



To Study the Temporal Behavior of White Peacock (*Pavo cristatus*) at Lucknow Zoo, Uttar Pradesh

Bhawna¹, Ruchira Nigam² Asif Ahmad Siddiqui³, Shritika Rai⁴, *Chitra Singh⁵

^{1,2,4,5}Department of Zoology, Isabella Thoburn College, University of Lucknow, Lucknow, Uttar Pradesh, India

³Department of Environmental Science, Integral University, Lucknow, Uttar Pradesh, India

*Corresponding author email: csingh19@gmail.com

ABSTRACT

The Indian Peafowl or White Indian Peafowl, Pavo cristatus is included in Schedule-I of the Indian Wild Life (Protection) Act, 1972 and was designated as the National Bird of India because of its "flagship" value, which is derived from its exalted position in mythology, wide distribution, and majesty. The goal of the current study was to examine the Temporal Behaviour of Pavo cristatus at Lucknow Zoo, Uttar Pradesh. In this 12 week of observations (2 days in a week) was conducted from 4th December 2023 to 28th February 2024. Focal sampling with continuous recording (Altmann 1974) was used to observe the behavioural activity of Pavo cristatus. During the investigation, 10 distinct peacock behaviours were noted in which mostly spent their time in Feeding (26%) followed by standing (20.13%), whereas it was observed that they often spent less time in display (0.70 hours).

Keywords: *Pavo cristatus, Temporal Behaviour, study, flagship, Focal sampling with continuous recording method*

INTRODUCTION

In 1963, India designated the Blue Peafowl (*Pavo cristatus*) as its National Bird. The peafowl was suggested to the government as the National Bird due to its extensive distribution throughout the nation and its long-standing connection to Indian life and culture, according to the late Dr. Salim Ali, a well-known ornithologist. In India, the relationship between the national bird and its people is the oldest and most personal in the world; nonetheless, this latter point is often overlooked and taken for granted. Majestic: There is no denying the Indian Peafowl's unparalleled beauty, adornment potential, and versatility. There's no other bird that can match this triple 'A' rating. It is indeed India's National Bird. Eventually, in one form or another, the peafowl has been acknowledged by the state throughout India's history. It is included in Schedule I of the Wildlife (Protection) Act, 1972, giving it the highest level of protection in India. The largest of the pheasants, often called the Indian or Common Peafowl. The peacock represents pride, glory, grace, joy, splendour, and

love. The dancing peacock is thought to be a sign that rain is about to arrive. The bird stretches its tail and begins to dance in time with the approaching dark clouds. The Far East, Ancient Persia, Greece, Christianity, and India all have traditions related to the peacock. It holds a hallowed place in Sanskrit literature and poetry, as well as in Hindu mythology, which is the subject of extensive folklore (Thaker, 1963).

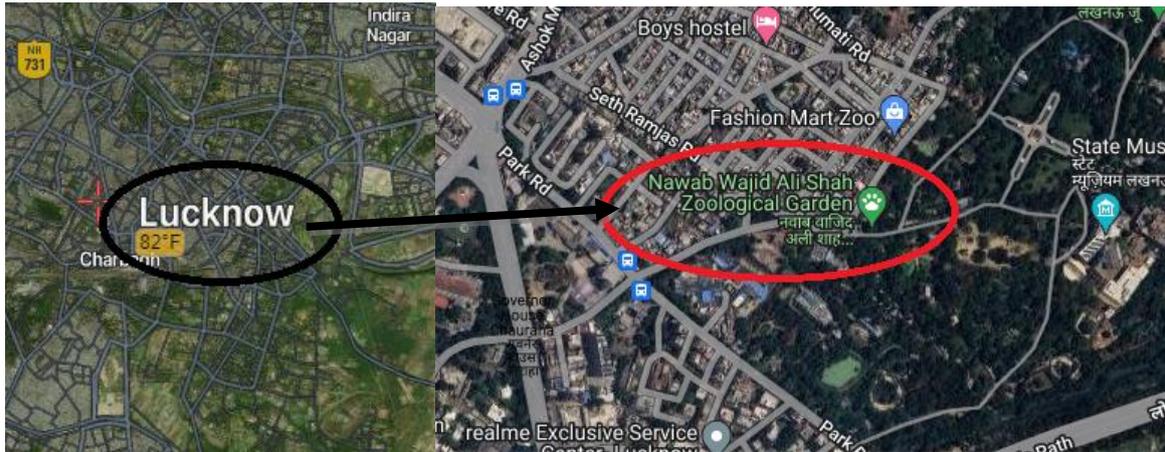
Though the Indian Peafowl is known to flourish in both non-forest and urban locations, Indian pheasants are mostly terrestrial forest residents. Male Indian peafowl's are among the largest flying birds in the world due to their distinctive colourful tail feathers or train. Demand also exists for the feathers of the Blue Peafowl and Jungle Fowl. Another issue to be concerned about is the illegal trading in live birds. With the exception of the Himalayan mountain ranges and north-eastern India, the Indian Peafowl (*Pavo cristatus*) was formerly extensively dispersed and prolific throughout the entire Indian mainland. Concerns on their deteriorating status have grown in recent years.

STUDY AREA

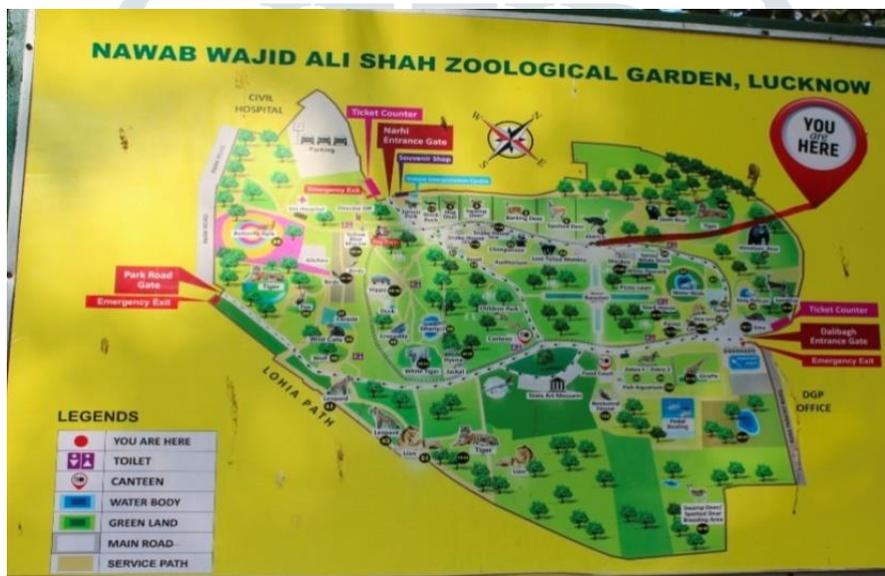
Nawab Wajid Ali Shah Zoological Garden, Lucknow Zoo is located in the heart of the Lucknow city. Nearby area of the Zoo is densely populated and hub of the political, social, financial, beaurocratic and administrative activities of the state. The campus comprises area of 29 hectare near Gomtinagar in Hazratganj area. The Zoo comprises more than 1050 animals of 98 species in addition to this zoo has more than 700 fishes of 67 species and more than 74 species of Butterflies in Butterfly garden. This campus is lush green arboretum having more than 5000 trees of 100 species and act as lung of the city.

Nawab Wajid Ali Shah Prani Udyan, Lucknow, popularly known as Lucknow Zoo. (Earlier known as "Prince of Wales Zoological Gardens") was established in the year 1921 to commemorate the visit of His Royal Highness, the Prince of Wales to Lucknow. The idea of establishing Zoological gardens at Lucknow emanated from Sir Harcourt Butler, then Governor of the State and it was received enthusiastically by the prominent landlords and the leading citizens of the State who donated liberally for the construction of animal houses and cages and also presented animals and birds for display from time to time.

The Lucknow Zoo also houses an exhibit of Awadhi antiques from the State Museum. Aside from that, several events, such as Wildlife Week and Children's Day, are held here.



(Source: satellites.pro) **Map 1: Satellite map of Nawab Wajid Ali Shah Zoological Garden (Lucknow Zoo)**



Map 2: Map of Nawab Wajid Ali Shah Zoological Garden (Lucknow Zoo)

MATERIALS AND METHODS

Plan of field work

The study was conducted from 4th December 2023 to 28th February 2024. 12 weeks of observations (2 days in a week) were taken beginning from 9:00 to 11:00 am in the morning and 3:00 to 05:00 pm in the evening. Focal sampling with continuous recording (Altmann 1974) was used to observe the behavioural activity of *Pavo cristatus*. Photographic evidences taken by One Plus Nord and GPS Recordings were taken through GPS Map Camera Mobile Application.



Photographic evidences taken by One Plus Nord and GPS Recordings were taken through GPS Map Camera Mobile Application

Focal sampling with continuous recording

This type of sampling method used to record daily activity cycle of individual Faunal species and the detailed behavioural observation were made from dawn to dusk. On selected focal group observation on status, daily activity and interaction with other individuals were recorded. Individual behaviour, e.g. Resting, feeding, sleeping, courtship, mating, dominance were recorded by this sampling method.

RESULT AND DISCUSSION

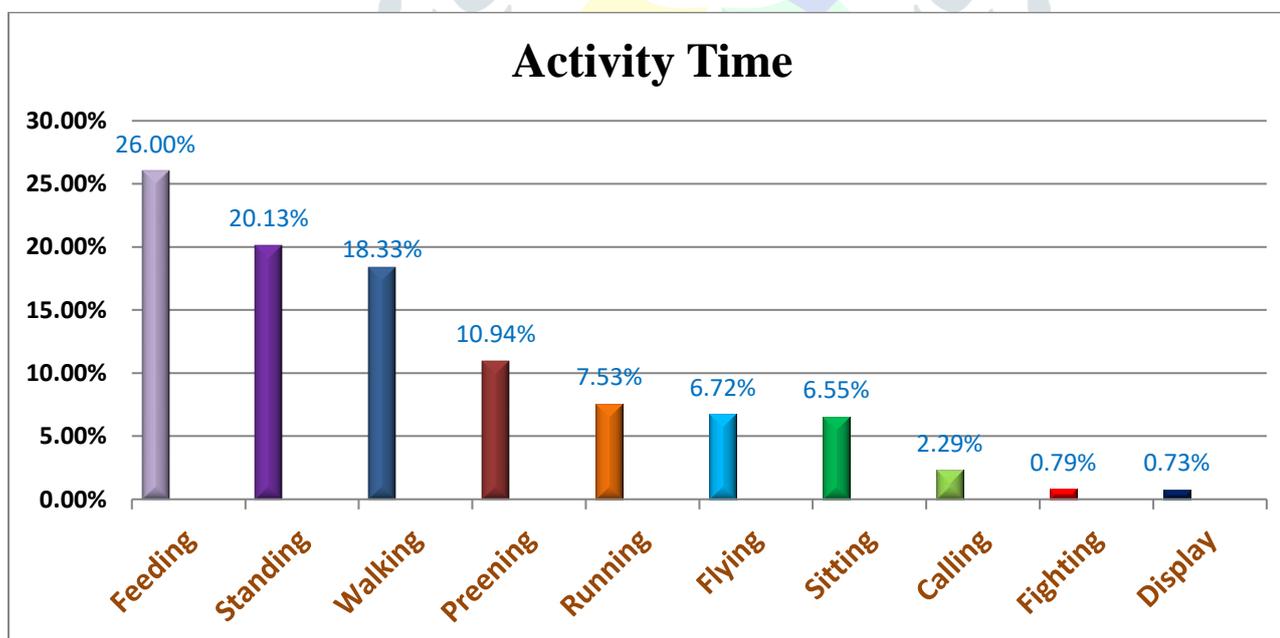
Table 1: Activity Time of *Pavo cristatus*

Date	Activity with time(in minutes and seconds)									
	Feeding	Standing	Walking	Running	Sitting	Display	Preening	Fighting	Flying	Calling
04/12/23	63min 45 sec	65min 15 sec	40 min	14 min	12 min	-	25 min	50 sec	13min 30 sec	3min 30 sec
09/12/23	65 min 55 sec	43 min 15 sec	55 min	12 min	14 min 50 sec	2min, 10 sec	32 min	-	15min	2 min
11/12/23	68 min	42 min	50 min 55 sec	13 min	15 min	-	30 min		17min	4 min 5 sec
16/12/24	72min	43min 45 sec	46min 10 sec	21 min	14 min	-	22min	-	12min	9 min 5 sec
18/12/24	50 min 20 sec	45min 11sec	48min	22min 20 sec	16 min	3min	25min	3 min 9 sec	19 min	8 min
23/12/24	60 min	39 min	33 min	19 min	22 min	5 min	31 min	8 min	18 min	5 min
27/12/24	61 min	38min	33 min 55 sec	18 min 5 sec	20 min	7min	28 min	7 min	21min	6min

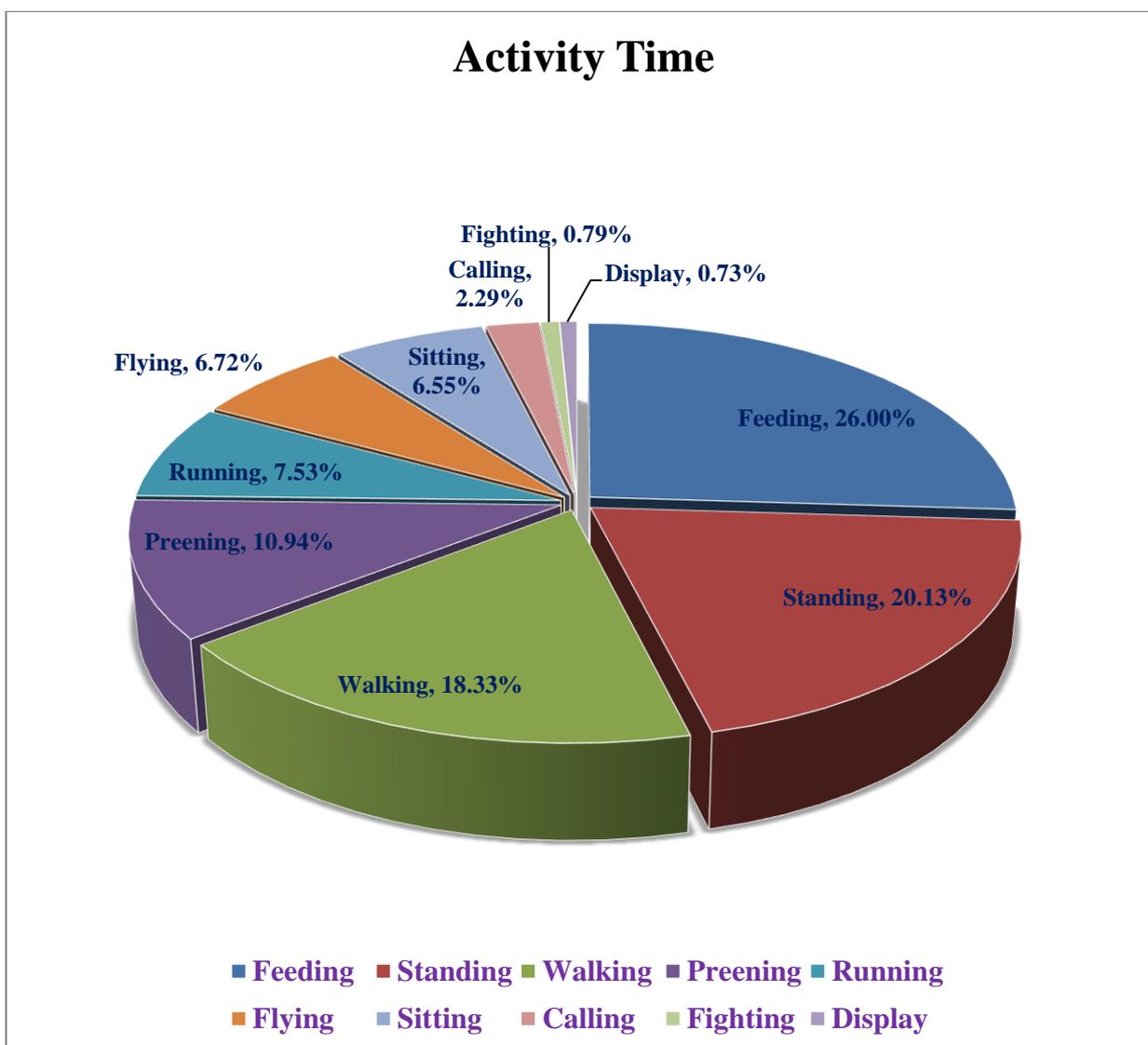
30/12/24	65 min	43min 55 sec	55min 15 sec	14 min 10 sec	14 min 55sec	-	32 min	-	15min	2min
02/1/24	70 min	42 min 10 sec	47 min 45 sec	16 min	14min	2 min 5 sec	20 min	-	12min	9 min
06/1/24	66 min	65 min	40 min 15 sec	14 min	13min	3min	22min	1min 45 sec	12min	3 min
08/1/24	61 min	38 min	32 min	20 min	21min	6 min	31 min	8 min	18 min	5 min
12/1/24	73min	42 min 45 sec	44 min 10 sec	23 min	14 min	-	24min	-	12 min	7 min 5 sec
16/1/24	69 min	43 min	47 min 10 sec	16 min	14 min 45 sec	-	20 min	2 min 5 sec	12 min	9 min
22/1/24	67 min	55 min	40 min 15 sec	14 min	23 min	-	24 min	1min 45 sec	12 min	3 min
27/1/24	65 min 15 sec	43min	55min	14 min	14 min 55sec	-	32 min 55 sec	-	15 min	2 min 10 sec
30/1/24	68 min	66 min	36 min 15 sec	15 min	13 min	3min	22 min	1min 45 sec	12 min	3 min
03/2/24	53 min 20 sec	45 min 11sec	48 min	22 min 20 sec	16min	-	25min	3min 9 sec	19min	8 min
06/2/24	60 min	65min	40 min	17 min 45 sec	12min 15 sec	-	25 min	50 sec	13min 30 sec	3min 30 sec
10/2/24	63 min	60 min	36 min 15 sec	21 min 45 sec	13min	3min	22min	-	18min	3 min
13/2/24	53 min 45 sec	52min	44min 10 sec	33 min	14min	-	24min 5 sec	-	12min	7 min
17/2/24	50 min	45min	43min	20min	20min	3 min 30 sec	23min 30 sec	3min	25min	6min
20/2/24	55 min	40min	38min	24min	21min	2 min	23min 30 sec	3min 30 sec	26min	5min
23/2/24	60 min	47 min 15 sec	56 min	14 min 10 sec	14 min	-	32 min 55 sec	-	15min 55sec	2min
28/2/24	57 min	44 min	45 min	16 min	24 min	2 min 5 sec	30 min	-	12min 10 sec	9 min 45 sec
Total (in mins)	1497 min 20 sec	1153 min 42 sec	1055min 30 sec	432 min 35 sec	371 min 40 sec	41 min 50 sec	626min 55 sec	44min 48 sec	387min 5 sec	125min 10 sec
Total (in hours)	24.96h	19.23h	17.59h	7.21h	6.19h	0.70h	10.50h	0.75h	6.45h	2.09h
Percent (%)	26%	20.13%	18.33%	7.52%	6.55%	0.73%	10.94%	0.79%	6.72%	2.29%

A total of 10 behaviours of Peacock were observed during the study. 12 week of observations (2 days in a week) was done. A total 96 hours of observation of peacock behaviour was carried out to study their different activities. The activity time of peacock was calculated using the Focal sampling with continuous recording which shows that maximum time was spent in Feeding (26%) followed by Standing (20.13%), Walking (18.33%), Preening (10.94%), Running (7.53%), Flying (6.72%), Sitting (6.55%), Calling (2.29%), Fighting (0.79%) and Display (0.73%).

SN.	Activity	Time Spent (In hours)	Percentage (%)
1	Feeding	24.96 hours	26%
2	Standing	19.23 hours	20.13%
3	Walking	17.59 hours	18.33%
4	Preening	10.94 hours	10.94%
5	Running	7.21 hours	7.53%
6	Flying	6.45 hours	6.72%
7	Sitting	6.19 hours	6.55%
8	Calling	2.09 hours	2.29%
9	Fighting	0.75 hours	0.79%
10	Display	0.70 hours	0.73%



Graph1: Bar graph showing Activity Time of *Pavo cristatus*



Graph 2: Pie graph showing Activity Time of *Pavo cristatus*

CONCLUSION

Pavo cristatus engage in a variety of activities since morning to evening. The frequency of observed behaviours varied with the time duration. In the present study the Activity Time of peacock shows that they mostly spent their time for feeding activity (24.96 hours) followed by standing (19.23 hours), walking (17.59 hours), preening (10.94 hours); it was observed that they often spent less time in display (0.70 hours).

ACKNOWLEDGEMENT

Authors express their gratitude to **Prof. Chitra Singh**, Head, Department of Zoology, Isabella Thoburn College, Lucknow for the timely guidance and support in the dissertation research work. I am also grateful to Lucknow Zoo to give me the permission to carry out this Research Work; and last but not the least thanks to the guards of zoo for their cooperation and support.

REFERENCES

- Alexander J.P (1983). "Probable diazinon poisoning in peafowl: a clinical description". Vet Rec. 113 (20): 470.
- Ali, S. and Ripley, S.D. (1980). Handbook of the Birds of Magapodes to Crob Plover. Oxford University Press, New Delhi, 347pp.
- Ali, S. and Ripley, S.D. (1983). Handbook of the birds of India and Pakistan. Compact Edition, Oxford University Press, Mumbai.
- Ali, S and Ripley. S.D. (1989). The compact handbook of the birds of India and Pakistan. Oxford University Press, Mumbai.
- Altmann, J. (1974). Observational study of behaviour: Sampling methods. Behaviour 49: 227-267.
- Anderson D.R., Laake J.L., Crain B.R. and Burnham K.P. (1979). Guidelines for line transect sampling of biological populations. J Wildlife Manage., 43, 70–78.
- Anon. (2002). Wildlife of the Punjab. Punjab Wildlife and Parks Department. PP: 13-14, 25.
- Bergmann, J. (1980). The peafowl of the world, Saiga Publ. Co.Ltd.
- Buckland S.T., Anderson D.R., Burnham K.P. and Laake J.L. (1993). Distance Sampling: Estimating Abundance of Biological Populations. Chapman & Hall, London, 446 pp.
- Burnham, K. P., Anderson, D. R. and Laake, J. L. (1980). Estimation of density from line transect sampling of biological populations. Wildl. Monogr.,72: 202.
- Chopra. G and Kumar. T. (2012). Study of roosting sites of Blue Peafowl, *Pavo cristatus* Linnaeus, 1758 in District Kurukshetra, Haryana (India). Nature and Science, 10(4): 49-55.
- Das, N. and Sivakumar, K. (2009). Population status and distribution pattern of Indian peafowl (*Pavo cristatus*, Linnaeus, 1758) in Chilla range, Rajaji National Park. J. Ind. For.,135:1391-1396.
- del Hoyo, J., Elliot. A. and Sargatal. J. (1994). Handbook of the Birds of the the world. New World Vultures to Guineafowl- Volume 2, Lynx Edicions, Barelona, pp 434-552.
- Dodia, P.P. (2011). Roost tree selection by the common Peafowl (*Pavo cristatus*) at Bhavnagar District, Gujarat (India), Life Science Leaflets. 11: 346-354.
- Fuller, R. A. and Garson, P. J. (2000) Pheasants: Status Survey and Conservation Action Plan 2000–2004. WPA/Birdlife/SSC Pheasant Specialist Group, IUCN, Gland, Switzerland, and Cambridge, UK, and the World Pheasant Association, Reading, UK.
- Galusha J.G and Redd J.M. (1992). Population structure and daytime behavior of Indian peafowl (*Pavo cristatus*) on protection island, Jefferson County, Washington. Pavo. 30: 75-86.
- Gill, F.B. (1994).Ornithology—2nd Edition. Oxford University Press, New York, 117pp.
- Harikrishnan, S., Vasudevan, K. and Sivakumar, K. (2010). "Behavior of Indian Peafowl *Pavo cristatus* Linn. 1758 During the Mating Period in a Natural Population". The Open Ornithology Journal 3: 13–19.
- Johnsgard, P.A. (1986). The Pheasants of the World, Oxford Univ. Press, Oxford.
- Johnsingh, A.J.T. (1976). "Peacocks and cobra". J. Bombay Nat. Hist. Soc. 73 (1): 214.

- Johnsingh, A.J.T and Murali, S. (1978). "The ecology and behaviour of the Indian Peafowl (*Pavo cristatus*) Linn. of Injar". J. Bombay Nat. Hist. Soc. 75 (4): 1069–1079.
- Johnsingh A.J.T. and Murali S. (1980). The ecology and behavior of Indian peafowl *Pavo cristatus* Linn. of Injar. J. Bombay Nat Hist Soc., 75: 1069-79.
- Madge,S. and McGowan.P. (2002). Pheasants, Partridges and Grouse, Including Buttonquails, and Allies. Helm Identification Guides, Christopher Helm, London, 488pp.
- Mushtaq-ul-Hassan, M. Ali, Z, Arshad, M.I, Mahmood, S and Mahmood-ul-Hassan, M. (2012). Effect of matting sex ratios in Indian peafowl (*Pavo cristatus*) on production performance at Wildlife Research Institute, Faisalabad (Pakistan). Iranian J. Vet. Res. Vol. 13(2): 143-146.
- Navaneethakannan, K. (1984). Activity patterns in a colony of peafowls (*Pavo cristatus*) in nature. J. Bombay Nat Hist Soc. 81: 387-393.
- Rajadurai. T. (1988). Present distribution and status of Indian Peafowl (*Pavo cristatus*) in Viralmalai area, Tamil Nadu, South India. M.Sc., dissertation.
- Ramesh, K. and McGowan, P. (2009) On the current status of Indian Peafowl *Pavo cristatus* Aves: Galliformes: Phasianidae): keeping the common species common. Journal of Threatened Taxa, 1: 106-108.
- Roberts, T.J. (1992). The birds of Pakistan. Vol. 1, Nonpasseri formes. Karachi, Pakistan, Oxford University Press. Elite Publications limited. P: 617.
- Sahajpal, V. and Goyal, S.P. (2008). "Identification of shed or plucked origin of Indian Peafowl (*Pavo cristatus*) tail feathers: Preliminary findings". Science and Justice 48 (2): 76–78.
- Sharma I.K. (1978). Social and sexual behavior of peafowl. Environ Aware 1978; 1: 169-71.
- Sharma, I.K. (1979). Ecological aspects of the peafowl *Pavo cristatus* at Jothpur. J. Eco.Pavo Vol 17(1&2): 50-53.
- Trivedi, P. (1993). Habitat selection by Indian peafowl in Gir Forest. M. Sc., Dissertation, Saurashtra University (Unpublished) pp.36.
- Trivedi, P and Johnsingh, A.J.T (1995). "Diet of Indian Peafowl *Pavo cristatus* Linn. in Gir Forest, Gujarat". J. Bombay Nat. Hist. Soc. 92 (2): 262–263.
- Veeramani. A. (1990). Studies on ecological and behavioural aspects of Indian Peafowl *Pavo cristatus* in Mudumalai Wildlife Sanctuary, Tamil Nadu, South India. M.Sc., Dissertation submitted to Bharathidasan University, Tamil Nadu.
- Walther BA, Clayton DA. Elaborate ornaments are costly to maintain: evidence for high maintenance handicaps. Behav. Ecol 2005, 16:89-95.
- Ward, P. and Zahavi, A. (1973). The importance of certain assemblages of birds as "information centers" for food findings. Ibis. 115:517-534.
- Yasmin, S. (1994). Characteristics of trees used for roosting by blue peafowl in Aligarh district, India. Annual Review of the World Pheasant Association 49: 57-63.