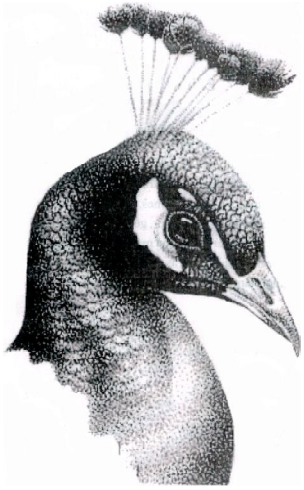
Mor

Newsletter of World Pheasant Association - India



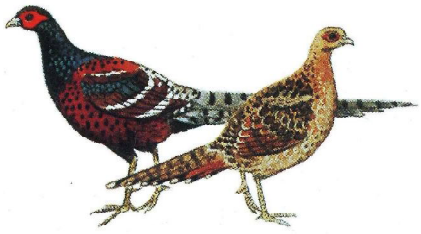
Indian Peafowl
Pavo cristatus
National Bird
&
Odisha State Bird

Himalayan Monal
Lophophorus impejanus
Uttarakhand State Bird

Western Tragopan
Tragopan melanocephalus
Himachal Pradesh State Bird

Blood Pheasant
Ithaginis cruentus
Sikkim State Bird

Blyth's Tragopan
Tragopan blythii
Nagaland State Bird



Hume's Pheasant
Syrmaticus humiae
Manipur and Mizoram
State Bird

Pheasants as National & State Birds

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Editorial

Dear Readers,

Welcome to the July edition of MOR.

This year we have entered in the consecutive fourth hottest year and it is revealing how unprepared much of the world remains for life on a hotter planet. According to scientists, this is the year they started living climate change rather than just studying it. Now we are experiencing floods undoubtedly the worst in Kerala history. Despite warnings and suggestions by experts, necessary action was not taken for ulterior motivs and hence the calamity that is extreme and near repair.

The present issue of MOR provids an insight into the Red Jungle fowl and Grey Jungle fowl popularly called the Jungli Murghi. Their population is decreasing everywhere. A study on these species is required as suggested in the articles that follow.

Hon. General Secretary, WPA-India

Video

by Centre for Science and Environment, New Delhi

This is one of India's greatest contributions to the world

A fascinating history of how Red Jungle fowl from India is the progenitor of all chickens served across the world (Down to Earth).

See https://youtu.be/Wnog7ylQH2w?t=229

India's Wonder Bird

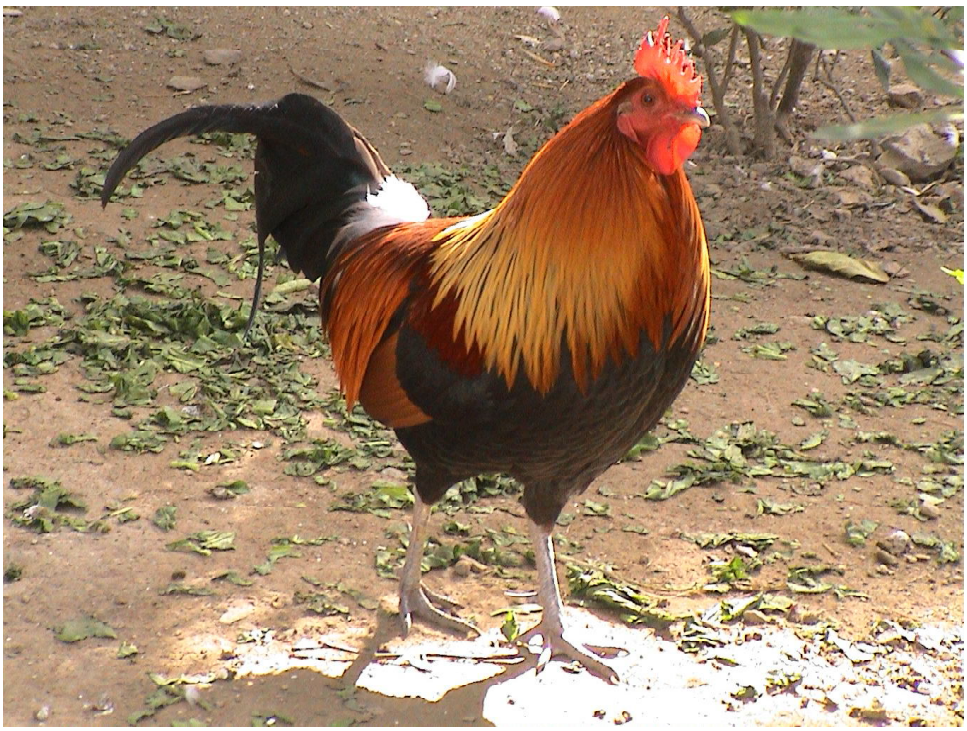


Photo: Dr. John Corder

India is recognized as the country of origin of several species of wild flora and fauna. Among these, one bird stands out in a class of its own, as its record is certainly unique and unsurpassed. This is the Red Junglefowl *(Gallus gallus)*, popularly called Jungli murghi, which is the real ancestor of all diverse forms of domesticated chicken throughout the world and thus the founder of the worldwide multi-billion poultry industry of the present time. From this single species - with its five sub-species - has arisen literally a phenomenon of great benefit to humankind. In fact, no other bird has proved so useful in human history. It is also amazing that from this species have originated such diverse forms as the Bantams and the Japanese Onagadori, with tail feathers of ten meters in length, and a black Orpington hen that produced a record 361 eggs in 365 days!

The Red Junglefowl is a pheasant belonging to the order *Galliformes*, family *Phasianidae* and sub-family *Phasianinae*. As mentioned above, the species *Gallus gallus* has five sub-species, of which the Indian one is classified as *Gallus gallus murghi*. The other sub-species found in some parts of north-east India bordering Myanmar, such as eastern Arunachal, is the Burmese Red Junglefowl *(Gallus gallus spadiceus)*. China has its own sub-species and the other two are called the Javan and Tonkinese Red Junglefowl, but none of these are found in India.

An interesting point about the Red Junglefowl is that whereas its domesticated forms are to be found all over India and indeed wherever human beings have spread out on earth, its distribution

in the wild state in India is currently confined to the northern and eastern and some parts of central India, more or less coinciding with the Sal forests. In fact, there seems to be some kind of a symbiotic relationship between the Sal *(Shorea robusta)* trees and Red Junglefowl. Thus, in the lower parts of central and western India and the whole of the south, its close cousin - the Grey Junglefowl *(Gallus sonnerati)* - holds sway and the Red Junglefowl is not found in these parts. This distributional aspect of the two junglefowl in the country is a mystery, which continues to confound the experts. Proper status surveys of these species in the country have not been carried out so far and hence reliable estimates do not exist.

Corbett National Park

Kaziranga National Park

Photos: Ayan Banerjee

Gallus species differ from other members of the pheasant family in having, in the male, a red fleshy comb on the head, lobed wattles (also reddish) hanging below the bill and a high-arched tail. The cock has shining silky plumage, crimson red on the head and back and mostly green-black elsewhere. It is also described as 'eclipse' plumage, which undergoes moulting after the breeding season. The hen is rusty brown, with speckled neck and minimal comb. In courtship display, the male drops one wing and tilts his head, mantle and back – his most colourful parts – toward the hen; the domestic rooster behaves similarly. The species is monogamous. The hen generally lays 5 to 8 eggs at a time.

A noteworthy trait of the wild Red Junglefowl is its very shy and wary behaviour and the agility with which it takes to flight, seeking cover at the slightest pretext. This special nature of the bird makes captive rearing difficult and explains partly the reluctance of the zookeepers and aviculturists in keeping this species. On the other hand, it is a tribute to the patience and skills

of the ancient people for their success in taming and domesticating this wild and wary species, despite the limitations of facilities and technology in those days.The story of domestication of the wild junglefowl is shrouded in the mists of the remote past. Perhaps, this development took place in India about 5000 years ago during the time of the Indus Valley Civilization. The seals and clay figurines found at Harappa and Mohenjodaro certainly bear testimony to this fact. The Chinese claim that their ancestors domesticated the species earlier. In any case, it is known that around 1500 BC *Gallus gallus* had reached central Europe and it was well established there in domesticated form during the Roman times. In Egypt also, the bird caught the fancy of the people, especially on account of its egg-laying potential, and it received the patronage of the Pharaoh rulers. In due course, its early morning wake-up call came to be regarded as liberation from darkness and the herald of dawn. In some Christian religious art, the crowing cock became a symbol of the resurrection of Christ and the Zoroastrians considered it the guardian of good over evil and even forbade the eating of fowl. Much later in the eighteenth century, the cock bird was made the emblem of the first French Republic. Gradually, it was spread out to all parts of the globe in human company and today it is one of the most numerous birds worldwide. Besides, poultry farming is now really big business, which is getting bigger and better as the demand for eggs and white meat grows in a world that is getting more and more health conscious.

A lesser known - but highly important - fact about the Red Junglefowl is that it has been making major contributions to human health, from time to time. Even the ancient Indian system of Ayurveda recognizes that the fowl has great medicinal and nutritional value, being rich in minerals such as iron and copper. In recent times, some additional aspects have come to light. For instance, in the late 1930s, the chicken infected by the malarial mosquitoes helped in developing the Paludrine drug, which was used widely at that time and was especially useful to the soldiers during World War II. More recently, studies on the Red Junglefowl have helped in tracing the AIDS virus in human beings. The latest is the news that chicken eggs can become a source of useful molecules to treat snakebites. If this works out, it will surely provide much needed relief to the horses that have to undergo painful tests for deriving the snake anti-venom.

In recent years, the morphological characteristics of the wild Red Junglefowl have been the subject of much attention among the scientists. As a result, two features are considered critical in determining the purity of the wild birds. These are: (a) a complete moult to an overall dark/ black 'eclipse' plumage by the male following the breeding season (generally June-September), and (b) virtual absence of a comb in the adult female. Some western scientists have asserted that these critical features of the pure wild fowl have been lost over time due to hybridization and contamination with domestic fowl, and hence perhaps wild birds of the species having true genetic purity may no longer be in existence anywhere. The debate on the subject is still inconclusive and much scientific work is required before coming to a firm conclusion in the matter. But, there can be no doubt that it would be a calamity indeed, if the above-mentioned assertion turns out to

be correct. In sum, it would mean the loss of a highly precious gene pool, one that has given to humankind incalculable benefits over the past 5000 years or so. Verily, this could become a classic case of slaying the bird that has been laying golden eggs. The implications for the future of the various domesticated forms and the poultry industry, as a whole, could be disastrous in a worst case scenario.

In this whole background, the importance of protecting and preserving whatever remains of the wild Red Junglefowl and its natural habitats assumes special significance and should receive the attention of all concerned. To this end, a five pronged conservation strategy is suggested below:

* An awareness campaign to generate proper appreciation and understanding of the special importance of the species.
* Rapid scientific surveys to determine the current status of the species in the country and also to identify prime areas likely to have pure wild birds.
* Molecular genetic studies to assess purity of the gene stock in the identified habitats - on a selective basis.
* Field action to ensure utmost protection to the remaining population of the species and its natural habitats, alongwith regular monitoring of the prime areas.
* Further research and studies to address the gap areas, specially distribution and ecology of the species.

Based on this strategy, a detailed action plan will have to be prepared. In all this, the Central Government and the concerned State Governments have a major role to play. At the Centre, the nodal responsibility has to be assumed jointly by the Ministry of Environment & Forests and the Ministry of Agriculture (specifically the Department of Animal Husbandry & Dairying), alongwith related agencies such as the Wildlife Institute of India, Indian Veterinary Research Institute, Centre for Cellular & Molecular Biology, interested Universities and scientific bodies. Besides, interested non-government organizations, notably the WPA-India and the Bombay Natural History Society, should be associated in meaningful ways. In fact, there is ample justification for undertaking, on priority, a special project wholly focussed on the conservation of the Red Junglefowl – verily the wonder bird of India.

by Samar Singh, former President, WPA-India

Red Jungle fowl *Gallus gallus*

Source: Booklet on Pheasant of India by WPA-India

Distribution: Global:- India, Pakistan, Nepal, Bhutan, Bangladesh, Myanmar, China, Thailand, Peninsular Malaysia, Cambodia, Indonesia, Laos and Vietnam. Five sub-species recognised.

India:- Two sub-species are found in India. The widely distributed Indian Red Junglefowl *(Gallus gallusmurghi)* occurs in north, central and eastern parts, including the Himalayan foothills of Jammu & Kashmir, Haryana, Himachal Pradesh, North Bengal and across to Assam, West Bengal, Bihar, Jharkhand, Orissa, parts of Andhra Pradesh, Madhya Pradesh, Chattisgarh and Uttar Pradesh. The other sub-species – the Burmese Red Junglefowl *(Gallus gallusspadiceus)* – is found in parts of Arunachal Pradesh, Meghalaya, Manipur, Nagaland, Tripura and Mizoram.

Population: Estimated are not available for any state in the country.

Legal Status: Included in Schedule IV of the Wild Life Protection Act 1972.

Morphology: The male bird is black below and orange and red above. The neck and rump is covered by long yellowish coloured feathers called 'hackles' which fall off during the moulting phase (eclipse plumage). The tail is laterally compressed and black (glossy deep green) in colour with the two central feathers long and hanging along each side of the tail. The wings are deep red, green, black and chestnut in colour. The cock has a comb (which is notched) and earlobes (deep red in the Burmese sub-species) in addition to wattles. The female is brown above and pale reddish brown below. The body is vermiculated in black and buff. The neck is covered with short hackles streaked in black and gold.

Ecology: The species occupies forested tracts in the lowlands moving up to about 2,000 meters in some cases. It is believed to have a strong association with Sal *(Shorea robusta)* forests. However, the sub-species spadiceus is equally at home in other types of forests. Generally found in groups of 4-5 feeding on the road/trail edges early in the morning. Its diet is a mixture of grass, fruits, crops, berries and insects (grasshoppers and termites). Roosts in trees. Breeding time is March to May.

General: Hunting is prevalent in most areas of its range, but this is not endangering the species presently. However, there is some apprehension that the wild stock may have crossed with domesticated varieties near human habitants and produced hybrids, rendering some of the wild populations genetically impure and causing a decline in the number of 'pure' birds. Some workers (Peterson and Brisbin 1989) go to the extent of saying that there may be no 'pure' Red Junglefowl left in the wild in their former range of occurrence. In view of the threat of hybridisation, the existing wild population should be afforded appropriate protection. This is important especially considering that the Red Junglefow is the real progenitor of all domesticated forms of chicken the world over.

Grey Junglefowl *Gallus sonneratii*

Source: Booklet on Pheasant of India by WPA-India

Distribution: Global:- Truly Indian species being endemic to India. **India:-** Species peculiar to Peninsular India. Some pockets of distribution found in Rajasthan, Gujarat, Maharashtra, Madhya Pradesh and Andhra Pradesh.

Population: Estimates for the species is not available so far. Occurs in at least 10 protected areas in Rajasthan, Madhya Pradesh, Gujarat and Kerala, including Mt. Abu Wildlife Sanctuary and Bansda, Silent Valley and Eravikulum National Park.

Legal Status: Full protection by virtue of inclusion in Schedule I of Wild Life (Protection) Act 1972.

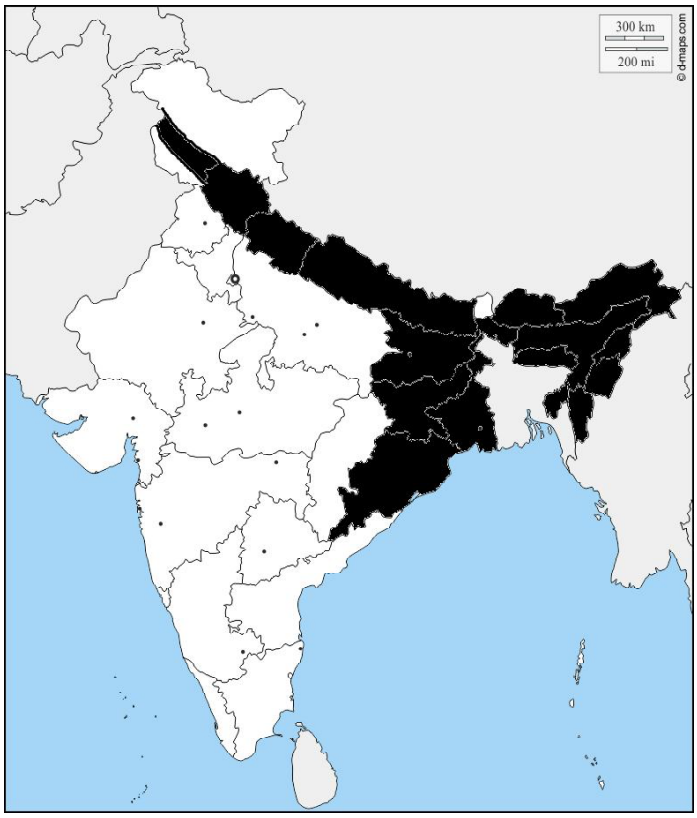
Morphology: The male is about 70-80 cm while the female is about 38 cm. Sexually dimorphic. Female lacks wattle and comb, is mottled blackish brown and buff above and white with black markings below. Immature male similar to female but more rufous. General effect as of domestic fowl, but cock with distinctly longer tail.

Ecology: Affects all types of forest from secondary dry deciduous to moist evergreen, commonly up to 1500 m. Partial to mixed bamboo jungle and neglected tea, coffee and rubber plantations overgrown with lantana tangles. Keep singly or in pairs or small parties of 5-6, the sexes either mixed or segregated. Large numbers collect in areas of periodical food abundance. Usually very shy and timid and emerges into the open to feed in the morning and late afternoon. Roosts up in trees or bamboo clumps, several birds perched together along a branch. Diverse diet, including seed of bamboo and *Strobilanthes* among others, grass and crop shots, tubers and berries of *Zizyphus*, *Lantana*, *Strebuus* etc and figs *Ficus*. Insects such as grasshoppers and termites and even small reptiles are also eaten. The bird appears to forage close to cover and in the same area in successive days, presumably responding to local distribution of food.

The breeding period is possibly more or less throughout the year, most records are in February – March. In West Nilgiris the breeding season in probably October-December, while in Travancore it is March-July and sometimes in August. The nests are built in small hollows next to bush bamboo etc. The clutch in 4-5, possibly 2 females producing the larger clutches. Incubation is done by female bird and lasts for 20-21 days. Male bird is often seen finding food for the chicks.

General: The species is threatened by loss of forested habitats due to cultivation, over-grazing and burning of scrub. Hunted for food in some areas. Its neck feathers called ‘hackles’ are used as ‘flies’ in the fishing industry. Has suffered loss in numbers because of export of neck feathers until a ban on their export was announced by the Government.

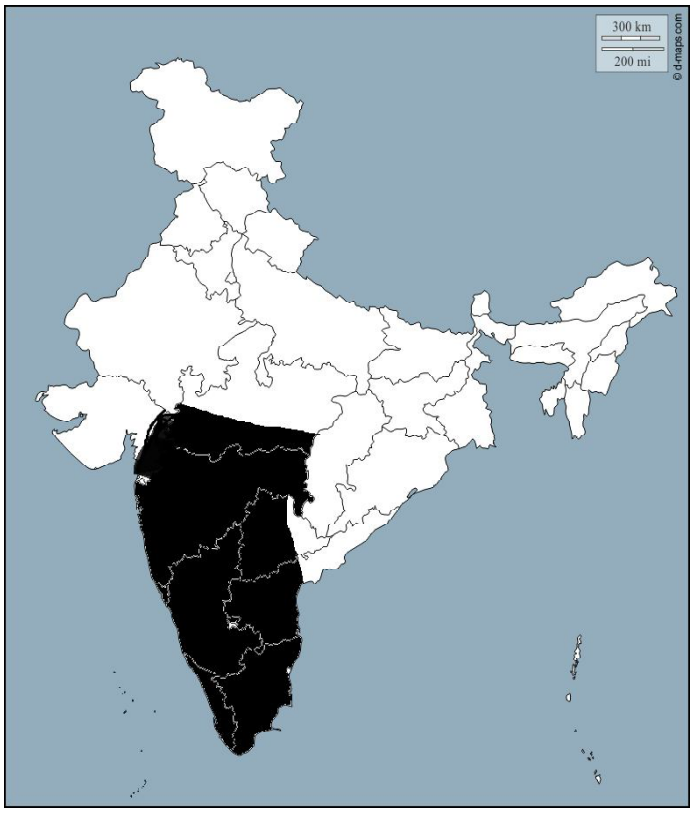
Red Junglefowl distribution in India



Classification

Kingdom	***:***	***Animalia***
Phylum	***:***	***Chordata***
Class	***:***	***Aves***
Order	***:***	***Galliformes***
Family	***:***	***Phasianidae***
Genus	***:***	***Gallus***
Species	***:***	***G. gallus***

Grey Junglefowl distribution in India



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Family	***:***	***Phasianidae***
Genus	***:***	***Gallus***
Species	***:***	***G. sonneratii***

Conservation of red junglefowl *Gallus gallus* in India

Abstract: The red junglefowl (RJF) is one of the most important species for mankind, due to economic and cultural reasons. Recently, fears have been expressed that the wild RJF may be genetically contaminated, leading to an inference that there may not be any pure RJF left in the wild. In order to assess the distribution of RJF in India, field surveys were carried out and secondary information was collated. Historically, RJF occurred in 270 districts in 21 states across India, but now it is found in 205 districts in the 21 states. Of the 255 Protected Areas (PAs) that occur within the RJF's distributional range in India, 190 PAs (31 National Parks [NPs] and 159 Wildlife Sanctuaries [WSs]) have reported its presence. A composite set of trait characters that are presumed to be indicators of wild RJF was used for characterising RJF in the field. A total of 563 (293 males and 270 females) RJF were characterised of which 7% of birds in the central region had reports of white ear patch. Eclipse plumage was observed in wild and captive birds. Ninety-two RJF samples and twenty five domestic chicken samples were collected and processed for DNA extraction. Thirty highly polymorphic microsatellite markers were utilised for RJF and domestic chicken genotyping. Preliminary studies showed polymorphism within RJF at these microsatellite loci.

Introduction: The red junglefowl *Gallus gallus* (RJF), the ancestor of the domestic chicken, is one of the most important species for mankind, due to its economic and cultural significance. Liu et al., (2006) suggested that there are distinct distribution patterns and expansion signatures suggesting that different clades may originate from different regions, which support the theory of multiple origins in South and Southeast Asia. The present day, multi-billion dollar poultry industry is based on the RJF and may have to depend on it in the future. Andersson et al. (1994) stated that 'populations of domestic animals and their wild ancestors provide a valuable source of genetic diversity that may be exploited to develop animal models for quantitative traits of biological and medical interest'. Hence conservation of genetically pure wild forms or their representatives have great potential to make a significant contribution to the study of some economically important genetic traits (Brisbin et al., 2002).

The RJF is widely distributed and its five subspecies are spread from the Indian subcontinent eastwards across Myanmar, South China, Indonesia to Java (Johnsgard, 1986). In India, two sub-species occur, the type specimen, *Gallus gallus murghii* and *Gallus gallus spadiceus* (Ali & Ripley, 1983). While the former is found in the north and central part of India, extending eastwards to Orissa and West Bengal, the latter is confined to the north eastern parts of India. Recently, fears have been expressed that the wild RJF populations may be genetically contaminated with domesticated chickens, leading to an inference that there may not be any pure RJF populations in the wild (Peterson & Brisbin, 1998), causing introgression of domestic genes into wild birds. An analysis of skins by Peterson & Brisbin (1998) showed a lack of phenotypic traits, which

characterise true wild RJF, as described by Morejohn (1968). This study investigated the status of RJF in India and aimed to identify ways to safeguard remaining pure wild birds. In 2006, a collaborative research project on the conservation of RJF was initiated focussing on, 1) an assessment of the current status and distribution of RJF in India; 2) the identification of pure RJF populations by molecular studies; 3) investigations into social interactions between wild RJF and domestic or feral chicken and 4) the development of a conservation action plan for RJF.

This paper presents the preliminary findings on the current status and distribution of RJF in India, standardisation of DNA extraction protocols for various sample types, optimisation of PCR condition and amplification of seven microsatellite loci in extracted DNA samples. The proposed plan of work is also presented and discussed.

Kindly see full article at https://www.pheasant.org.uk/uploads/Fernandes%20et%20al%2094-101.pdf.

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Paper presented at the 4th International Galliformes Symposium, 2007, Chengdu, China.

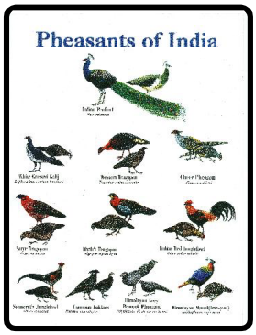
Grey Junglefowl

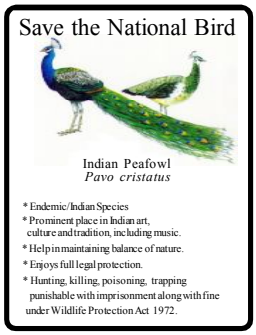
Photo: Dr. John Corder

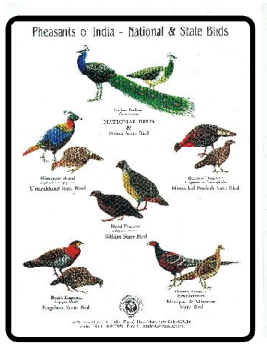
Resource Material - *available on request*

Posters

- Pheasants of India
- Pheasants of Arunachal Pradesh
- Pheasants of Himachal Pradesh
- Pheasants of Uttarakhand
- Pheasants of Assam
- Pheasants of J&K
- Pheasants of Sikkim
- Pheasants of Nagaland
- Pheasants of West Bengal
- National and State Birds
- Save the National Bird
- Himalayan Monal

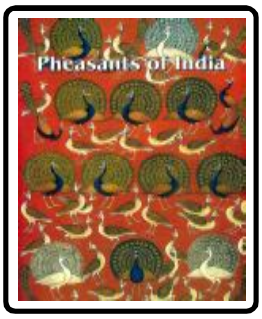


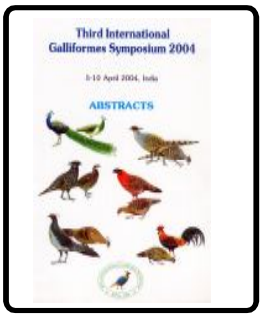


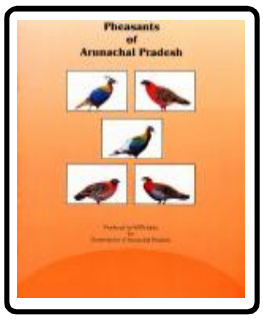


Booklets

- Pheasants of India
- Pheasants of Arunachal Pradesh
- Third International Galliformes
- Symposium Abstracts
- Pheasants of Himachal Pradesh







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