Discovery of Late Pleistocene Ostrich Pictograph in India:

Dr. V. T. Ingle, Dr. G. K. Mane

Abstract:

The early evidence of flightless bird like ostrich was found in India after the discovery of broken egg shells. Further aDNA (ancient DNA technique) studies gave certain clues about its genetic similarity to the African Ostrich. However; to substantiate this claim more evidences were sought. The author had discovered Ambadevi cave shelter paintings in 2007 and found a pictograph of Ostrich dating prior to Late Pleistocene era. It would throw a new light on the period of rock art in India in general and Ambadevi Rock Shelters in particular.

Key words: Ostrich, Pleistocene, Paleolithic, pictograph, pictoglyph, Satpura-Tapti valley, ambadevi rock shelter, cave shelter

Introduction:

One hundred million years ago, there was a single landmass known as *Gondawana Land* comprising Antarctica, Australia, New Zealand, Indian subcontinent, Madagascar, Africa, and South America. During the tectonic shift their separation started in different directions leading to many living species scattering over different continents. It has been further substantiated by the existence of living species, fossils, bones, egg shells and pictographs. Such common species are Elephant, Panthera (Leopard), Marsupialia (Kangaroo), Giraffidae (Girrafe, Shivatherium), Vermiligua (anteater), Orycteropodidae (Aardwark), Suidae (Boar), Hystricidae (Porcupine), and Ostrich. Ostrich, the largest flightless bird, existing in Africa and Arabia. It is reported to have existed in China and Mongolia during upper Paleolithic. However; quite surprisingly authentic evidences of its existence in India are missing. Existence of Ostrich is recorded in many continents with similar morphology, though in different appearances do appear elsewhere, such as *Rheas* in South America, *Emus* & *Cassowary* in Australia, and *Elephant Birds* (recently extinct) in Madagascar. However, in Indian subcontinent few supporting evidences other than pieces of eggshells, probably of ostrich, were discovered from 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. 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 (Plate-4) [1,2].

For dating the upper Paleolithic culture in India we have the following three kinds of evidences:

1) Stratigraphical, 2) Faunal, and 3) C^{14} 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 Advance Middle Paleolithic period and others were found in the period of I & II however; none was found from Mesolithic levels. They have been found in the layers of middle Paleolithic and upper Paleolithic period. Interestingly three eggshell pieces (two from phase II D and one from phase II E) are engraved with simple criss-cross designs between two horizontal lines. Though these designs, although simple but represent a direct evidence of the presence of Paleolithic industry. In India though the upper Paleolithic industry lies between 26000 to 12000 BP, there are also earlier phases of the upper Paleolithic which

may place the upper Paleolithic 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 Paleolithic and Mesolithic. In India, on the basis of paleontological, the Upper Paleolithic stone tool culture associated with eggshell find and can be ascribed to the later part of the late Pleistocene period.

The C^{14} date at this site is ascribed to upper and middle Paleolithic:

Grnn 7200 level 25000±200 BP.

A comprehensive aDNA study of partly fossilized eggshells from Chandresal, District Kota, Rajasthan, was carried out. The eggshells have been given two C^{14} dates. Tests were carried out by Laboratorium voor Algemene Natuurkunde Rijksuniversiteit, Groningen, Netherland 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 [4]. 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 Paleolithic times. Eggshells from Ellora have been associated with upper Paleolithic tools. 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*.

Many rock art shelters with pictographs of animals and birds have been discovered in Africa and India having many common creatures. A pictoglyph of a large bird resembling ostrich with eggs has been reported from cave shelters in Hitasara [4]. The author and associated research colleagues discovered, in early 2007, more than 300 rock shelters having, numerous Palaeolithic to Mesolithic rock paintings. It is situated in Gavilgarh range of Satpura-Tapti valley, on the border of Maharashtra (Vidarbha) and Madhya Pradesh. It is now known as Ambadevi Rock-Shelters [6, 7, 8, 9, 10, 11 and 13]. Most of the creatures in pictographs are identifiable except a few. In one of the rock shelters, known as Mungasadev (21.393N, 77.936E), a pictograph (about 125 to 130 cm tall) of a strange two long legged creature with two hind feathers (Plate-1) painted in red colour was discovered in 2007 by the first author. It could not be identifies or correlated with any living creature in India and was left for speculation. On the strength of research article [2.3] the said pictograph was investigated for present studies. A morphological comparative study of the said pictograph with African rock painting pictograph [11] (Plate-2) and African common ostrich image (Plate-3) was carried out. [Table-1].

Description:

Height of the said pictograph (Plate-1) is about 125 to 130 cm and painted in red colour on the rough wall of sandstone shelter. It has been drawn in primitive style with solid lines and shapes however; with good sense of proportion. It consists of an elliptical body slightly drooping downward toward the hind side. The hind side has two longish curved branches of tail feathers pointing downwards. The head is facing left. It

has a very long, centrally slightly bulging, neck. It has two long legs with toe. Due to weathering the lower part, near the toe, has weathered and become faint, however, the upper part is still in good condition. Apparent difference between an ostrich and common bird is mainly due to former's very long neck and legs, fluffy tail, and toe. Visual comparison of Plate-1 and Plate-2 show them to have long neck, long legs, tail and toe. Further both look similar to Plate-3.

Indian Ostrich Pictograph

PLATE-1

African Ostrich Pictograph

PLATE-2

African common ostrich

PLATE-3

Locations of Egg shell finds

PLATE-4

Methods:

The printout of images Plate-1, Plate-2 and Plate-3, hereinafter denoted by A, B, and C respectively, are taken on paper. The outline of each image is inked and various body parts are measured with scale. The measurements are normalised with respect to a height of 28 cm. Ratio of body parts are calculated between A & C and between B & C respectively and tabulated in Table-1.

Measurement of body parts for comparative study after image normalization:

	MEASUREMENTS (cm)				**COMPARISON**	
HEIGHT	A	B	C		**A/C %**	**B/C %**
HEAD	0.80	0.85	0.80		**100.00**	**106.58**
NECK	11.00	12.79	11.50		**95.65**	**111.21**
BODY	6.00	5.68	7.00		**85.71**	**81.20**
LEGS	9.50	8.00	10.00		**95.00**	**80.00**
TOE	0.60	0.43	1.00		**60.00**	**42.63**

LENGTH/WIDTH	A	B	C		**A/C %**	**B/C %**
HEAD	2.60	1.42	2.50		**104.00**	**56.84**
NECK	0.85	0.57	1.00		**85.00**	**56.84**
BODY	16.00	9.95	15.50		**103.23**	**64.18**
LEG	0.60	0.57	0.60		**100.00**	**94.74**
TOE	1.50	1.14	3.50		**42.86**	**32.48**

Observations:

On visual inspection all the plates show a striking resemblance in appearance and shape. The comparison between A (Plate-1) and C (Plate-3) shows that the ratio A/C lies between 100% to 85% except for the toe which is much less. So it can be concluded that the Indian ostrich pictograph is very close to common African ostrich. The comparison between B (Plate-2) and C (Plate-3) shows that the ratio B/C lies between 105 % to 56%, except for the toe which is much less. The variation could be attributed to painting style.

Conclusion:

The appearance and morphological comparison show that the said Indian pictograph is of an ostrich being similar to common African ostrich and perhaps had same ancestor. As per the aDNA findings the Indian ostrich eggshell fossils belonged to late Pleistocene era (27000-42000 BP) and had 92% aDNA matching. The said painting location lies within the area where numbers of ostrich eggshell have been discovered hence Ostrich certainly roamed in India during that period and got extinct perhaps due to climatic changes or overhunting and eggs poaching and further the pictograph must have been painted prior to its extinction. The Indian Ostrich rock pictograph is the first and only one so far reported and is located at ***Mungasadev cave shelter*** (21.397N, 77.936E), Madhya Pradesh, India. At the same cave shelter there are pictographs of animals similar to Greater *one-horned Indian rhinoceros* (extinct in Central India), *Giraffe (*Shivatherium now Extinct), *Aardwark (No record), African Wild Dog (No record)* and many others. From the proximity, colour and style of paintings they appeared to have been painted simultaneously. This puts the date of all these painting to Pleistocene era (27000-42000 BP) and thus the oldest rock paintings in India so far

reported. Further there is a need to scientifically investigate the past existence and further extinction of these animals in central India.

Acknowledgement:

The first author wishes to thank the members of research team Mr. Padmakar Lad, Mr. Pradip Hirurkar, Dr. Manokar Khode, Mr. Shirishkumar Patil, Mr. Dnyaneshwar Damahe for their active support.

Ref:

1. Sali, S. A., Stone Age India, Shankar Publication, Aurangabad (1990)
2. Giriraj Kumar et al. Archaeological discoveries and a study of Late Pleistocene ostrich eggshells and eggshell objects in India https://www.researchgate.net/publication/285190801_Archaeological_discoveries_and_a_study_of_Late_Pleistocene_ostrich_eggshells_and_eggshell_objects_in_India
3. Sonal Jain et al. "Ancient DNA Reveals Late Pleistocene Existence of Ostriches in Indian Sub-Continent", PLoS ONE, March 2017
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0164823
https://www.researchgate.net/publication/314386170
4. Ranjini Raghunath, "When ostriches called India their home", Evolutionary Biology, Molecular Biology and research, 2017
https://indiabioscience.org/news/2017/when-ostriches-called-india-their-home
5. Pradeep K. Behera et al." Further Light on the Ostrich in Indian Rock Art: Evidence from Hitasara, Odisha" Heritage: Journal of Multidisciplinary Studies in Archaeology 7: 2019, pp 278-288
6. V. T. Ingole et al, " Discovery of Painted Rockshelters from Satpura-Tapti Valley", Purakala (17), RASI Congress, PP 153-158, 2007
https://www.researchgate.net/publication/296832717_Discovery_of_Painted_Rockshelters_from_Satpura-Tapti_Valley
7. V. T. Ingole: "Distinctive Features of the Art of Ambadevi Rock Shelters in Satpura-Tapti Valley", RASI Conference. Badami (Karnataka),2012
8. https://www.researchgate.net/publication/296835115_Distinctive_Features_of_the_Art_of_Ambadevi_Rock_Shelters_in_Satpura-Tapti_Valley

9. Vineet Godhar, Ashish Shende: “Reflections on the Ecological Aspect of Animals Depicted in Rock Art of Satpura-Tapti Valley and Nearby Region” Puratattva, 41, pp 216-223, 2011
10. Prabhash Sahu, “Petroglyphs in Recently discovered Rock Shelters of Gavilgarh Hills”, Heritage and Us, issue-4, pp 6-16, Dec-2013-Jan. 2014,
11. https://en.wikipedia.org/wiki/Ambadevi_rock_shelters
12. https://africageographic.com/blog/rock-art-a-cultural-treasure-of-ennedi/
13. www.vtingole.com ©