The Bioscan AN INTERNATIONAL QUARTERLY JOURNAL OF LIFE SCIENCES
21(1) 1274-1288, 2026 www.thebioscan.com

Birds in the Rock Art of Gawilgarh Hill

Himanshu M. Mahajan[1], Ashikkumar Nagwanshi[2], Prabash Sahu[1]

1. Post Graduate (Autonomous) Teaching Department of Ancient Indian History, Culture and Archaeology, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, Maharashtra-440033.
2. Post Graduate (Autonomous) Teaching Department of Zoology, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, Maharashtra-440033.
Corresponding Author: himanshumahajan201@gmail.com
Email: aashikkumarnagwanshi@gmail.com, prabashsahu@gmail.com

Orchid ID:
Himanshu Mahajan: http://orcid.org/0009-0001-4793-6880
Ashikkumar Nagwanshi: https://orcid.org/0000-0002-0214-330X

Prabash Sahu: http://orcid.org/0000-0003-0691-0403

https://doi.org/10.63001/tbs.2026.v21.i01.pp1274-1288

KEYWORDS

Birds,
Environment,
Gawilgarh Hills,
Rock Art,
Prehistory

Received on: 18-12-2025

Acceptedon: 08-02-2026

Published on:

16-02-2026

ABSTRACT

The rock art of Gawilgarh Hill, situated in the Satpura ranges of central India, constitutes a significant assemblage of prehistoric imagery that highlights the ecological presence and cultural significance of fauna in early human societies. Among the various animal depictions, avian figures are prominently featured in frequency and symbolic expression. This study explores representations of avian species such as the peacock, crane, heron, vulture, and duck, illustrated in diverse styles and pigments across several rock shelters. These depictions not only reflect the birds' prevalence in the surrounding environment but also suggest their potential roles in daily ritual practices. The artistic variation and strategic placement of these images imply a deliberate selection process, revealing complex interactions between humans and birds. By analyzing pictographs, spatial arrangements, and associated motifs, this paper investigates the symbolic and cultural significance of avifauna within the broader visual tradition of Gawilgarh Hill's rock art.

Introduction

Human-avian interactions have significantly influenced various prehistoric societies. Various archaeological evidence enhances our understanding of these relationships within their socio-cultural and environmental contexts. Among this evidence, the depiction of birds in rock art forms a crucial category of visual data. India is home to a remarkable diversity of avian species, attributable to its vast range of ecosystems, including the Himalayas, coastal regions, deserts, wetlands, and dense forests. As of the most recent data, India hosts approximately 1,350 species of birds, representing about 13% of the world's bird species, which are estimated at around 10,906 species globally, according to the International Ornithologists' Union's World Bird List 2024 (https://www.worldbirdnames.org/). The study of Indian birds has a long and

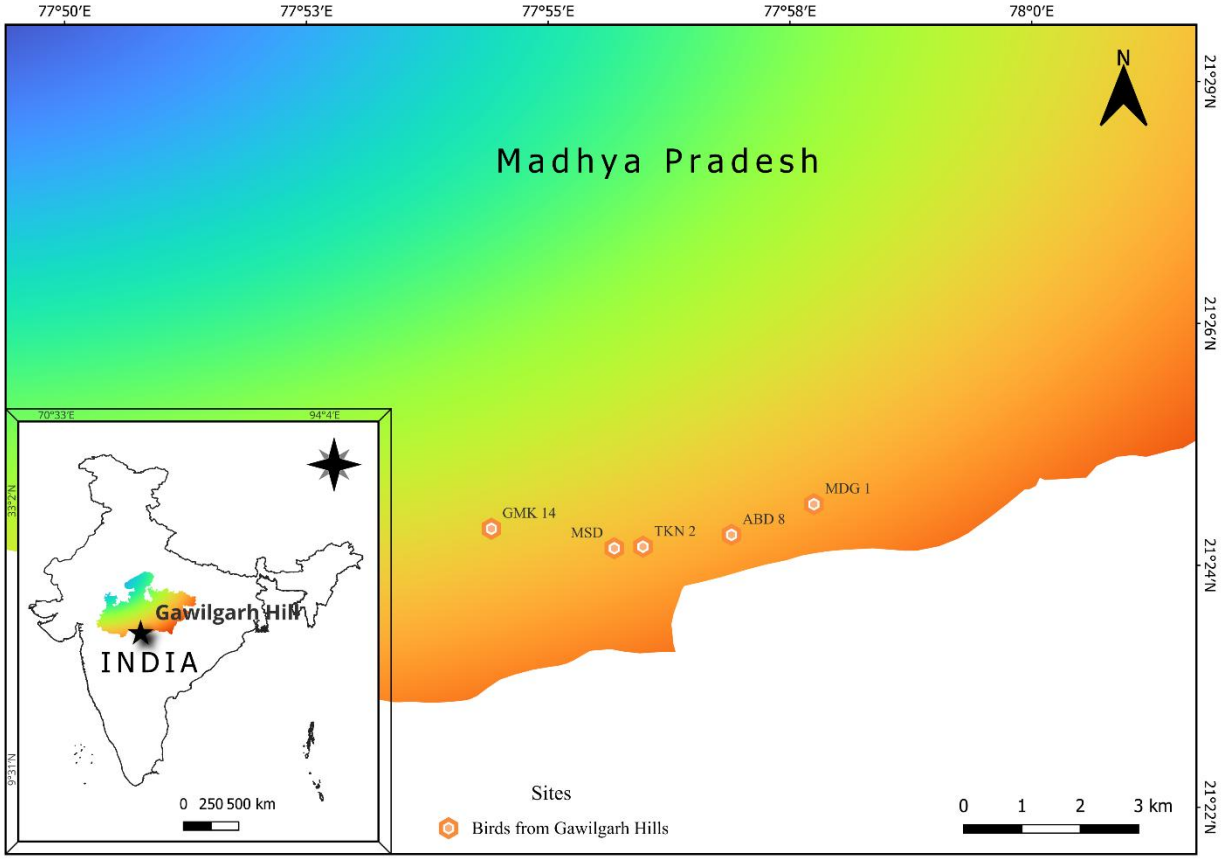
distinguished history. One of the most prominent figures in Indian ornithology a Salim Ali (1896–1987), often referred to as the "Birdman of India." He was instrumental in laying the foundation for systematic ornithological studies in the Indian subcontinent. His landmark works include "The Book of Indian Birds" (1941) and the "Handbook of the Birds of India and Pakistan" volume ten (co-authored with S. Dillon Ripley between 1968 and 1974), which remain standard references in the field.

In the region of Southern Iberia, the Tajo de las Figuras rock shelter is notable for its dense collection of avian imagery, which is a significant component of the broader schematic art tradition. These depictions, characterised by their naturalistic style, include species such as ducks, flamingos, and herons. This suggests a high level of observational expertise, likely influenced by the site's proximity to the migratory bird route near the historical Laguna de la Janda (Lazarich et al. 2019). Throughout the Iberian Peninsula, birds are depicted in both hunting and symbolic contexts, ranging from solitary figures to dynamic scenes of hunting. This evolution reflects a shift from subsistence-focused to symbolic representation as societies transitioned from hunter-gatherer lifestyles to agro-pastoralist practices (Lazarich & Ramos-Gil, 2020). Conversely, in the Kimberley region of Australia, bird imagery is less common but holds profound cultural significance, particularly for raptors like eagles and owls. These birds are integral to Indigenous cosmologies and Dreamtime narratives, serving as spiritual messengers and ancestral figures rather than mere representations of fauna (Motta & Porr 2023).

Birds occupy a prominent place in Indian rock paintings, revealing a deep aesthetic and possibly symbolic engagement by prehistoric artists. Yashodhar Mathpal's ornithographical study categorises these birds into four primary groups: perching birds, birds of prey, water birds, and non-flying or occasionally flying birds. Among these, with short flights, especially the peafowl (*Pavo cristatus*), are the most frequently depicted, accounting for approximately 67.5% of bird imagery, followed by water birds (27%), birds of prey (3.8%), and perching birds (1.7%). While early paintings emphasise naturalistic renderings, such as peafowls in Bhimbetka and Mirzapur or water birds like spoonbills and cormorants, later compositions show a shift to stylised and decorative forms. Interestingly, the scarcity of grain-dependent perching birds may suggest the pre-agricultural context of many paintings. These depictions are more than decorative; they reflect the cultural, symbolic, and possibly spiritual dimensions of early Indian societies (Mathpal, 1976: 84–93). In Indian rock art, engravings of large, flightless birds possibly ostriches have been documented at sites like Marichatila in Odisha (Pradahan, S. 2001). These depictions, alongside archaeological findings of ostrich eggshells from over sixty sites, suggest the significance of the ostrich in late Palaeolithic and Mesolithic contexts in the Indian subcontinent (Behera & Badam 2019). Birds are a recurring yet understudied motif in global rock art, reflecting diverse ecological, symbolic, and cultural interactions. The present study focuses on a particular rock shelter within the Gawilgarh Hills, distinguished by its assemblage of six avian depictions. Such concentrated bird imagery is uncommon in the prehistoric rock art of central India, suggesting a unique symbolic or ecological emphasis on avifauna by the rock artists.

About the site

The Gawilgarh Hills in the Satpuras, composed of Deccan Traps, have orthoquartzitic (metamorphosed sandstone) escarpments spreading to nearly forty square kilometres from Bairam Thana to Ramgarh (both sleepy villages on the foothill) (Randive, et.al. 2021). In these outcrops, many natural shelters have been formed due to various forces of Nature acting for centuries together. Many of these natural shelters were occupied by prehistoric men as shelter right from the Upper Palaeolithic period, if not earlier, as evident from the paintings, engravings and lithic tools found within and in the vicinity of the shelters. These shelters divided into twenty- groups and named after different localities and nearby places of importance and abbreviated into three letters in that name like ABD for Ambadevi group, Gaimukh (GMK), Ugum (UGM) etc. Bear paintings displaying varied elements of nature and the environment of the bygone era, painted in green, black, white and different shades of red and petroglyphs in various forms like engraving, bruising, pecking, deep and shallow cupules are tentatively assigned to the Upper Palaeolithic, Mesolithic, Chalcolithic and Historical periods. The design elements in petroglyphs included various forms of flora, fauna, abstract and geometric designs, human figurines and vulva (Sahu.P.2014, 2017, Bhattacharya-Sahu. N. et.al, 2014, 2017).



Map 1: Map showing Birds depicted in the rock shelter from Gawilgarh hills

Table 1: Birds depicted in the Rock Shelter of Gawilgarh Hills

Sr. No	Shelter Name	Geo-coordinates		Facing	Petroglyphs/Pictographs
		Latitude	Longitude		
1	ABD 8	21° 24′ 18.18″ N	77° 57′ 01.2″ E	Southwest	Pictographs
2	GMK 14	21° 24′ 21.8″ N	77° 54′ 38.2″ E	Southeast	Pictographs
3	MSD	21° 24′ 10.2″ N	77° 55′ 51.4″ E	East	Pictographs
4	MDG 1	21° 24′ 36.4″ N	77° 57′ 50.3″ E	West	Pictographs
5	TKN 2	21° 24′ 11.1″ N	77° 56′ 08.5″ E	Southwest	Pictographs

Ambadevi-8 (ABD) rock shelter

Rock Shelter ABD 8, positioned at 21°24’18’’N and 77°57’01’’E, faces southwest and measures 15.40 meters along the north–south axis, with a 4-meter western projection and a ceiling height of 2.98 meters. The shelter hosts a diverse array of rock art elements, including pictographs, petroglyphs, and a cupule, reflecting a complex tradition of symbolic expression. The pictographs are distributed obliquely along the sloping ceiling surface, beginning from the northwestern end and extending down to the plinth. A superimposed panel features two animal forms: an indistinct figure in burnt sienna overlaying a donkey painted in dark red, with subsequent abstract engravings etched over the pictorial layer. Below this composition, two birds are depicted facing each other—the bird in left painted in blackish pigment stands upright with elongated legs, while bird in the right painted in light red, appears to hold a branch in its leg(fig.1).

The petroglyphs, located on the ceiling and walls, include an engraved elephant with a rectangular torso and elongated trunk oriented to the right, juxtaposed with a horned animal facing left. A figure is superimposed by an engraved vulva motif. A human figure is placed between these animals, possibly suggesting a scene of early domestication (Sahu. P. 2017). Below the right, a series of vulva engravings oval in shape with vertical central lines further suggests themes of fertility and symbolic continuity.

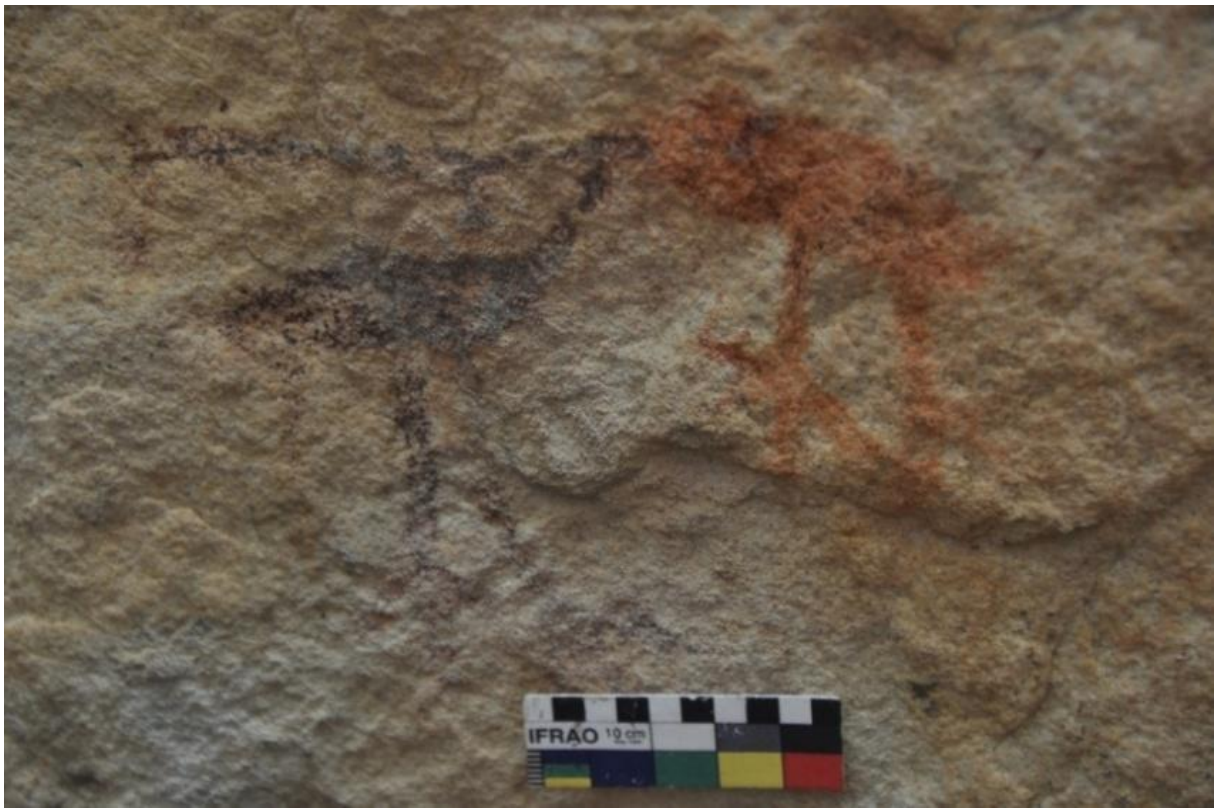


Fig 1: Original image of Birds from the ABD-8 rock shelter (Courtsy: Nandini Sahu-Bhattacharya)

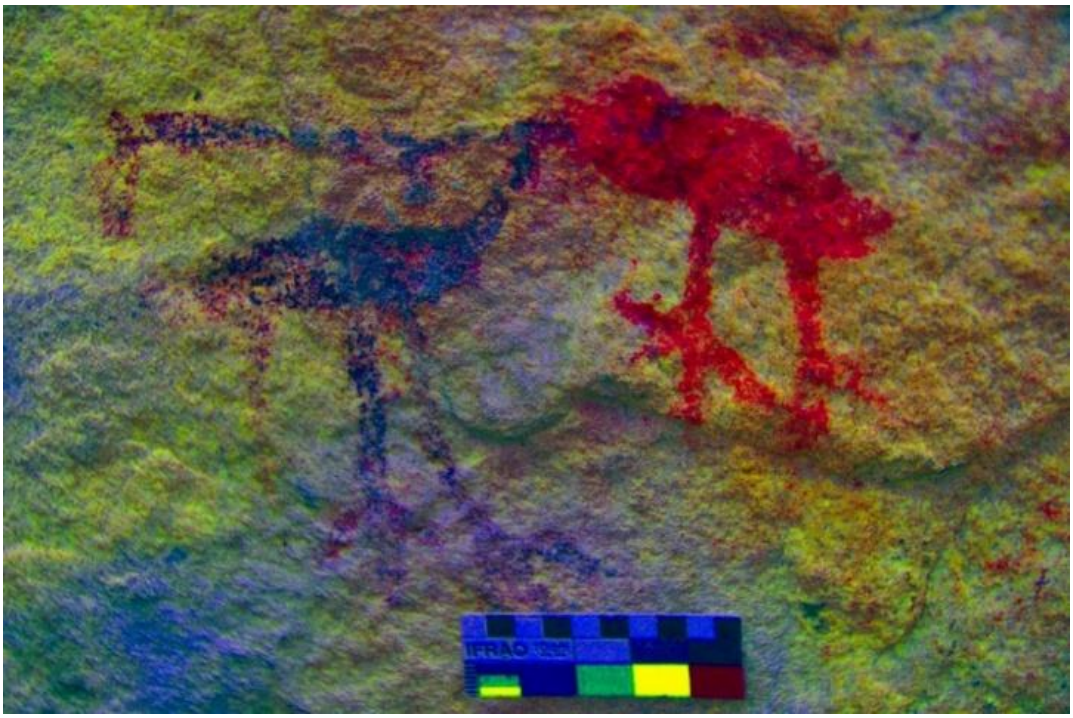


Fig 2: Image enhanced by D-stretch software ABD-8 rock shelter (Courtsy: Nandini Sahu-Bhattacharya)

Gaimukh-1 rock shelter

Shelter GMK 1 is a rock shelter located at latitude 21°24′11.6″N and longitude 77°54′28.4″E, with an elevation of 526 meters above mean sea level. The shelter is oriented toward the north-northwest and has a maximum east–west length of 15.80 meters. A notable projection extends 2.25 meters toward the north, and the maximum height of the ceiling reaches 3.38 meters. The shelter contains several pictographic elements, predominantly executed in red and dark red pigment. Among the most prominent figures is a depiction of an animal rendered in dark red, characterised by a long body, prominent hind limbs, and a delineated tail. The stylistic features and superimposition suggest a deliberate composition, possibly indicative of narrative or symbolic content. The representation of the duck in the form of a pictograph indicates the familiarity of prehistoric communities with this avian species. The duck painted in ochre is characterised by a simple yet deliberate outline (Fig.3) that captures the anatomical features of the bird. Notable elements include a clearly defined neck, a prominently rendered beak, and distinctly marked legs, suggesting an observational accuracy and symbolic intent in its portrayal.

Fig.3: Painted Duck from Gaimukh-1 rock shelter

Mendhagarh-4 (MDG) rock shelter

Fig. 4: Original image of peahen at Mendhagarh-4 rock shelter (Courtsy: Nandini Sahu-Bhattacharya)

The Mendhagarh group, comprising seventeen decorated rock shelters, is situated on the left bank of the Pat Nullah, a natural spring that originates at a site known as Ugum. This group is characterised by a combination of petroglyphs and pictographs, reflecting both symbolic and representational artistic traditions. Shelter MDG 4 (Lat. 21°24'57.3"N; Long. 77°57'36.4"E), oriented towards the south-southeast, contains two notable pictographs. The first depicts an antelope in a standing posture as s human figure. A peacock is painted in outline. The portrayal distinctly emphasises anatomical features such as an elongated body, a prominently extended neck adorned with visible feather-like detailing, and well-defined legs. The representation, though stylistically minimal, conveys a clear recognition of the bird's characteristic morphology, particularly through the depiction of plumage on the neck, suggesting a deliberate attempt by the artist to capture the identity and symbolic presence of the species(fig. 4 & 5).

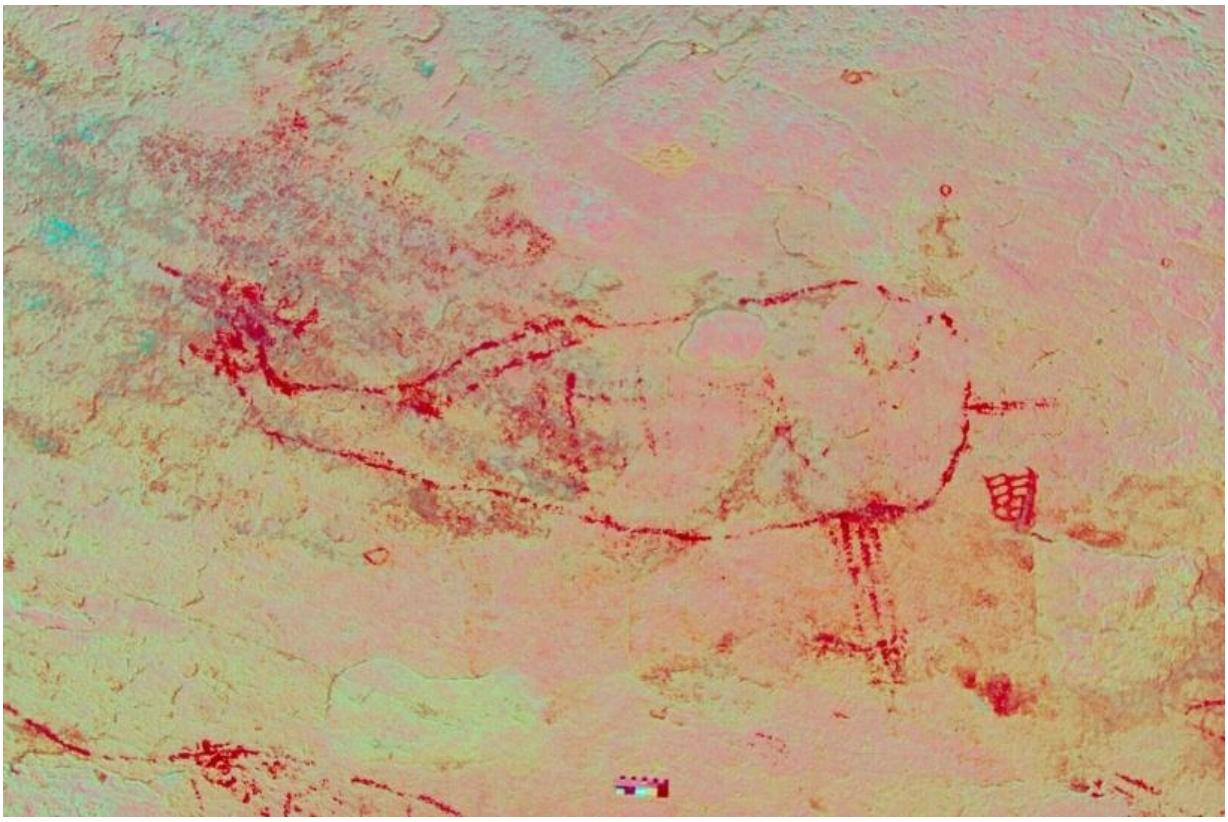


Fig 5: Image enhanced by D-Stretch Software

Mungsadev (MSD) rock shelter

The Mungsadev rock shelter (Lat. 21°24'10.2" N; Long. 77°55'51.4" E), named after the local tribal deity venerated at the site, is a prominent prehistoric rock art location within the Gawilgarh Hills of central India. This east-facing shelter, comparable to the Zoo Rock shelter at Bhimbetka, extends approximately 48 meters along a south-north axis, with a 5.90-meter projection eastward and a maximum ceiling height of 5.60 meters, making it one of the largest rock shelters in the region. The site is richly decorated with both pictographs and petroglyphs and exhibits the highest concentration of animal representations within the Gawilgarh group. Executed primarily in varying shades of red pigment, the pictographs depict a diverse range of fauna, including rhinoceros, various deer species (such as spotted deer, sambar, and barasingha), wild boar, nilgai, donkey, elephant, tortoise, wild dog, a bull with a rider, and a heron. In addition to these animal motifs, the shelter also features symbolic and anthropomorphic imagery, including honeycomb patterns and human figures. Petroglyphs are represented by oval-shaped carvings with central depressions interpreted as vulva symbols and rectangular depressions incised into the bedrock, potentially indicating ritualistic or fertility-related practices. This combination of monumental scale, artistic complexity, and symbolic richness underscores the cultural and archaeological significance of the Mungasadev rock shelter within the broader context of South Asian prehistoric rock art traditions.

The depiction represents a flamingo, characterised by its distinctly large, curved

beak, elongated neck, and slender legs morphological features typical of the species. The figure is rendered in a light red pigment, suggestive of the bird's natural coloration, and stands out prominently against the rock surface. The depiction measures approximately 75 cm in height and 19 cm in width, indicating a deliberate emphasis on vertical proportion to capture the bird's elegant stance (fig 6). The stylistic treatment and proportional dimensions imply a degree of anatomical observation, reflecting the artist's familiarity with the species, which may have held ecological or symbolic significance within the context of the rock art tradition.

Fig 6: Original image and D-Stretch image Mungasadev

Telkan-2 (TKN) rock shelter

The rock shelter TKN 2 (Lat. 21°24'11''N; Long. 77°56'8''E), oriented southwest, extends 15.15 m along the NW-SE axis, with a 7.24 m projection southwest and a ceiling height of 5.62 m. The shelter features a diverse array of pictographs and petroglyphs, predominantly painted in red and executed on the walls. Among the numerous animal depictions, a prominently detailed vulture stands out, depicted with wings fully spread, its head turned left, and its tail visible between its two legs. This representation demonstrates careful attention to anatomical detail and posture, indicative of the artist's observational skill. Surrounding motifs include a small dog with straight ears, a possible donkey with a checkered body pattern, a walking monkey, and various faded animals such as deer and squirrels. Geometric designs, including concentric circles forming floral patterns and honeycomb motifs, complement the naturalistic imagery. The vulture motif, with its vivid and precise portrayal, is a key feature illustrating the shelter's artistic complexity and symbolic significance. One of the most striking depictions is that of a vulture rendered with remarkable artistic precision. The bird is portrayed with its wings fully outstretched, suggesting a moment of either flight or display. Its head is turned distinctly to the left, indicating intentional orientation by the artist, while the tail feathers are prominently visible between its two legs demonstrating careful attention to anatomical detail and posture (Fig 7). This representation not only reflects a high level of observational skill but also underscores the cultural or symbolic significance attributed to the vulture within the context of the rock art tradition.

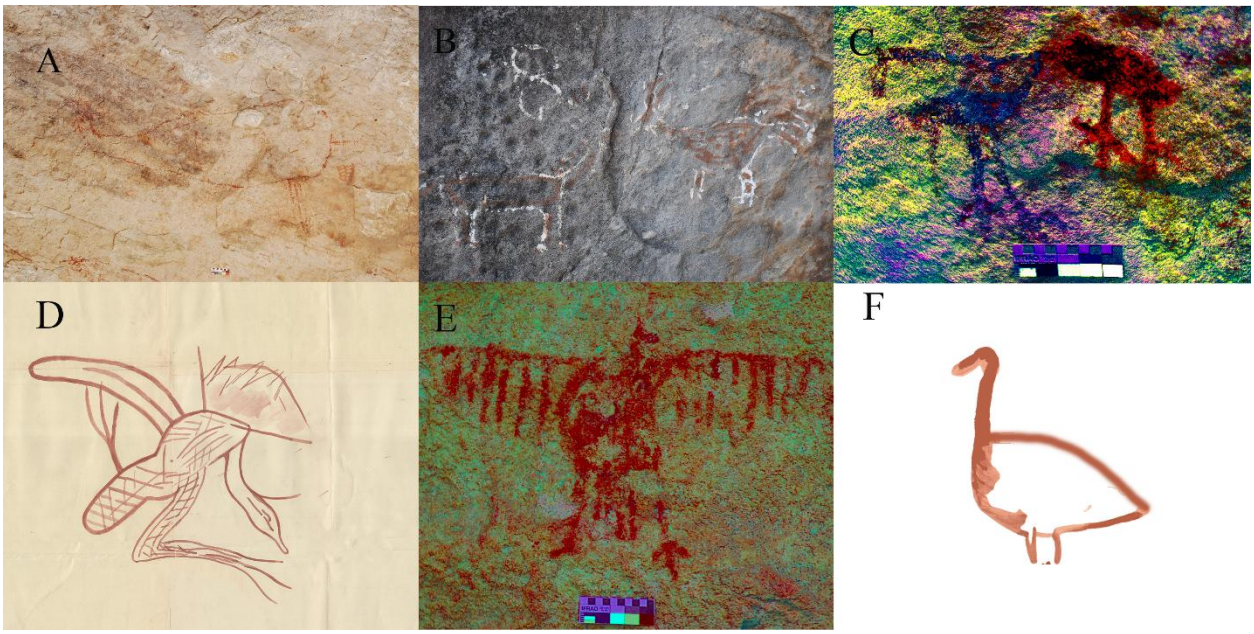
Fig 7: Vulture from the Telkhan-2 rock shelter (Courtsy: Nandini Sahu-Bhattacharya)

Table 2: Classification of Birds

Sr. No	Animals	Order	Family	Style	Colour	Ecological Information
A	Peacock	Galliformes	Phasianidae	Outline	Red	Forest and open area near the water source
B	Peacock	Phasianidae	Phasianidae	Outline	Red	Forest and open area near the water source
C1	Crane	Gruiformes	Gruidae	Outline with fill colour	Blue/ Black	Wetlands and Grasslands
C2	Heron	Pelecaniformes	Ardeidae	Outline with geometric design	Red	Lakes, Ponds and Wetlands
D	Crane	Gruiformes	Gruidae	Outline with fill colour	Red	Lakes, Ponds and Wetlands
E	Vulture	Cathartiformes	Accipitridae	Outline with fill colour	Red	Cliffs and Grasslands

F	Duck	Anseriformes	Anatidae	Outline	Red	Lakes, Ponds and Freshwater Wetlands

Birds



The Role of Birds in Ecosystem Services

Birds play a crucial role in maintaining environmental balance and contribute significantly to all four categories of ecosystem services: provisioning, regulating, cultural, and supporting (Whelan et al., 2008). These services offer both direct and indirect advantages to humans by providing essential resources and supporting ecological functions. As vital components of food webs and nutrient cycles, birds are intricately interwoven into the natural world and human societies (Mariyappan et al., 2023). Their presence spans diverse habitats, and they occupy important ecological niches in global food chains. Birds function as pollinators, seed dispersers, predators, scavengers, ecosystem engineers, and particularly as bio-indicators. These roles enable them to provide a wide array of ecosystem benefits through their natural behaviours and interactions (Sekercioglu, 2006; Wenny et al., 2011). Ecosystem services, which include the benefits people obtain from ecosystems, are enhanced by birds due to their ecological versatility and the positive impact of their activities (Deng & Yimam, 2022).

Birds as Bio-Indicators

Birds are commonly regarded as effective indicators of the health and stability of ecosystems (Balasubramanyan & Imran Khan, 2016). Their population trends offer valuable insights into environmental changes, enabling researchers to monitor the condition of both natural and human-modified habitats. Long-term bird monitoring is essential for detecting environmental shifts, guiding conservation initiatives, and recognising even minor ecological disturbances (Jhenkhar et al., 2016). Because birds are highly sensitive to changes in their surroundings, they often serve as early indicators of environmental stress. A rich diversity of bird species

generally signifies a well-functioning and healthy ecosystem (Dendup et al., 2021). Scientists frequently examine bird communities, especially in areas influenced by human activity, to assess habitat quality and environmental integrity (Canterbury et al., 2000). In forest ecosystems, birds are particularly valuable for assessing habitat structure and condition (Moning & Müller, 2008). Their quick reactions to environmental alterations make them essential for informing conservation strategies and ecological management at both local and broader scales (Canterbury et al., 2000).

Birds as Pollinators

Interactions between birds and plants, particularly in the processes of pollination and seed dispersal, are essential for maintaining ecological balance (Lundberg & Moberg, 2003). Certain bird families, such as Nectariniidae, which include nectar-feeding species, play a critical role in pollinating specific trees. These birds depend heavily on floral nectar for sustenance. Studies have shown that the absence of pollinators like birds, bees, and bats can significantly hinder fruit production in both domesticated and wild plant species (Klein et al., 2007). Avian pollination is most commonly observed in tropical and subtropical zones, where the continuous availability of nectar throughout the year supports a range of nectarivorous birds (Merino & Nogueras, 2003). In India, numerous bird species such as mynas, crows, thrushes, black drongos, parakeets, bulbuls, titmice, woodpeckers, lorikeets, and flowerpeckers have been noted for their flower-visiting and pollinating behaviors (Solomon & Rao, 2006). In total, over 290 bird species have been recorded as contributors to pollination and seed dispersal across the country. Of these, sunbirds, starlings, mynas, and oriental white-eyes are among the most frequent and efficient avian pollinators (Balasubramanian, 2012).

Birds as Pests

In agricultural landscapes, birds serve both beneficial and detrimental roles. While they contribute positively to ecological balance, certain bird species are known to damage crops by feeding on fruits, grains, vegetables, and seedlings, thereby posing challenges to farmers (Suresh & Kambrekar, 2021). This damage can occur at various stages of crop development, often leading to reduced harvests. However, many birds, particularly insect-eating species, act as natural pest regulators by feeding on harmful insects. Their role extends beyond pest control; birds also support nutrient recycling, improve soil fertility, and reduce rodent populations. Although their feeding habits may sometimes conflict with agricultural goals, the overall contribution of birds to agroecosystems is largely beneficial (Mariyappan et al., 2023).

Birds as Scavengers and Sanitary Agents

Birds play an important role as scavengers in many ecosystems by removing the carcasses of dead animals. While many bird species feed on animal remains when available, vultures are specialised scavengers that rely entirely on carcasses for food. Vultures provide a critical, yet often overlooked and less studied, ecosystem service (Deng and Yimam, 2022). Their scavenging helps in effective waste removal and prevents the spread of diseases that can result from the accumulation of dead animals. In India, a decline in vulture populations due to poisoned carcasses led to an increase in feral dogs and rats, as there was less competition for carrion as a food source (Markandya et al., 2008).

Conclusion

The representations of birds in the rock art of Gawilgarh Hill offer significant insights into the ecological awareness and symbolic consciousness of prehistoric communities residing in the Satpura ranges. The frequent depiction of species such as peacocks, cranes, herons, vultures, and duck underscores not only their ecological significance but also their cultural resonance within early human societies. These images, executed in diverse stylistic forms and pigments, reflect intentional artistic choices that convey more than mere representation; they imply ritualistic and utilitarian associations with avifauna. The spatial distribution detailing indicates a nuanced understanding of birds as both natural and symbolic entities. The study confirms that the avian imagery at Gawilgarh Hill is not incidental but rather deeply embedded within its creators' cognitive and cultural framework, highlighting birds' integral role in shaping early human expressions, beliefs, and interactions with the natural world. Continuing the tradition of paintings of birds, especially by the present Gond tribes.

Competing Interest

The authors declare that they have no conflicts of interest in this paper.

Author's Contribution

Authors' contributions are as follows: Archaeological data compilation and study design and correspondence: Himanshu M. Mahajan; Conceptualisation and referencing: Ashikkumar Nagwanshi; data analysis, editing: Prabash Sahu.

Acknowledgment

We extend our sincere gratitude to the Director General, Archaeological Survey of India, and Nandini Sahu-Bhattacharya, Joint Director General, ASI, for institutional encouragement. I also acknowledge the assistance of the Prehistoric Branch and Excavation Branch-I, Nagpur, ASI, for their valuable cooperation during this research.

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