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*RESEARCH ARTICLE*

# POPULATION DYNAMICS AND GROUP SIZE OF CHUKAR PARTRIDGE ALECTORIS CHUKAR IN MANDAL VALLEY, GARHWAL HIMALAYA, INDIA

**Manish Kukreti**
Department of Zoology, Govt. P.G. College Gopeshwar, Chamoli-246401.

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## Abstract

Present study reports population dynamics of Chukar partridge in Mandal valley, Garhwal Himalaya, India during January 2019 to December 2019. A total 1423 birds with 333 groups were recorded in 315 sightings. Overall individual per sighting, average group size and largest group size across the year were recorded 5.66±0.40, 4.02±0.54 and 7.89±0.66 respectively. Significant variation was also observed in population and group size. Maximum values of individuals per sighting recorded in month of November (8.37±0.76), maximum average group size and largest group size were recorded on month of September (7.59±0.65 and 12.92±1.23) while minimum for the same were recorded during April month.



## Introduction:-

The knowledge of population dynamics of any animal species is prerequisite for a wildlife manager because successful management needs accurate information on population size at particular time of the year. Population size or density of an organism depends on many factors viz., habitat size, ecology, food, reproductive success, competition etc. Chukar partridges are important group of the game birds, belong to the order- Galliformes, Family- Phasianidae. Chukars are widely distributed game birds, found in the America, Europe, and South Africa and Asia from sea level (in southern Sind and Beluchistan) to an elevation of 5000m altitude (Hume and Marshall, 1879; Johnsgard, 1973). They inhabit semi arid mountainous area characterized steep rugged/stony slopes covered with scattered trees shrubs and grass (Galbreth and Moreland, 1953; Molini, 1976; Carmi-Winker et. al., 1987). As a sport bird, Chukars have been successfully introduced into southern America, Hawaii, and New Zealand etc. (Udavardy, 1977; Dunn et. al., 1987; Del Hoyo, 1994; Christensen, 1996).Fourteen subspecies of Chukar Alectoris chukar are known to occur in different parts of the world (Peterson 2005). In India, two species of Chukar are found in southwestern Himalaya, Punjab and Gujarat in disturbed habitats near agricultural fields between 400 to 3000m altitudes (Ali and Ripley, 1983). The present study of chukar is very little and based on account given long ago by British naturalists livings in India before independence (Hume and Marshall, 1879). In this paper we describe findings of the study carried out on variation in population and group size of chukar partridge for one year in Mandal valley, Garhwal Himalaya.

## Materials And Methods:-

Chukar partridge Alectoris chukar is a common game bird of the Garhwal Himalaya, and known as 'chakor' in vernacular language. A residential population of this bird was studied at Mandal valley in district Chamoli, Uttarakhand ($30^0$ 25'N and $79^0$ 19'E, 1850m). The study site was located on the East facing slope and spread out in

**Corresponding Author:- Manish Kukreti**
Address:- Department of Zoology, Govt. P.G. College Gopeshwar, Chamoli-246401.

5km$^2$ area. The climate is moderate and receives average 156mm rainfall and maximum and minimum temperature fluctuates between $8^0$C to $20^0$C and $5^0$C to $16^0$C respectively. The study area is comprised by 23% mixed temperate forest (Pinus roxiburghii, Cedrus deodara, Cupressus etc.)

From January 2019 to December 2019, regular visits for 8-11 days were made every month to record information on sighting of Chukar partridge. Using transect/trail walks method (Javed and Kaul, 2002), data were collected on total number of Chukar sighted, number of groups, maximum number of individuals in a groups, biotic pressure etc. In the study site, many trails were laid by local people who daily visit area to fodder and fuel collection etc. Data was analyzed statistically using ANOVA (Fisher, 1963).

## Results:-

Details of sightings are presented in table. During the study period (January 2019 to December 2019), A total 1423 Chukars were recorded 315 sightings. The overall 5.66±0.40 Chukars were sighted in a single sighting (range from 1.85 ±0.08 to 8.37± 0.76). Population size was found low from February to June but significant increase was observed by month of August and attained maximum size in November (8.37±0.76 individuals/sighting). There after a decline in population was noticed. Chukar partridge is a social birds and remains in groups of 4-5 birds. During the study, total 333 group of Chukar were observed with average group size 4.02±0.54 (figure). The group size was recorded low from February to June followed by an increasing trend from July onwards and attained maximum (size in September 7.59±0.65, P<0.005, March vs. September). Overall size of the largest group was 7.89±0.66 (ranged from 3.71±0.09 in April to 12.92±1.23 in September 2019, P<0.005).

## Discussion:-

Records on sightings of Chukar partridge collected for one year (from January 2019 to December 2019) in Garhwal Himalaya, Uttarakhand show seasonal variation. During monsoon and post monsoon and winter seasons (June to January), both population and group size were found quite high while decline was recorded in the spring. Seasonal variations in population and group size could be due to the biological factors. Small population and group size were recorded during spring and breeding seasons (from February to April). This could be due to reproductive behavior. In Chukar, breeding starts during February onwards (Ali and Ripley, 1983) when pair formation between male and female takes place. For making territory, birds disperse in habitat. After egg laying, females also become busy in incubation of eggs on her nests. As a result, sighting of birds reduced during this period. During the monsoon and post monsoon (June to October), high number of individuals and large groups could be due to merging of small coveys with newly hatched juveniles.

Among the environmental factors, rainfall associates with growth of vegetation, grain, grass, seeds and insects population. Therefore, abundant food supply attracts all individuals of population and formation of large flocks' stakes place as reported in other game species. In Black francolin (Shah et.al.2002), Cheer pheasant (Phurailatpum et.al., 2005) flocking also coincides with abundant food supply during post monsoon season.

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| 1. **Months** | 2. **No. of sighting** | 3. **Total individuals** | 4. **Individuals/ 5. sighting** | 6. **Average group size** | 7. **Largest group size** |
|---|---|---|---|---|---|
| 8. January 2019 | 9. 15 | 10. 62(15) | 11. 4.50±0.50 | 12. 3.07±0.41 | 13. 5.75±0.64 |
| 14. February | 15. 22 | 16. 50(24) | 17. 2.52±0.40 | 18. 1.58±0.36 | 19. 4.22±0.49 |
| 20. March | 21. 25 | 22. 50(28) | 23. 2.01±0.08 | 24. 1.57±0.27 | 25. 4.20±0.35 |
| 26. April | 27. 33 | 28. 61(33) | 29. 1.85±0.08 | 30. 1.50±0.58 | 31. 3.71±0.09 |
| 32. May | 33. 41 | 34. 120(43) | 35. 3.60±0.51 | 36. 2.12±0.46 | 37. 5.35±0.64 |
| 38. June | 39. 16 | 40. 88(20) | 41. 5.50±0.26 | 42. 3.60±0.86 | 43. 7.20±0.58 |
| 44. July | 45. 32 | 46. 145(32) | 47. 4.70±0.30 | 48. 4.20±0.53 | 49. 8.50±0.50 |
| 50. August | 51. 29 | 52. 168(32) | 53. 6.71±0.02 | 54. 6.01±0.36 | 55. 10.15±0.43 |
| 56. September | 57. 28 | 58. 172(29) | 59. 7.53±0.61 | 60. 7.59±0.65 | 61. 12.92±1.23 |

| | | | | | |
|---|---|---|---|---|---|
| 62. October | 63. 26 | 64. 190(27) | 65. 7.63±0.75 | 66. 7.52±0.55 | 67. 12.46±1.43 |
| 68. November | 69. 21 | 70. 157(22) | 71. 8.37±0.76 | 72. 5.50±1.20 | 73. 11.00±1.04 |
| 74. December | 75. 27 | 76. 160(28) | 77. 6.30±0.55 | 78. 4.00±0.54 | 79. 9.53±0.57 |
| 80. **Total/Average** | 81. **315** | 82. **1423(333)** | 83. **5.66±0.40** | 84. **4.02±0.54** | 85. **7.89±0.66** |

**Table:-** Records of population and group size of Chukar Partridge Alectoris chukar at Mandal valley, district Chamoli, Garhwal Himalaya

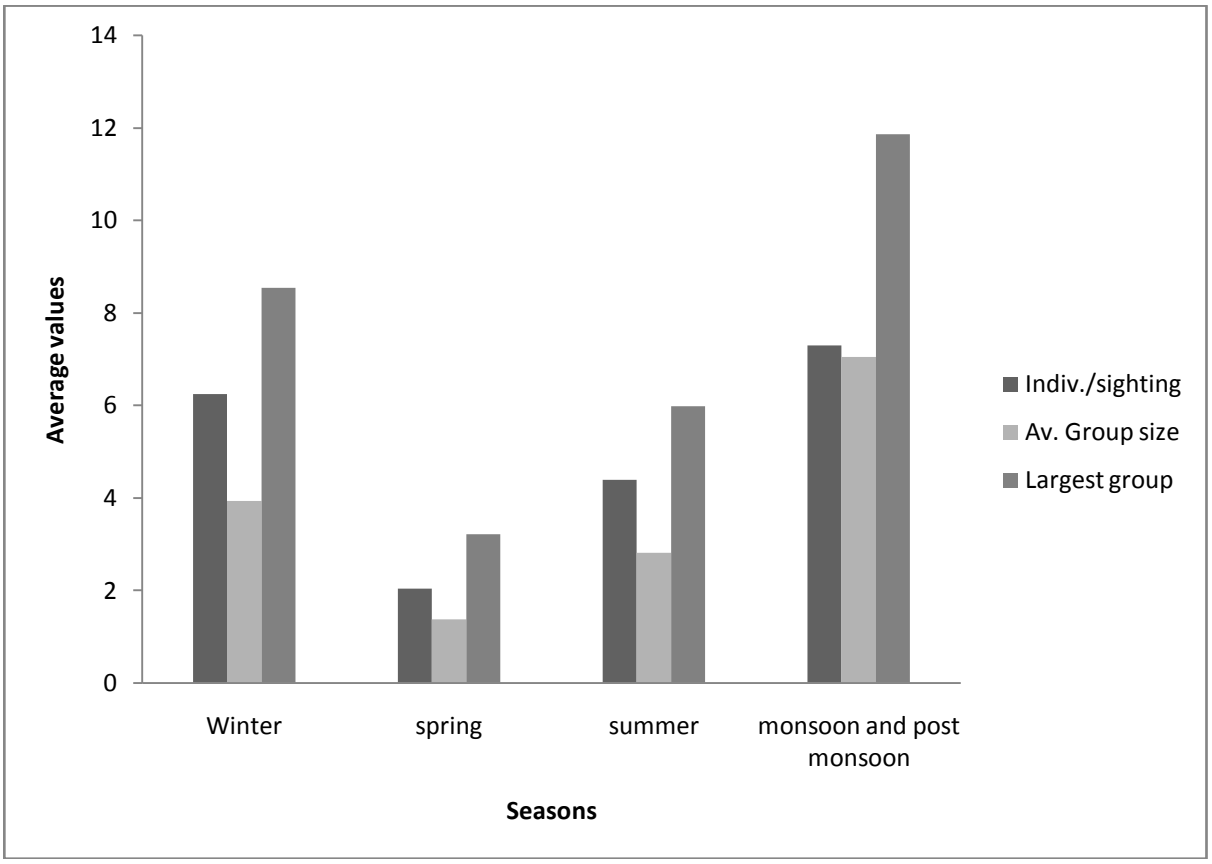


**Figure:-** Seasonal variation of population of Chukar Partridge, Alectoris Chukar at Mandal valley, Garhwal Himalaya, India.

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