



Discovery of Late Pleistocene Ostrich Pictograph in Ambadevi Rock Shelters, Distt. Betul, Madhya Pradesh, India

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Abstract: Existence of ostrich in India has been a matter of great speculation. Many sites have been discovered showing fragments of egg shells and many with geometrical figures and motifs in India. They were later proved to be closely related with ostrich eggs after aDNA studies and found to be from Late Pleistocene era. However; mere egg shell finds would not substantiate existence of ostrich. A pictograph of a bird resembling ostrich was discovered in cave shelter in India analogous to a pictograph of ostrich in Ennedi cave shelter in Africa. Morphological comparative studies of the Indian pictograph, Ennedi pictograph, and existing African ostrich are carried out and found to be analogous. A drooping wing plumes with tail feathers, being a distinctive and exclusive feature of African ostrich, was also noticed in the said Mungsadev pictograph. These investigations substantially indicate the existence of ostrich like bird during Late Pleistocene era in India.

Keywords: Ostrich, Eggshell, Rock art, Pleistocene, Palaeolithic, Pictograph, cave shelter, Satpura-Tapti valley, Ambadevi, Betul, Gavilgarh

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Introduction

Ostrich, the largest flightless bird exists in Africa and Arabia. It is reported to have existed in China and Mongolia during upper Palaeolithic. Existence of Ostrich is recorded in many continents with analogous morphology, though in different appearances elsewhere, such as Rheas in South America, Emus & Cassowary in Australia, and Elephant Birds (recently extinct) in Madagascar. Tactonically, geographically and logically its presence was predicted. However; landmark discoveries were made when pieces of eggshells, of ostrich, were found at various sites in Madhya Pradesh, Rajasthan, Anjar in Runn of Kachchha, Ellora in Godavari basin, at Pune in Mula-Mutha valley, at Barp in Kukadi village in the Bhima basin, Asta, Kakarda and Tisi in central Tapti basin, and most significantly at Patne (Dhule District) in Maharashtra where hundreds of egg shells were discovered (Figure-1). Many egg

shell pieces were found to have geometrical figures and motif from Pleistocene era [1,2,3]. It appeared from these finds that ostrich might have existed in north-west and central part of India but period was illusive due to lack of further supporting evidences. Mere egg finds could neither substantially prove its existence nor predict its shape and size.

Archaeologists were searching for some sizeable evidence in rock shelter art for its existence. Many rock shelters have been discovered all over India (Figure-2). Many have coloured pictographs and pictoglyph of animals, birds, human figures, culture, hunting scenes, war scenes, weird birds and animals, mythology, and geometric figures, agriculture, domesticated animals, scripts. During the search of various cave shelters scientists did find few bird pictographs grossly resembling an ostrich, one of which has been reported from the cave shelters in Hitasara [4].

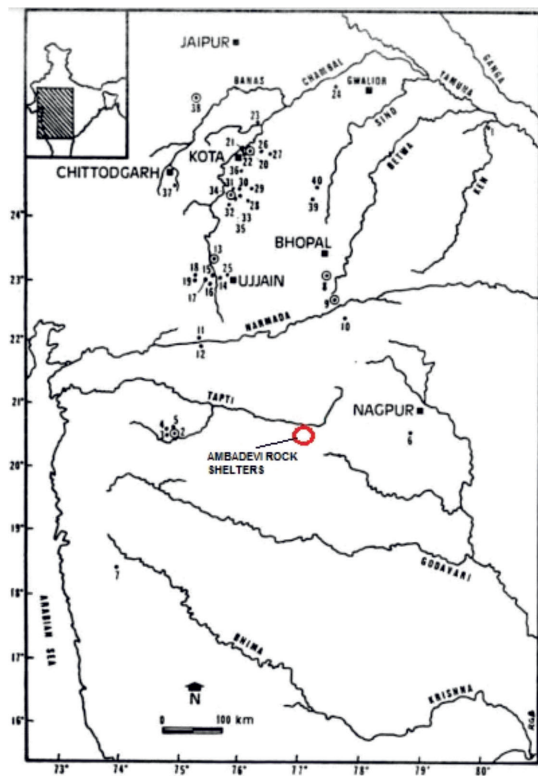


Figure 1

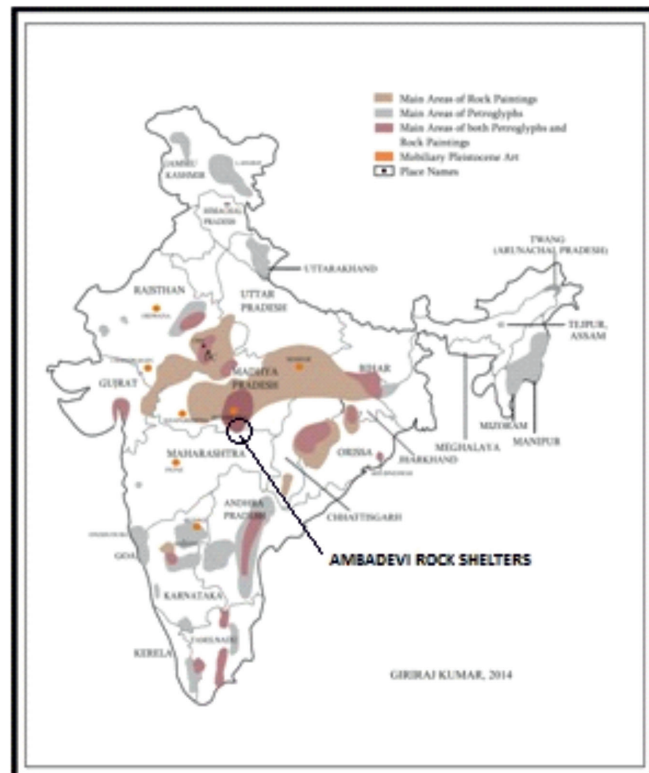


Figure 2

Figure 1: Map showing the distribution of Ostrich egg sites in India (Giriraj Kumar *et al*)

Figure 2: Map showing the distribution of rock art sites in India (Giriraj Kumar *et al*)

Subsequently an mtDNA analysis [5,6] of these egg shell pieces were carried out and it was found to be of an ostrich, dated as early as Late Pleistocene era (48000-12000 BP) [7]. For dating the upper Palaeolithic culture in India we have the following three kinds of evidences:

Stratigraphical, 2) Faunal, and 3) C¹⁴ dates

One of the most important sites of the eggshell finds is at Patne where over one hundred of eggshells were found [1]. At Patne one piece of eggshell has been found at the base of gravel yielding Middle Palaeolithic period and others were found to be from the period of I & II however; none was found from Mesolithic levels. They have been found in the layers of Middle Palaeolithic and Upper Palaeolithic period. Interestingly three eggshell pieces (two from phase II D and one from phase II

E) are engraved with simple crisscross designs between two horizontal lines. Though these designs, although simple but represent a direct evidence of the presence of Palaeolithic motif development [3]. In India though the Upper Palaeolithic motif development and creation of art lies between 48000 to 12000 BP [8,9,10], there are also earlier phases of the Upper Palaeolithic which may place the upper Palaeolithic culture roughly between 35000 to 10000 BP. This period falls within Late Pleistocene. Thus on the basis of the stratigraphical position the period appears to be between the Middle Palaeolithic and Mesolithic. In India, on the basis of paleontological, the Upper Palaeolithic stone tool culture associated with eggshell find and can be ascribed to the later part of the late Pleistocene period.

The C¹⁴ date at this site is ascribed to upper and middle Palaeolithic: Grnn 7200 level 25000±200 BP.

A comprehensive aDNA study of partly fossilized eggshells from Chandresal, District Kota, Rajasthan, was carried out. Tests were carried out by Laboratorium voor Algemene Natuurkunde Rijksuniversiteit, Groningen, Netherland. The eggshells have been given two C¹⁴ dates. viz:

Grn 10638 lower level (I) 38900 ± 700 BP,

Grn 10639 upper level (II) 36550 ± 600 BP

It was reported to have been matching up to 92% with African Ostrich [3] DNA and found to be from Late Pleistocene era (27000-42000 BP) prior to its extinction [6]. That was the first reported evidence of ostrich existence in Indian subcontinent. The mtDNA (mitochondria DNA) was surprisingly well preserved despite Indian harsh tropical climate. To further substantiate the said claim, a more tangible proof was needed as “eggshell morphologies may not be completely reliable for constructing phylogenies (family trees) as commented [3]. From the above, it appears that eggshells from Madhya Pradesh and Rajasthan belong to the upper Palaeolithic times. Eggshells from Ellora have been associated with upper Palaeolithic tools [2,7]. At Pune one piece was found in the deposits of the late Pleistocene. From the above findings the eggshells from Patne appear to be belonging to the genus *Struthio*, and possibly to the species *Struthio Camelus*.

The C¹⁴ date at this site is ascribed to Upper Palaeolithic and Middle Palaeolithic:

Grnn 7200 level 25000±200 BP.

Rock Art Site of Ambadevi Rock Shelters

In 2007, the author and his team discovered a cluster of rock shelters [Figure-3]. It is situated in Gavilgarh range of Satpura-Tapti valley, on the border of Maharashtra (Vidarbha) and Dharul, Distt. Betul of Madhya Pradesh [11,12,13]. It is now known as Ambadevi Rock-Shelters Their search continued till 2012 and within an area of 36 square kilometres more than 300 shelters were discovered (Figure-3). Many of those were decorated, mostly with red pigments and many had pictoglyph. The period was then estimated to be ranging from Upper Palaeolithic to Mesolithic. Vineet Godhar et al [14] compared the rock art in surrounding region. A rock shelter, now known as *Mungsadev* (21.393N, 77.936E) is one of the most important rock shelters(Figure-4) having pictograph of many animals (animal zoo), birds, geometric figures in red colour, (Figure-4), pictoglyph of vulva. In the same cave shelter author and his team discovered a pictograph of ostrich like bird (Figure-6). Many animal pictographs such as spotted deer (Figure-7), wild dog (Figure-8) are identifiable. A pictograph of single horn Rhino (Figure-8) is depicted which is now extinct from Central India. Many animal figures could not be identified (Figure- 9. Figure-10, Figure-11), many closely resemble their African counterparts. Interestingly in Baradnala Cave Shelter (21.3944N, 77.9162E), many charcoal remnants were found

at the bottom of the thick sand layer, perhaps from the fire place of the early settlers but contemporary tools could not found.

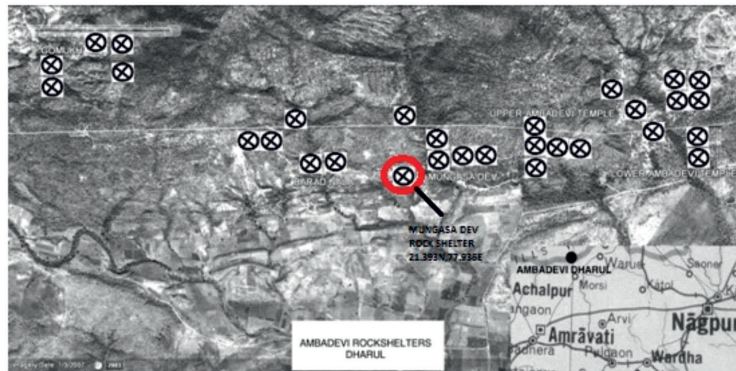


Figure 3



Figure 4

Figure-3 Ambadevi Rock Shelters: Few shelter locations.

Figure-4: Mungsadev rock shelter view



Figure-5



Figure-6

Figure-5: Animal zoo - Mungsadev rock shelter.

Figure-4: Ostrich pictograph - Mungsadev rock shelter



Figure-7

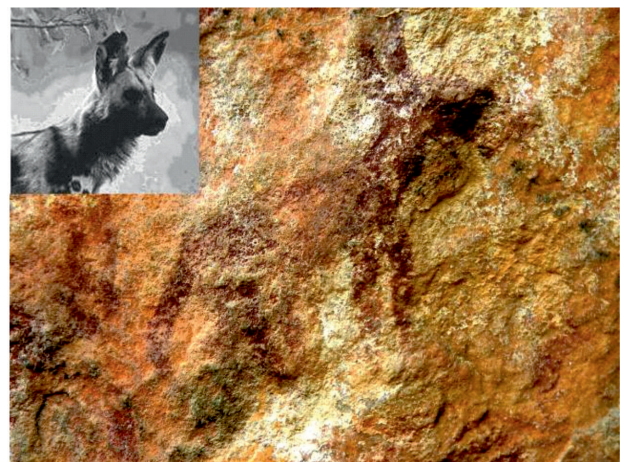


Figure-8

Figure-7: Spotted deer Mungsadev rock shelter.

Figure-8: Wild dog Mungsadev rock shelter

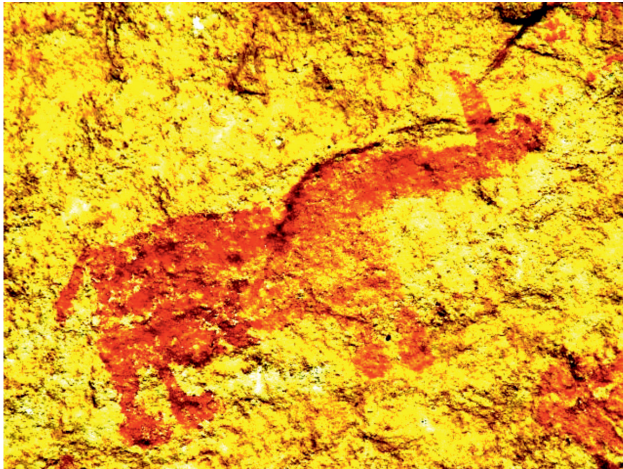


Figure-9

Figure-9: Single horned Rhino Mungsadev rock shelter.



Figure-10

Figure-10: Unidentified animal Mungsadev rock shelter

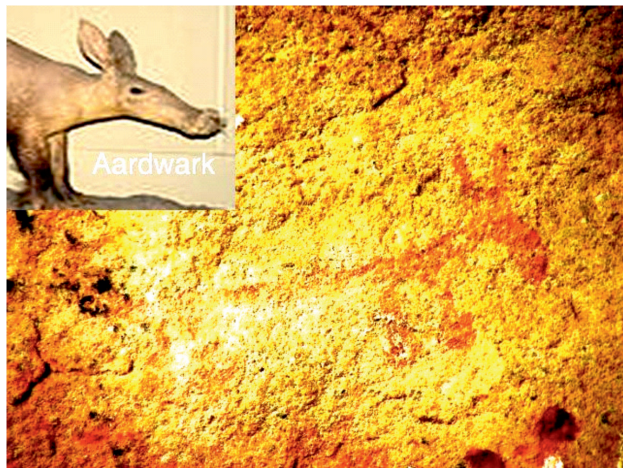


Figure-11

Figure-11: Unidentified animal Mungsadev rock shelter



Figure-12

Figure-12: Wild boar and tortoise Baradnala rock shelter



Figure-13

Figure-13: Flying vulture Kukudasa rock shelter

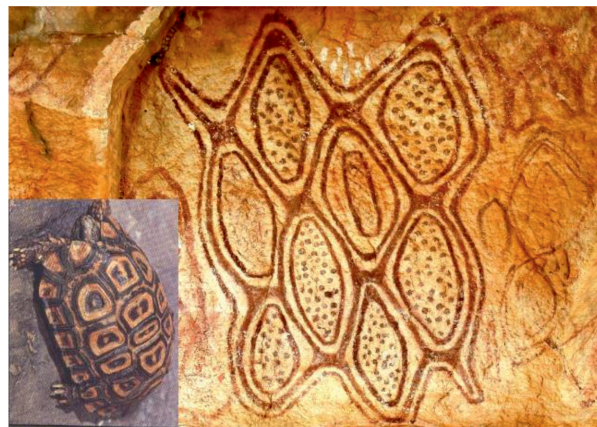


Figure-14

Figure-14: Geometric pattern Ambadevi rock shelter



Figure-15

Figure-15: Pictoglyph of bison Ambadevi rock shelter



Figure-16

Figure-16: War scene Gaimukh rock shelter

From other nearby rock shelters number of pictograph and pictoglyph were discovered such as a wild boar and tortoise (Figure- 12), a flying vulture (Figure-13), geometric pattern (Figure-14), a pictoglyph of bison (Figure-15), a war scene (Figure-16). The said site (Figure-3) was further investigated systematically and extensively since 2012 by ASI and several new sites, many stone implements were discovered and reported by Bhattacharya-Sahu et al [15,16].

Methods

During our first visit in early 2007, one of the pictographs (Figure-5) located in Mungsadev rock shelter, called for our special attention as it did not look like an animal but was reasonably tall (about 130 cm), slender with a long neck, long legs, separate wing plumes and tail feathers on hind side. On close scrutiny it resembled an ostrich like bird (*Mungsadev pictograph*). News to that effect was sent to Times of India (TOI) [9] and it was referred to a renowned scholar in the field who expressed some doubts about the claimed identity. It is well known that identification of the creatures from the pictograph and pictoglyph is a matter of uncertainties, objections, and doubts in the field of archeology therefore the comments were given due reverence and *Mungsadev pictograph* was thoroughly investigated further.



Figure-17

Figure-17: Pictograph of Ostrich pair from Africa Ennedi rock shelter



Figure-18

Figure-18: Pictograph from Hitsara rock shelter Odisha

Elephant Bird (now extinct), Emu, Cassowary, Ostrich, in the category of giant flightless birds (Figure-20), only African Ostrich has the longest neck in comparison with all. Many rock art shelters with pictographs of animals and birds have been discovered in Africa where in Ennedi rock shelter [17] an ostrich pictograph was discovered (Figure-17). In India a pictographs of ostrich like bird with eggs (Figure-18) from Hitsara rock shelter [4] was reported.

A pictograph depicting a pair of large bird was found in the rock painting of Ennedi Plateau of Chad in Africa and has been identified to be of African ostrich [17]. It is further observed that only African Ostrich (Figure-21) has distinguishable and noticeable drooping wing plumes and tail feather, on the hind side. Amongst all large birds only African ostrich has such a unique feature. Mungsadev pictograph (Figure-22) also found to have distinct long curved drooping wing plumes and tail feathers.



Figure-19



Figure-20

Figure-19: *Mungsadev pictograph from Mungsadev cave shelter*

Figure-20: Image of Elephant bird and Ostrich

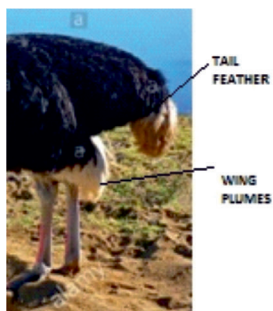


Figure-21

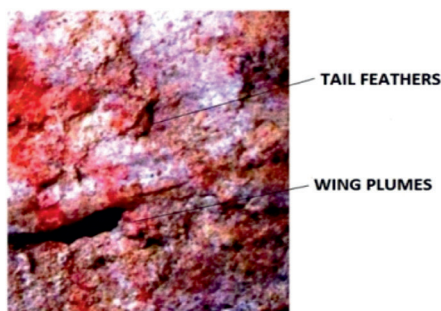


Figure-22



Figure-23

Figure-21: Distinct drooping wing plumes and tail feathers of African Ostrich.

Figure-22: Distinct drooping wing plumes and tail feathers of *Mungsadev pictograph*

Figure-23: Toes of *Mungsadev pictograph*

Ostrich has two toes, one being long and strong while the other is short. In the pictograph (figure-19) distinct toes could not be clearly seen perhaps (a) due to overlapping, (b) painted on rough

sand stone, and (c) erosion. The toe is the lowest part of the body and in the present position it is close to the base of the shelter which happens to be more vulnerable to erosion due to rains and wind hence it is more likely that the original paint with the sand stone base might have worn out in the course of time period. However a faint rectangular silhouette of toe is still observable as shown in Figure-23. As regards the style of painting similar variation was also observed in the pictographs of other animals belonging to the same cave shelter (Figure-5). The variation in the morphology of animal pictograph in rock art is expected as the artist paints them out of his memory after an encounter with particular specie. Other factors may also be attributing to such variation such as customary skills, contemporary style, available tools, and paint ingredients.



Figure-24



Figure-25



Figure-26

Figure-24: Mungsadev pictograph

Figure-25: Ennedi pictograph

Figure-26: African ostrich

It is observed that Mungsadev pictograph (Figure-24), Ennedi pictograph (Figure-25) and African ostrich (Figure-26) have long neck, stout body, wing plumes, tail feathers, long legs, and toes. With fair judgement all these figures they visually appear to have much in common. All the above three specimen are considered for morphological study. Printouts of all three figures are taken from head to toe. Height of each specimen is kept same for comparative studies. Measurements of various body parts, height-wise and width-wise, are taken and tabulated. **Standard Deviation (STDEV)** of corresponding main body parts are calculated and tabulated with remarks. Where Table-1, Table-2, and Table-3 show **STDEV** of height and Table-4, Table-5, and Table-6 show **STDEV** of width.

Legend

Mean Absolute Deviation (MAD) =(Difference/Mean),

For Analogous $MAD \leq 0.2$, Acceptable $MAD \leq 0.3$ else Diverge

Description	Figure No
Mungsadev pictograph	Figure-24
Ennedi pictograph	Figure-25
African ostrich	Figure-26

Table 1

SN	Height	Mungsadev Pictograph	African Ostrich	MAD	Remarks
1	Head	9.5	15.6	0.49	Diverge
2	Neck	112	104.2	0.07	Analogous
3	Body	40	88.5	0.76	Diverge
4	Legs	100	104.2	0.04	Analogous
5	Toe	5	15.6	1.03	Diverge

Height: Ennedi pictograph and African ostrich**Table 2**

SN	Height	Ennedi Pictograph	African Ostrich	MAD	Remarks
1	Head	11.1	15.6	0.34	Diverge
2	Neck	111.1	104.2	0.06	Analogous
3	Body	44.4	88.5	0.66	Diverge
4	Legs	100	104.2	0.04	Analogous
5	Toe	5.6	15.6	0.95	Diverge

Height : Mungsadev pictograph and Ennedi pictograph**Table 3**

SN	Height	Ennedi Pictograph	African Ostrich	MAD	Remarks
1	Head	9.0	11.1	0.16	Analogous
2	Neck	112.0	111.1	0.01	Analogous
3	Body	40.0	44.4	0.11	Analogous
4	Legs	100.0	100.0	0	Analogous
5	Toe	5.0	5.6	0.11	Analogous

Width : Mungsadev pictograph and African ostrich**Table 4**

SN	Width	Mungsadev Pictograph	African Ostrich	MAD	Remarks
1	Head	20.0	20.8	0.04	Analogous
2	Neck	10.0	8.3	0.18	Analogous
3	Body	90.0	138.5	0.42	Diverge
4	Legs	7.0	8.3	0.17	Analogous
5	Toe	5.0	28.1	1.40	Diverge

Width : Ennedi pictograph and African ostrich**Table 5**

Sn	Width	Ennedi Pictograph	African Ostrich	MAD	Remarks
1	Head	16.7	20.8	0.22	Acceptable
2	Neck	3.3	8.3	0.86	Diverge
3	Body	75.6	138.5	0.59	Diverge
4	Legs	6.5	8.3	0.25	Acceptable
5	Toe	16.7	28.1	0.51	Diverge

Width : Mungsadev pictograph and Ennedi pictograph**Table 6**

SN	Width	Mungsadev Pictograph	Ennedi Pictograph	MAD	Remarks
1	Head	20.0	16.7	0.18	Analogous
2	Neck	10.0	3.3	1.00	Diverge
3	Body	90.0	75.6	0.17	Analogous
4	Legs	7.0	6.5	0.07	Analogous
5	Toe	5.0	16.7	1.08	Diverge

Observations

1. It is observed from Table-1 that the height of neck and legs of Mungsadev pictograph and African ostrich are **analogous**.
2. It is observed from Table-2 that height of neck and leg of Ennedi pictograph and African ostrich are **analogous**.
3. Most importantly it is observed from Table-3 that height of all body parts in Mungsadev pictograph and Ennedi pictograph are **analogous**.
4. It is observed from Table-4 that the width of head, neck, and legs of Mungsadev pictograph and African ostrich are **analogous**.
5. It is observed from Table-5 that width of head of Ennedi pictograph and African ostrich is **analogous**.
6. It is observed from Table-6 that width of head, body and leg in Mungsadev pictograph and Ennedi pictograph are **analogous**.
7. In all images there appears to have more similarities in height than the width of corresponding body parts.
8. It is observed from Table-3 and Table-6 that there are striking similarities between Mungsadev pictograph and Ennedi pictograph.
9. Interestingly Ennedi pictograph has been identified to be of an ostrich.
10. Similar deviations are observed such as in heights of African ostrich compared with Mungsadev pictograph and Ennedi pictograph (Table-1 and Table-2) and respectively in width (Table-4 and Table-5).
11. Height of the Mungsadev pictograph is about 130 cm and painted in red colour on the rough wall of sandstone shelter. It consists of an elliptical body slightly drooping towards the hind side. It has a very long neck, slightly bulging at its centre. It has two long legs each with a toe. Due to weathering the lower part, near the toe, has weathered and became faint; however, the upper part is still in good condition. Interestingly it has a drooping wing plumes closer to legs and a drooping tail feather towards the hind side. Similar wing plumes and tail feathers are also observed in African ostrich as shown in figure-21, which is unique identity mark of African ostrich as it is not found in any other large birds. There appears to be a striking resemblance between the two.
12. It has been drawn in contemporary style similar to other pictographs where each pictograph is filled by colour.

13. From the above observations, with fair judgment, it may be concluded that Mungsadev pictograph is of an ostrich from Pleistocene era.
14. It can further be concluded Mungsadev rock shelter belongs to Late Pleistocene era including pictographs therein.

Conclusion

It has been shown that Mungsadev pictograph is analogous to Ennedi pictograph many aspects and importantly Ennedi pictograph has been identified to be of an ostrich. Further Mungsadev pictograph has drooping wing plumes closer to the legs and a drooping tail feather towards the hind side. Analogous wing plumes and tail feathers are also observed in African ostrich. This is a unique identity mark of an African ostrich as it is not found in any other large birds. Few divergences in the pictographs may be attributed to human error as the painting depends on the customary skills, style, available tools, paint ingredients, information, and memory of the artist. The erosion of the pictograph in the course of time, is also to be considered. The painting style of pictographs of the animals in Mungsadev cave shelter is similar hence should be contemporary. The egg shell finds in the adjoining region has genetically been proved to be of ostrich (*Struthio Camelus*) from Pleistocene era. It may therefore be concluded with fair judgment that Mungsadev pictograph is of an ostrich belonging to Pleistocene era and so also the rest of the pictographs of Mungsadev cave shelter. Further investigation to determine the exact age of paint ingredients and coal remnants, by using modern techniques including carbon dating, should be undertaken. Such investigations shall throw new light on the age of Ambadevi cave shelters and ancient history of early human settlement in Central India and Indian peninsula by large.

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