgh and London: W.R.Chambers Ltd.
- Mujumdar, G.G. and S.N. Rajaguru 1966. *Ashmound Excavations at Kuppal*. Pune: Deccan College.
- La Motta Vincent M. and Michael B.Schiffer. 2001. *Behavioral Archaeology: Toward a New Synthesis*. In *Archaeological Theory Today*. Ian Hodder (ed.), Cambridge: Polity Press.
- Munn, L. 1934. Prehistoric and Protohistoric Finds. *Journal of the Hyderabad Geological Survey* 2(1): 121-135.
- Munn, L. 1935. Prehistoric and Protohistoric Finds in the Raichur and Shorapur Districts. *Man in India* 15(4):225-250.
- Munn, L. 1936. Archaeological Finds in the Eastern Portion of the Raichur Doab. *Journal of the Geological Survey*. 3(1): 1-82.
- Paddayya, K. 1973. *Investigations into the Neolithic Culture of the Shorapur Doab, South India*. Leiden: E.J.Brill.
- Paddayya, K. 1993a. The ashmounds of South India: Fresh Evidence and Possible Implications, *Bulletin of Deccan College Post-Graduate and Research Institute* 51-52(1991-1992): 573-626.
- Paddayya, K. 1993b. Ashmound Excavations at Budihal, Gulbarga District, Karnataka. *Man and Environment*. 18(1): 57-87.
- Paddayya, K. 1995a. Further Field Investigations at Budihal, Gulbarga District, Karnataka. *Bulletin of the Deccan College Research Institute*. 53(1993): 277-322.
- Paddayya, K. 1995b. New Light on the Early Agro-Pastoral Communities of South India. *Proceedings of the 19<sup>th</sup> Session of Andhra Pradesh History Congress* (Presidential Address : Ancient Andhra History and Archaeology Section), Anantapur. Pp.5-15.
- Paddayya, K. P.K.Thomas. and P.P. Joglekar. 1995. A Neolithic Animal Butchering Floor from Budihal, Gulbarga District, Karnataka. *Man and Environment* 20(2): 23-31.
- Paddayya, K. 1998. Evidence of Neolithic Cattle-Penning at Budihal, Gulbarga District, Karnataka. *South Asian Studies* 14: 141-153.
- Paddayya, K. 2001. The Problem of Ashmounds of Southern Deccan in the Light of Budihal Excavations, Karnataka. *Bulletin of the Deccan*

College Post-Graduate and Research Institute,  
Vol.60-61:181-225.

Paddayya,K.(Ed.)2002a. The Problem of Ashmounds  
of Southern Deccan in theLight of Recent Research  
In *Recent Studies in Indian Archaeology*. New Delhi:  
Munshiram Manoharlal Publishers.

Paddayya, K. 2004-05.Symbolic Appraoches to the  
Study of Early Agropastoral Communities of Lower  
Deccan. *Puratattva* 35: 1-6.

Rami Reddy,V.1976 *The Prehistoric and  
Protohistoric Cultures of Palavoy South India*.  
Hyderabad. The Government of Andhra Pradesh.

Rami Reddy,V. 1990. Ashmounds in South India, in  
*Archaeology in Karnataka* (A.Sundara Ed.),pp.85-99.  
Mysore: Directorate of Archaeology and Museums.

Sundara,A.1968. Protohistoric Sites in Bijapur  
District. *The Journal of the Karnatak University-  
Social Sciences* 4:3-23.

Sundara, A. 1970. Neolithic Cultural Patterns and  
Movements in North Mysore State. *The Journal of  
the Karnataka University-Social Sciences* 6:3-13.

Sundara,A.1971.New Discoveries of Ashmounds in  
North Karnataka:Their Implications in  
*Professor K.A.Nilaknta Sastri Felicitation Volume*  
(S.Ganesan,S.Rajan, N.S.Ramaswami and  
M.D.Sampath Eds.),pp.308-314. Madra:  
K.A.N.Sastri Felicitation Committee.

Sundara,A. 1985. Cultural Ecology of the Neolithic  
in India, In S.B. Deo and K.Paddayya (Eds.), *Recent  
Advances in Indian Archaeology*. Pune: Deccan  
College. Pp.39-57.

Sundara,A.1987. Studies in Ashmounds, In B.M.  
Pande and B.D. Chattopadhyaya. (Eds.), *Archaeology  
and History: Essays in Memory of Sri A.Ghosh*. New  
Delhi: Agam Kala Prakashan.Pp.313-324.

Zeuner,F.E. 1960. On the Origin of the Cinder  
Mounds of the Bellary District, India. *Bulletin of the  
Institute of Archaeology, London* 2 (1959):37-48