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RESEARCH ARTICLE

DENSITY AND DISTRIBUTION OF INDIAN PEAFOWL (*PAVO CRISTATUS*) IN THE MEGHAMALAI FORESTS, TAMIL NADU, WESTERN GHATS OF SOUTHERN INDIA.

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Abstract

To find out the Indian Peafowls abundance its distribution in the Meghamalai forest was carried out during the period of 2013 to 2014. The distribution of Indian Peafowl was obtained in all the habitats in the study area with the wide range of altitude (330-950m). The sightings of Indian Peafowls were recorded in all the eighteen transects as well as four different seasons in Meghamalai forests. This study area consisting of five different habitats namely southern dry deciduous scrub forest (SDSF), southern dry mixed deciduous forest (SDMDF), southern moist mixed deciduous forest (SMMDF), southern sub-tropical hill forest (SSTHF) and miscellaneous and plantation forests (MISC+PL). The Indian Peafowl densities in the study area, ranged widely from 9.06/km² (95% CI=6.56-15.17). The highest density was recorded in the Summer season 10.13/km² (95% CI=14.98-43.38) and the lowest density was obtained in the Post-monsoon season 9.06/km². The maximum density of Indian Peafowl was recorded in SDSF habitat 18.32/km² (95% CI=11.23-21.32).

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Introduction:-

The Indian Peafowl is regarded as protected species through the Indian Wildlife Protection Act (1972) and listed as least concern (LC) by the International Union for Conservation of Nature (IUCN). According to Bird Life International [1] *Pavocristatus* is a threatened species. Even though there are several threats against this species and for their survival in many parts of the fragmented areas in the country. The Indian Peafowl is native to south Asia, but introduced and semi feral in many other parts of the world. The Indian Peafowl is under the inclusion of Order Galliformes, Family Phasianidae, Genus *Pavo* and the species is *cristatus*. [2] Many workers draws particular attention to the need of quantitative accurate and comprehensive maps of species distribution and abundance. Without such a database in many fragmented areas it will not be possible to plan priorities in conservation. Hence this species is highly emphasized and it is essential to take up an in depth research on the population and habitats in the fragmented areas in the southern parts of India. Keeping in view, the aforesaid facts, that term study on Indian Peafowl at the Meghamalai forests, Tamil Nadu, Western Ghats was studied. The present study is focused mainly on the population in different seasons during the period of 2013 to 2014 in the Meghamalai forests, Western Ghats south India.

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The Indian subcontinent is home for wide range of flora and fauna owing its to varied range climatic, topographic and vegetation structure. The present survey is not only served as first step to determine the distribution and abundance of a species but also it helped in understanding its habitat requirements. Miller [3] highlighted the importance of distribution and abundance of species in assessing the status. Knowledge of the number in a population is a prerequisite for effective wildlife resource management.

Conroy and Noon [4] opined that in gaining a useful understanding of the conservation status of a particular species, the biologists must have information on the distribution of the species, and occupancy of available and relative population estimates. It is reported that estimates or measures of a population are useful making comparisons of related species of populations of the same species in different habitats or of the same population at different times. The selection might thus be expected to exert rather strong influences on habitat selection patterns (Lack [5]; Ramesh and McGowan, [6] and Odum, [7]). No detailed information is available on abundance and distribution of Indian Peafowl. The current study has not only served as a first step to determine the distribution and abundance of a species by also it helped in understanding its habitat requirements. The objectives the study was to document the distribution of Indian Peafowl and its abundance in different seasons in the Meghamalai Forests, Western Ghats.

Materials and methods:-

Study area:-

The Theni forest division ($9^{\circ} 31' - 10^{\circ} 10' \text{N}$, $77^{\circ} 20' - 77^{\circ} 40' \text{E}$) is located in Theni district, Tamil Nadu, south India. This area forms part of the Western Ghats and it is located on the boundary of Tamilnadu and Kerala state. This forest covers an area of 723 sq.km. It comprises of Bodi, Cumbum, Gudalaur, Varushanadu and Meghamalai forest ranges in which Meghamalai range was chosen to study the population of Indian Peafowl. At present most of the forest area has declared as Meghamalai Wildlife Sanctuary. The elevation ranges from 300 m to 1965 m. The rainfall varies between 700mm and 2000 mm. The important rivers are Periyar, Suruliyar, Palar and Vaigai. The forest types [8] are classified into southern dry deciduous scrub forest (SDSF), southern dry mixed deciduous forest (SDMDF), southern moist mixed deciduous forest (SMMDF), southern sub-tropical hill forest (SSTHF) and miscellaneous and plantation forests (MISC+PL)

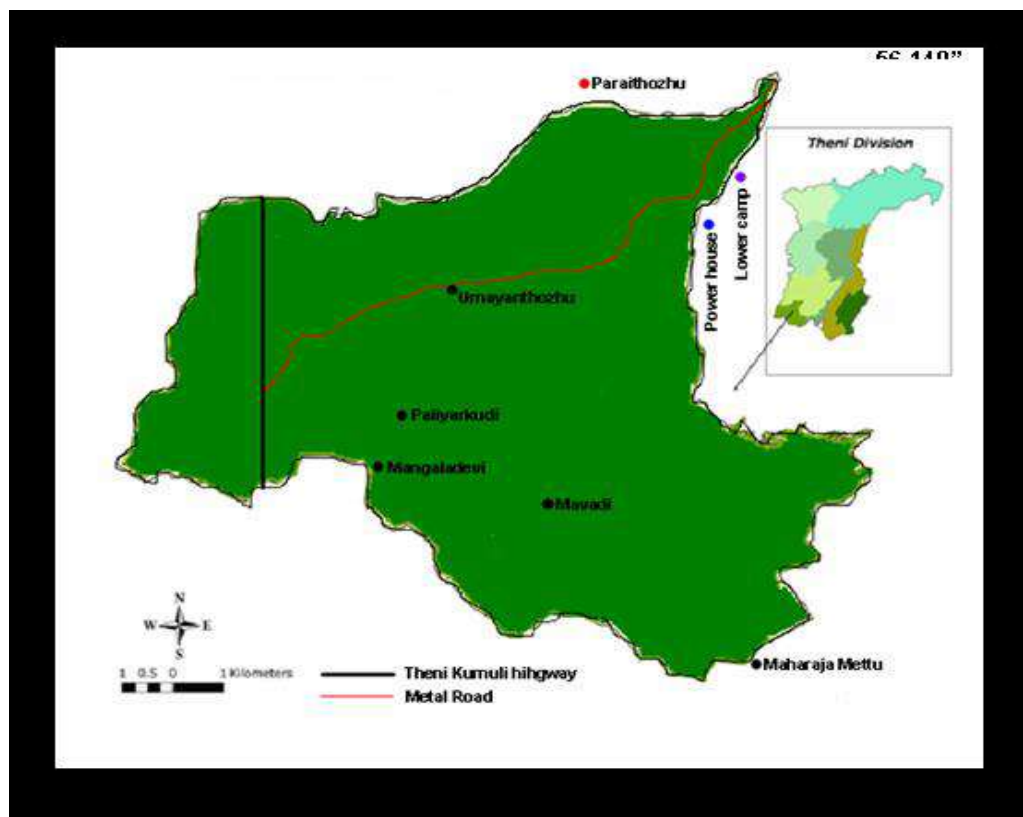


Figure 1:-Study area map

Results and Discussion:-

The distribution of Indian Peafowl was obtained in all the habitats in the study area with the wide range of altitude (330-950m). The sightings of Indian Peafowls were recorded in all the twenty transects as well as four different seasons (Table: 1) in Meghamalai forests. This study area consisting of the habitats (Table:2) namely southern dry deciduous scrub forest (SDSF), southern dry mixed deciduous forest (SDMDF), southern moist mixed deciduous forest (SMMDF), southern sub-tropical hill forest (SSTHF) and miscellaneous and plantation forests (MISC+PL).

Density of Indian Peafowl in different Seasons:-

The Indian Peafowl densities in the study area, ranged widely from 9.06/km² (95% CI=6.56-15.17). The highest density was recorded in the Summer season 10.13/km² (95% CI=14.98-43.38) and the lowest density was obtained in the Post-monsoon season 9.06/km² (Table:1 & Fig. 1). The moderate density was obtained in the seasons of Pre-monsoon 10.13/km² (95% CI=4.96-22.17) and Monsoon seasons 10.36/km² (95% CI=6.12-17.85) respectively.

Density of Indian Peafowl in different Habitats:-

The overall density of Indian Peafowl in the study area was 12.41 (95% CI=9.53-16.39). The maximum number of density 18.32/km² was obtained in the SDSF habitat (95% CI=11.23-21.32). The minimum density 2.34 /km² was recorded in the SSTHF habitat (95% CI=1.15-3.16). In the other habitats such as SMMDF (13.43/km²), MISC+PL (14.23/km²) and SDMDF (16.75/km²), were obtained the moderate densities of Indian Peafowl respectively (SMMDF habitat 95% CI=12.28-18.65, MISC+PL habitat CI=12.19-17.24 & SDMDF habitat CI=9.25-19.26) Table 3 & Fig 2.

The present study revealed the distribution of Indian Peafowls in all the seasons and in four different habitats except in SSTHF (rare abundance) and the wide range of altitude 330 to 750 m in the Meghamalai forest areas. This study also revealed that the populations of Indian Peafowls were found in the particular transects containing habitats mostly in the open areas of forests in the study area.

Sathyanarayana and Veeramani [10] reported at Tamilnadu, the abundance of Indian Peafowls in scrub jungle may be due to the availability of sufficient food plants, insects, roosting trees and good ground cover for breeding and protection. According to Subramanian et al [11] the Grey jungle fowl prefers mostly scrub jungle when compared to southern sub-tropical hill forests and further stressed that the ground litters and fruiting plants play significant role for Grey junglefowl (Subramanian et al [12]; and Subramanian et al [13]). Veeramani [14], Johnsingh and Murali [15] stated that more abundance of Indian Peafowls were recorded in scrub jungle in Mudumalai Wildlife sanctuary. The rare sightings of Indian Peafowl in SSTHF in the study area may be a high altitude and sparse availability of shrubs and bushes. The present study on abundance and distribution revealed that Indian Peafowl densities in the study area were highest in the summer season and similarly the maximum densities were noticed in the Deciduous habitats when compared to higher altitudinal habitats such as hill forest. It seems to be an ideal microhabitat variables as well as clearings in the summer and it may be the preference of open areas. Ahmed and Musavi [16] have observed 65% white-crested Kalij pheasants in the scrub jungle when compared to other habitats Ranikhet, Kumaun, in the Himalayas. Silva et al [17] stated that the thorn scrub vegetation in Ruhuna National Park is ideal for the Ceylon Junglefowl especially in the dry season. According to Gaston ([18]; Easa [19]), the line transect method is the simplest method to get an index of pheasant population and can be carried out at any time of year. Hence this method is most suitable to estimate the abundance of pheasants. Easa [19] reported the reappearance of Indian peafowl in Parambikulam area in Kerala.

Table 1:- Density of Indian Peafowl (*Pavocristatus*) in the study area during the study period (2013-2014)

Sl.No	Season	Density/Sq.Km	Lower Confidence Limit (95%)	Upper Confidence Limit (95%)
1	Post-monsoon (December-February)	9.06	6.56	15.17
2	Summer (March-May)	26.32	14.98	43.38
3	Pre-monsoon (June-August)	10.13	4.96	22.17
4	Monsoon (September-November)	10.36	6.12	17.85

Table 2:- Characteristics of locations in the sightings of Indian Peafowl (*Pavocristatus*) during the study period (2013-2014)

Transect Number	Location	Habitat/forest Type	Altitude (m)
1	ManjanoothuOdai	SDSF	330-360
2	ManjanoothuOdai	SDSF	330-360
3	Manjanoothu	SDMDF	330-370
4	Manjanoothu village	SDMDF	330-370
5	Manjanoothu Road	SDMDF	330-370
6	Manjanoothu Road	SDMDF	330-370
7	Manjanoothuparai-1	SDMDF	330-370
8	Manjanoothuparai-2	SDMDF	330-370
9	Bommarajapuram-1	SMMDF	400-600
10	Bommarajapuram-2	SMMDF	400-600
11	NochiOdai	SMMDF	400-600
12	SampuluthozhuPallam	SMMDF	400-600
13	Arasaradi	SMMDF	400-600
14	Arasaradi Road	MISC+PL	400-600
15	Enbathanju Acre	SSTHF	600-750
16	Enbathanju Acre-river	SSTHF	600-750
17	Vellimalai	SSTHF	800-950
18	Vellimalai river side	SSTHF	800-900
19	Vellimalai estate	MISC+PL	800-950
20	Vellimalai roadside	SSTHF	800-950

Table 3:- Density of Indian Peafowl (*Pavocristatus*) in different Habitats in the study Area during the study period (2013-2014)

Sl.No	HABITATS	Density/Sq.Km	Lower Confidence Limit (95%)	Upper Confidence Limit (95%)
1	SDSF	18.32	11.23	21.32
2	SDMDF	16.75	9.25	19.26
3	SMMDF	13.43	12.28	18.65
4	MISC+PL	14.23	12.19	17.24
5	SSTHF	2.34	1.15	3.16
Overall		12.41	9.53	16.39

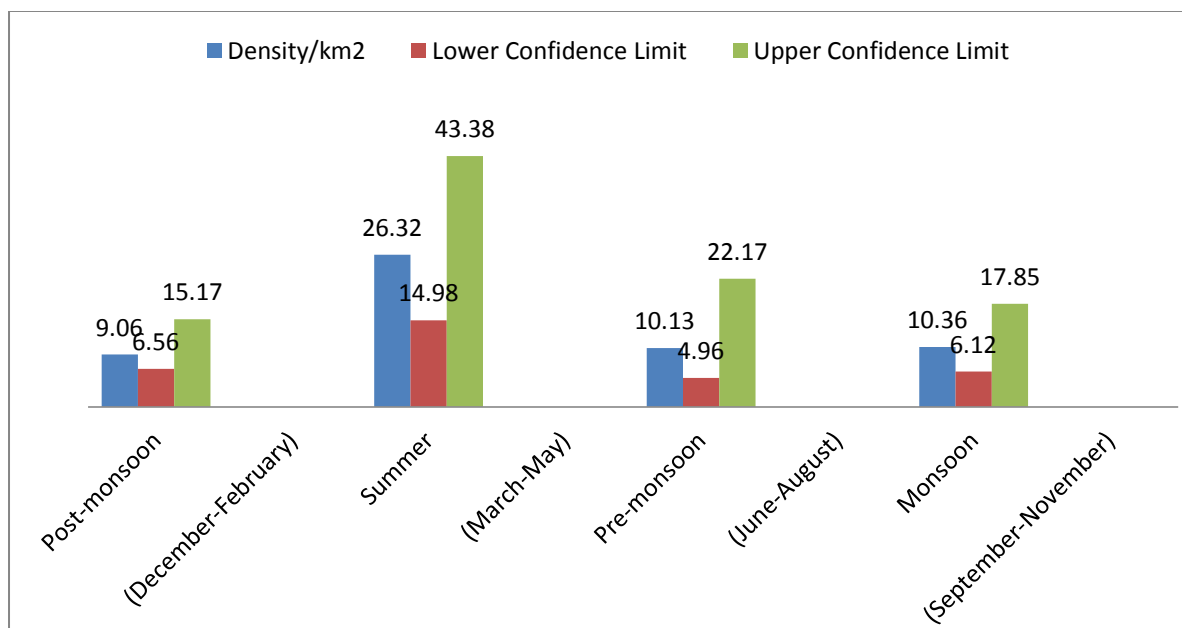


Fig 1:- The Density of Indian Peafowl (*Pavocristatus*) in different seasons in the study area (Density/km²)

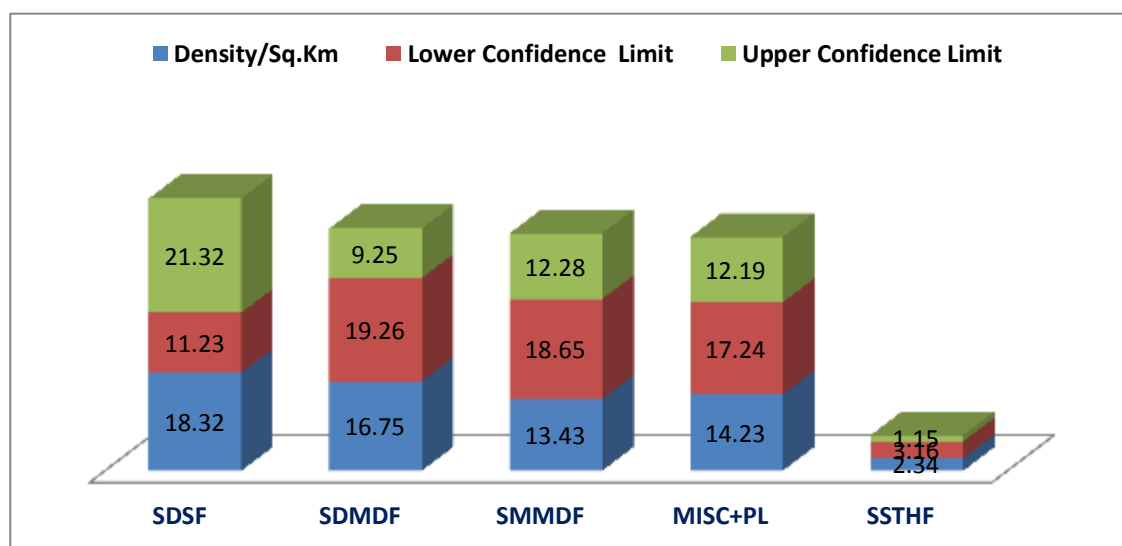


Fig 2:- The Density of Indian Peafowl (*Pavocristatus*) in different Habitats in the study area (Density/km²)

Conclusion:-

The distribution of Indian Peafowl was obtained in all the habitats in the study area with the wide range of altitude. The sightings of Indian Peafowls were found in all the transects as well as four different seasons in study areas. The densities of Indian Peafowl in the study area, were high in the Summer season and the low density in the Post-monsoon season. The moderate density was obtained in the seasons of Pre-monsoon and Monsoon seasons. The maximum number of density was obtained in the SDSF habitat. The minimum density was recorded in the SSTHF habitat. In the other habitats such as SMMDF, MISC+PL and SD MDF were obtained the moderate densities of Indian Peafowl respectively.

The present study revealed the distribution of Indian Peafowls in all the seasons and in different habitats and the wide range of distribution (altitude 330 to 750 m) in the Meghamalai forest areas. This study also revealed that the populations of Indian Peafowls were found higher number in particular habitat when compared to others and it showed the mostly in the open areas of forests in the study area.

The more abundance of Indian Peafowls in scrub jungle may be due to the availability of sufficient food plants, insects, roosting trees and good ground cover for breeding and protection purposes. Peafowl prefers mostly scrub jungle when compared to southern sub-tropical hill forests and may be the reason for the ground litters and fruiting plants plays significant role. The rare sightings of Indian Peafowl in SSTHF in the study area may be a high altitude and sparse availability of shrubs and bushes. The present study on abundance and distribution revealed that Indian Peafowl densities in the study area were highest in the summer season and similarly the maximum densities were noticed in the Deciduous habitats when compared to higher altitudinal habitats such as hill forest. It seems to be an ideal microhabitat variables as well as clearings in the summer and it may be the preference of open areas.

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