

# Birds of oak forests in the Kumaon Himalaya, Uttar Pradesh, India

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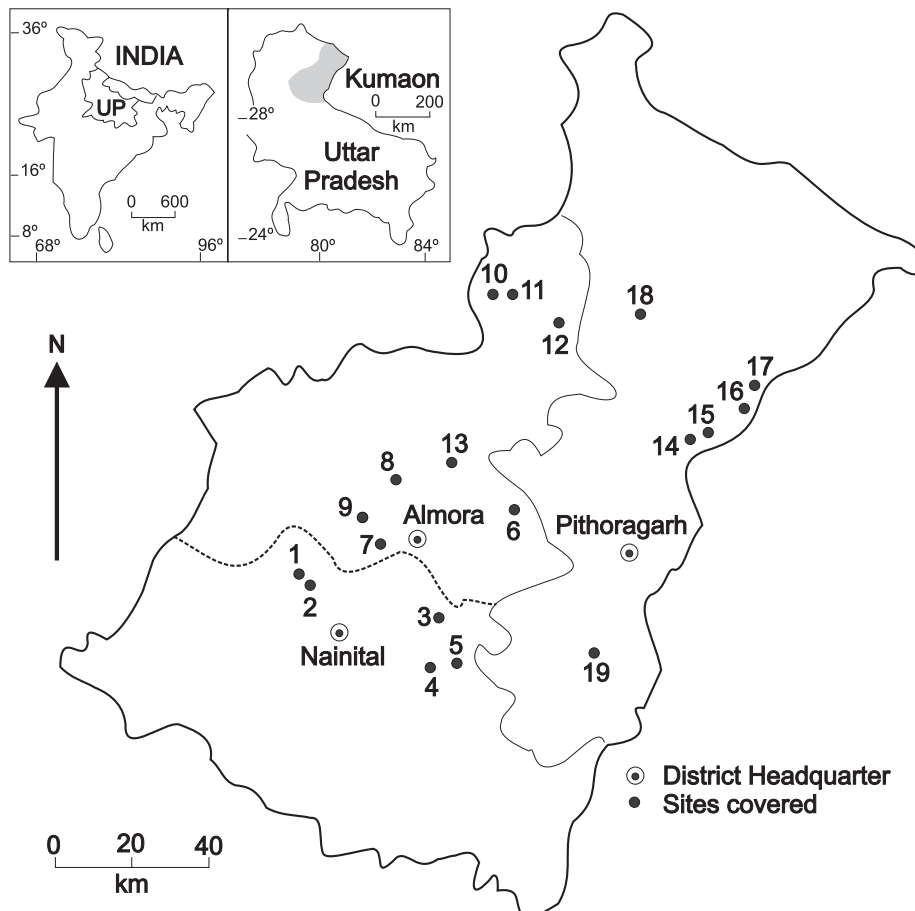
We surveyed 19 patches of oak forests in three districts of the Kumaon Himalaya to document the status of birds from April 1995 to July 1997. Totals of 203, 85 and 84 species of birds were recorded by using species richness counting, point counts and line transect methods respectively. Totals of 182, 81 and 162 bird species were recorded from Almora, Nainital and Pithoragarh districts respectively. These, together with records from other relevant published sources, have been combined to produce a checklist of 382 bird species for the Kumaon Himalaya. It is recommended that further surveys should be conducted in Almora and Nainital districts.

## INTRODUCTION

The oak forests in the Kumaon Himalaya, Uttar Pradesh have been studied in detail by plant ecologists (Saxena and Singh 1982, Saxena *et al.* 1985, Singh and Singh 1986). However, very little current information exists on major animal communities (e.g. avian, mammalian etc.) which inhabit oak forests in the Kumaon Himalaya. Therefore, we carried out extensive surveys in extant oak patches to document the status of birds from April 1995 to July 1997.

## STUDY AREA

The surveys were conducted in three districts i.e. Almora, Nainital and Pithoragarh of the Kumaon Himalaya (28°43'55" and 30°30'12"N latitude and 78°44'30" and 80°45'E longitude). We covered 19 oak patches of different sizes during these surveys (Fig. 1) between an altitudinal range of 1,200 to 3,500 m (Table 1). The Kumaon Himalaya are mountainous and divisible into subtropical (300 to 1,500 m), temperate (1,500 to 3,500 m) and alpine (>3,500 m) zones (Saxena



**Figure 1.** Location of sites covered during surveys in the Kumaon Himalaya (for site names, see Table 1)

**Table 1.** Sites covered during bird surveys in the Kumaon Himalaya

Site name	Code	Patch size	Altitudinal range
Naini Tal			
Kunjakharak	1	14.5	1900-2500
Vinayak	2	15.32	1900-2400
Mukteshwar	3	11.75	1500-2400
Gager	4	3.25	1700-2300
Maheshkhan	5	22	1900-2300
Almora			
Jageshwer	6	21	1800-2300
Sitlakhet	7	11.25	1700-2200
Pandavkhola	8	13.23	1800-2500
Ranikhet	9	3	1880-2100
Sundardunga	10	25.75	2500-3500
Pindari	11	21.5	2500-3500
Lahur	12	49.5	2100-3000
Binsar	13	11.25	1600-2500
Pithoragarh			
Dhaphadhura	14	34.36	1200-2500
Majhtham	15	25	1300-3200
Duku	16	52	1290-2700
Sobala	17	28.12	1900-3500
Munsiyari	18	30.5	2300-3000
Mechh	19	23.25	1800-2200

*et al.* 1985). The vegetation in the Kumaon Himalaya is predominantly forest, and mostly belongs to moist temperate type (Champion and Seth 1968). There are five main forest types found in the whole of the Kumaon Himalaya. These are sal forests (found up 1,200 m), pine forests (1,200-2,400 m), oak forests (1,300-3,200 m), mixed broadleaf forest (foothills to 3,300 m) and *Betula utilis* forest (3,200-3,500 m). The major tree species found in different sites included *Quercus leucotrichophora*, *Q. lanata*, *Q. floribunda*, *Q. semecarpifolia*, *Tsuga dumosa* and *Rhododendron arboreum*, in association with *Viburnum* species, *Myrica esculenta*, *Alnus nepaulensis*, *Sida oblonga*, *Lyonia ovalifolia*, *Persea duthieii* and *Lindera pulcherrima*. The dominant shrub species were *Myrsine africana*, *Arundinaria* species, *Berberis aristata*, *Rubus* species, *Daphnae* species, *Mahonia nepaulensis* and *Pyracantha* species.

## METHODOLOGY

### Sampling of birds

The sampling of bird communities was initiated in Ranikhet region in the pre-monsoon season of 1995, followed by a survey and intensive study in the Binsar Wildlife Sanctuary in Almora district in the pre-monsoon season of 1996. During the post-monsoon season of 1996, surveys were carried out in the Askot Wildlife Sanctuary in Pithoragarh district, and these were followed by surveys in the whole of the Kumaon Himalaya during the pre-monsoon season of 1997.

The species richness counting method (MacKinnon and Phillipps 1993), point count method (Bibby *et al.* 1992) and line transect method (Emlen 1971) were used for sampling birds in oak patches. The study was initiated in Ranikhet where 21 points were established in oak forest. The points were randomly established, with a minimum interval of 100-150 m and were monitored

from 07h00-08h30 in the morning and 16h00-17h30 in the evening. Bird species were recorded within a radius of 20 m. This was followed by sampling of birds by line transect and species richness counting methods in the Binsar Wildlife Sanctuary. Six line transects, each 500 m in length and 500 m apart, were monitored from 07h00-09h00 to census the birds. There were nine monitoring sessions of each transect. A total of 71 bird lists were compiled in Binsar using the species richness counting method. Each list consisted of only 20 consecutive different bird species seen. No species was included more than once on each list. This was followed by the sampling of the bird communities in five oak patches of the Askot Wildlife Sanctuary, using the species richness counting method, and a total of 54 bird lists were compiled.

During surveys in the pre-monsoon season of 1997, birds were sampled by monitoring of 121 points and by compiling 110 lists in different localities of the Kumaon Himalaya. The points were established randomly at each site and monitored for 20 minutes only as more than one point was monitored per day. Birds were counted within a fixed radius of 20 m. The points were separated by a minimum distance of at least 100 m. At each point, data were collected on the following parameters:

1. Bird species
2. Group size, sex (if identifiable)
3. Radial distance and vertical distance
4. Activity
5. Tree species
6. Portion of the tree which was used by bird (upper canopy, middle canopy, lower canopy, stem) and ground

### Data analysis

The total number of species for each site was calculated by adding the number of different species cumulatively from either point counts or from different lists compiled in the area. All bird records from point counts, line transect monitoring and species lists were pooled together to prepare a combined checklist for all surveyed sites. All individual sightings of birds were pooled for each locality and bird species were ranked according to following abundance categories:

- 1 = rare (0-5 sightings)
- 2 = common (6-25 sightings)
- 3 = abundant (26-50 sightings)
- 4 = very abundant (>50 sightings)

The species abundance scores for each site were summed together to calculate mean rank abundance score for a species reflecting its overall abundance for the Kumaon Himalaya. The values of mean rank abundance varied between 0 to 2.5. The total number of bird species were also classified according to their feeding guild and status following Ali and Ripley (1987), using the guild classification suggested by Karr (1971).

## RESULTS

Table 2 provides the number of bird species sampled by different methods. A total of 203, 85 and 84 species

**Table 2.** The number of species recorded at different sites in the Kumaon Himalaya by different sampling methods

Sites	SRCM		PC		LT	
	N	NS	N	NS	N	NS
<b>Nainital</b>						
Kunjakharak	4	39	8	22		
Vinayak	3	35	8	12		
Mukteshwar	4	42	8	21		
Gager	3	39	4	13		
Maheshkhan	5	49	8	29		
Total	19	78	36	35		
<b>Almora</b>						
Jageshwer	11	70	9	34		
Sitlakhet	5	57	4	21		
Pandavkhohli	3	44	4	15		
Ranikhet	-	-	78	62		
Sundardunga	18	108	4	7		
Pindari	8	73	12	22		
Lahur	6	53	8	22		
Binsar	71	154	-	-	54	84
Total	122	185	119	75	54	84
<b>Pithoragarh</b>						
Dhaphiadhura	34	111	8	28		
Majhtham		4	49	9	29	
Duku	9	86	6	16		
Sobala	31	117	12	20		
Munsiyari	5	58	4	14		
Mechh	3	41	4	9		
Total	86	160	43	40		
Overall total	254	203	198	85	54	84

SRCM = Species richness counting method, PC = Point count, LT = Line transect, N = Number of bird lists, points or transects, NS = Number of bird species

**Table 3.** The bird species sampled in different districts of the Kumaon Himalaya according to their feeding guild

District	I	G	F	O	C	N
Nainital	51	4	4	10	6	3
Almora	110	15	11	25	19	5
Pithoragarh	103	9	10	19	15	4
Overall total	119	18	14	28	19	5

**Table 4.** Bird species according to their status in three districts of the Kumaon Himalaya

District	R	RM	M	V
Nainital	65	10	3	-
Almora	151	26	8	-
Pithoragarh	130	23	7	-
Overall	166	27	10	-

R = Resident, R/M = Resident/migratory, M = Migrant, V = Vagrant

were sampled by compiling 254 bird lists, monitoring of 198 points and 54 line transects in three districts of the Kumaon Himalaya, respectively. A total of 197 species and other casual records of birds have been combined to produce a comprehensive checklist of 222 bird species, along with information on altitude, status and mean abundance values of each species for the whole of the Kumaon Himalaya (Appendix).

Table 3 provides the classification of 197 bird species according to their feeding guilds. The highest number (58.6%) of birds belonged to the insectivorous guild and the lowest number (2.4%) to the nectarivorous guild in the bird community in the Kumaon Himalaya. At district level the contribution of insectivorous birds varied slightly and was highest in Almora district (65.3%) and lowest in Pithoragarh district (59.4%). The birds were also classified according to their status in the Kumaon Himalayas (Table 4). The contribution of resident birds was maximum (81.7%) in the community and it varied very little between the three districts.

## DISCUSSION

The Kumaon Himalaya have been explored relatively poorly as far as bird communities are concerned. There are about 55 published accounts of birds from the Kumaon Himalayas. The most important of these were those by Hudson (1930), who documented 124 bird species occurring on seven hills around Nainital between 6,000 and 8,500 ft; Briggs (1931), who documented 83 bird species in Ranikhet forest, and Tak (1995), who documented 127, 94 and 82 species of birds from Nainital, Almora and Pithoragarh districts respectively.

The present study covered the same area in Ranikhet, as well as the same period of the year as that of Briggs (1931), who also observed the birds in the Cantonment forests lying between Chobatia and Dhobi Ghat Nullah in Ranikhet. We have compared the birds recorded in the present study with that of Briggs (1931) for Ranikhet forest only. Out of 83 birds recorded in 1931 and 114 birds in 1995, there are 68 common species, 15 species are exclusive to 1931 and 46 species were recorded only in 1995. The exclusive birds in 1931 include the Golden Eagle *Aquila chrysaetos*, Collared Falconet *Microhierax caerulescens*, Velvet-fronted Nuthatch *Sitta frontalis* and Long-billed Vulture *Gyps indicus*. It is surprising that many species found to be quite common in Ranikhet in 1995, such as Grey-headed Woodpecker *Picus canus*, Lesser Yellow-nape *P. chlorolophus*, and four leaf warblers *Phylloscopus* were not found at all by Briggs (1931). Briggs made observations on birds for a period of 42 days only, and it is likely that he missed many species that we recorded in our sampling. We feel that more work is required in the Kumaon Himalaya, especially in Nainital and Almora districts for a more comprehensive comparison of status of several species such as Cheer Pheasant *Catreus wallichii* and Himalayan Monal *Lophophorus impejanus*.

One of the major objectives of our two years study on the bird communities was to evaluate the different sampling methods. The line transect (Emlen 1971) and point count methods (Bibby *et al.* 1992) have been used very extensively to sample bird communities. We initially thought of using the line transect method in the Kumaon Himalaya, considering its robustness and ease in computation. However, there were no previous studies providing an indication of the efficiency of the method in sampling birds, except our own efforts in Ranikhet, where birds were sampled by using point counts as well as the line transect method, in 1995. We compared the proportion of birds sampled on point counts as well as

on line transects with that of our checklist of birds of Ranikhet based on random searches. A maximum of approximately 60% of birds was sampled by both methods and there was no significant difference in the number of birds sampled by point and line transects ( $P > 0.05$ ). Carol Inskipp (pers. comm.) suggested the use of the species richness counting method for further surveys. This method emerged as the most efficient method of sampling bird populations based on the number of bird species recorded per unit effort compared to point counts and line transect methods. Therefore, we recommend use of the species richness counting method for sampling the birds in general ornithological surveys in the Himalayas.

The unequal sampling of birds by different methods at different sites does not allow any rigorous treatment of differences in species richness of each site. We believe a majority of sites such as Pindari in Almora and Kunjakhark in Nainital still require intensive sampling of bird communities. Considering this, further surveys are recommended in these regions.

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## REFERENCES

- Anon. (1929) Northern Indian Black Partridge (*Francolinus f. asiae*) in the Kumaon hills. *J. Darjeeling Nat. Hist. Soc.* 4: 70-71. [= An]
- Abdulali, H. (1952) Finn's Baya (*Ploceus megarhynchus* Hume). *J. Bombay Nat. Hist. Soc.* 51: 200-204. [= A]
- Ahmed, A. (1993) Preliminary ecological studies in 1991 on the White-crested Kalij Pheasant at Ranikhet, Kumaon Himalayas, Uttar Pradesh, India. Pp. 73-75 in D. Jenkins, ed. *Pheasants in Asia 1992*. Reading: World Pheasant Association; *W.P.A. J.* 17 & 18: 85 (abstract). [= Ah]
- Ahmed, A. (1997) Birding on treks around Nainital. *Newsletter for Birdwatchers* 37: 41-42. [= Ahm]
- Ali, Sálím (1935) Mainly in quest of Finn's Baya. *Indian Forester*?: 365-374. [= Al]
- Ali, Sálím and Crook, J. H. (1959) Observations on Finn's Baya (*Ploceus megarhynchus* Hume) rediscovered in the Kumaon terai, 1959. *J. Bombay Nat. Hist. Soc.* 56: 457-483. [= A&C]
- Ali, Sálím and Ripley, S. D. (1987) *Compact handbook of birds of India and Pakistan*. New Delhi: Oxford University Press.
- Ambedkar, V. C. (1969) Observations on the breeding biology of Finn's Baya (*Ploceus megarhynchus* Hume) in the Kumaon terai. *J. Bombay Nat. Hist. Soc.* 65: 596-607. [= Am<sup>1</sup>]
- Ambedkar, V. C. (1970) Nests of the Baya, *Ploceus philippinus* (Linnaeus) on telegraph wires. *J. Bombay Nat. Hist. Soc.* 66: 624. [= Am<sup>2</sup>]
- Ambedkar, V. C. (1972) On the breeding biology of the Black-throated [*Ploceus benghalensis* (Linnaeus)] and the Streaked Weaver Birds [*Ploceus manyar flaviceps* (Lesson)] in the Kumaon terai. *J. Bombay Nat. Hist. Soc.* 69: 268-282. [= Am<sup>3</sup>]
- Anderson, A. (1878) On a new species of Indian *Prinia*. *Proc. Zool. Soc. London* 1878: 370-371. [= And]
- Bibby, C. J., Burgers, N. D. and David, A. H. (1992) *Bird census techniques*. Academic Press.
- Briggs, F. S. (1931) Birds observed in the neighbourhood of Ranikhet. *J. Bombay Nat. Hist. Soc.* 34: 1072-1079. [= B]
- Brooks, W. E. (1869) Notes on birds observed near Nynee Tal and Almorah, from April to June 1868. *Ibis* (2)5: 43-60. [= Br]
- Champion, H. G. and Seth, S. K. (1968) *A revised survey of the forest types of India*. Government of India publication, New Delhi.
- Davis, D. (1946) Occurrence of the White-bellied or Snow Pigeon (*Columba leuconota leuconota*) at a low level in the Kumaon Himalaya. *J. Bombay Nat. Hist. Soc.* 46: 184-185. [= D]
- Drijvers, R. (1995) Horned Grebe *Podiceps auritus*: a new species for India. *Forktail* 10: 175-176. [= Dr]
- Emlen, J. T. (1971) Population densities of birds derived from transect counts. *Auk* 88: 323-342.
- Field, F. (1922) Notes on the nesting of the Himalayan Tree Creeper (*Certhia himalayana*). *J. Bombay Nat. Hist. Soc.* 28: 1138-1139. [= F]
- Finn, F. (1899) (Exhibition of two living specimens of a new species of Indian weaver-bird.) *Proc. Asiatic Soc. Bengal* 1899: 77-78. [= Fi]
- Ganguli, U. (1966) Three weeks of birdwatching in Ranikhet in autumn. *Newsletter for Birdwatchers* 6(2): 3-6. [= G]
- Ghorpade, K. D. (1976) Bird notes on an entomological expedition to the Pindari glacier, Kumaon Himalaya. *Newsletter for Birdwatchers* 16(1): 2-9. [= Gh]
- Gray, J. E. (1829) Pp. 29, 48 in C. Cuvier and E. Griffith, *The animal kingdom, Aves* 3. [Gray]
- Gray, J. E. and Hardwicke, T. (1830-1835) *Illustrations of Indian Zoology: chiefly selected from the collection of Major-General Hardwicke*. 2 vols. London: Treutel, Wurtz, Treuttel, Jun. & Richter. [= G&H]
- Griffith, E. (1829) The class Aves arranged by the Baron Cuvier, with specific descriptions by Edward Griffith..and Edward Pidgeon.. The additional species inserted in the text of Cuvier by John Edward Gray. In G. L. C. F. D. Cuvier *The animal kingdom arranged in conformity with its organization*. London: G. B. Whittaker. [= Gr]
- Gupta, P. D. (1998) A report on a visit to Kumaon Hills. *Samsad News* 16(12): 2 pp.
- Hardwicke, T. (1827) Description of two new birds from Nepal. *Trans. Linn. Soc. London* 15: 166-169. [= Ha]
- Hartert, E. (1917) On some Rallidae. *Nov. Zool.* 24: 265-274. [= Har]
- Hudson, C. (1930) A list of some birds of the seven hills of Nainital, U.P. *J. Bombay Nat. Hist. Soc.* 34: 821-827. [= H]
- Hume, A. O. (1869) (Letter about various Indian birds.) *Ibis* (2)5: 355-357. [= Hum]
- Hume, A. O. (1870) (Letter about various Indian birds.) *Ibis* (2)6: 283-288. [= Hu]
- Illyas, O. (1996) World Birdwatch - 95. *Newsletter for Birdwatchers* 36: 24-26. [= Il]
- Irby, L. H. (1861) Notes on birds observed in Oudh and Kumaon. *Ibis* 3: 217-251. [= I]
- Jepson, P. (1987b) Recent reports. *Oriental Bird Club Bull.* 6: 36-40. [= J]
- Karr, J. R. (1971) Structure of avian communities in selected Panama and Illinois habitats. *Ecol. Monograph* 41: 348-357.
- Kazmierczak, K. and Singh, R. (1998) *A birdwatcher's guide to India*. Sandy: Prion. [= K&S]
- Kinnear, N. B. and Whistler, H. (1930) (Description of *Sitta castaneiventris almorae*.) *Bull. Brit. Orn. Club* 51: 27. [= K&W]
- Kloss, C. B. (1918) On birds recently collected in Siam. Part I. Phasianidae-Eurylaemidae. *Ibis* (10)6: 76-114. [= K]
- Koelz, W. (1950) New subspecies of birds from southwestern Asia. *Amer. Mus. Novit.* 1452: 10 pp. [= Ko]
- Koelz, W. (1954) Ornithological studies. I. New birds from Iran, Afghanistan, and India. *Contrib. Inst. Regional Exploration* 1: 1-32. [= Koe]
- Lesson, R. P. (1826-1829) In *Dictionnaire des sciences naturelles*, ed. Levrault. [= L]
- MacKinnon, J. and Phillipps, K. (1993) *The birds of Borneo, Sumatra, Java and Bali*. Oxford: Oxford University Press.
- Maheswaran, G. (1996) World Birdwatch - Nainital and Corbett Tiger Reserve. *Newsletter for Birdwatchers* 36: 26-28. [= M]
- Meinertzhagen, R. (1927) Systematic results of birds collected at high altitudes in Ladak and Sikkim. *Ibis* (12)3: 363-422, 571-633.
- Moore, F. (1856) Notice of some new species of birds. *Proc. Zool. Soc. London* 1855: 215-217. [= Mo]
- Naoraji, R. and D'Silva, C. (1998) Sighting of Red Kite *Milvus milvus* at Ranikhet. *J. Bombay Nat. Hist. Soc.* 95: 339-340. [= N&D]

- Narang, M. L. and Lamba, B. S. (1979) Occurrence of Nepal Dark Rosefinch, *Carpodacus n. nipalensis* (Hodgson) at Jogeshwar near Almora (U.P.). *Cheetal* 20(2-3): 60. [= N&L]
- Newsome, J. (1979) Birding in Almora. *Newsletter for Birdwatchers* 19(7): 10. [= N]
- Osmaston, A. E. (1916) Curious habits of wood-peckers in the Kumaon hills. *J. Bombay Nat. Hist. Soc.* 24: 363-366. [= O]
- Prater, S. H. (1940) The occurrence of the Yellow-bellied Flowerpecker (*Pachyglissa melanoxantha* Hodgs.) at Almora, U. P. *J. Bombay Nat. Hist. Soc.* 42: 187. [= P]
- Rao, V. U. S. (1965) Notes on some birds observed at Naini Tal. *Newsletter for Birdwatchers* 5(8): 7. [= R]
- Rasool, T. J. (1984) Some observations on natural Cheer Pheasant, *Catreus wallichii*, population at Mukteswar Reserve Forest, Kumaon, Naini Tal, U. P. *J. Bombay Nat. Hist. Soc.* 81: 469-472. [= Ra]
- Robson, C. (1985) Recent reports: India. *Oriental Bird Club Bull.* 2: 36-37. [= Ro]
- Robson, C. (1996) From the field: India. *Oriental Bird Club Bull.* 24: 60. [= Rob]
- Saxena, A. K. and Singh, J. S. (1982) A phytosociological analysis of woody species in forest communities of a part of Kumaon Himalayas. *Végétatio* 50: 3-22.
- Saxena, A. K., Tanuja Pandey and Singh, J. S. (1985) Altitudinal variation in the vegetation of Kumaon Himalaya. Pp. 43-66 in D. N. Raoseval, ed. *Perspectives in environmental botany*. Lucknow: Print House.
- Sharpe, R. B. (1890) Notes on specimens in the Hume collection of birds. No. 6. On the Coraciidae of the Indian region, with description of some new species. *Proc. Zool. Soc. London* 1890: 546-552. [= Sh]
- Singh, J. S. and Singh, S. P. (1986) Structure and functioning of central Himalayan oak forest. *Proc. Indian Acad. Sci. (Plant Sciences)* 147: 250-260.
- Singh, S. R. and Singh, A. (1980) A brief report of birding in Nainital during Feb.-March. *Newsletter for Birdwatchers* 20(8): 4-6. [= Si]
- Smetacek, V. (1975) On the increasing occurrence of typically plains-birds in the Kumaon Hills. *J. Bombay Nat. Hist. Soc.* 71: 299-302. [= S]
- Smythies, B. E. (1943) On the occurrence of the Yellow-headed Fantail Warbler (*Cisticola exilis tyleri* Jerdon) in the Kumaon tarai, U. P. *J. Bombay Nat. Hist. Soc.* 44: 292-296. [= Sm]
- Sridharan, E. (1974) Birdwatching around Naini Tal. *Newsletter for Birdwatchers* 14(10): 5-7. [= Sr]
- Tak, P. C. (1995) Aves. Pp 169-200 in Director, ed. *Himalayan ecosystem series: fauna of western Himalaya, Part I, Uttar Pradesh*. Calcutta: Zoological Survey of India. [= T]
- Tak, P. C. and Sati, J. P. (1994) Birds of Goriganga valley, Kumaon Himalaya. *Cheetal* 33(1): 17-26. [= T&S]
- Vigors, N. A. (1830) (Exhibition of specimens of several species of birds, apparently undescribed, from the Himalayan mountains.) *Proc. Comm. Zool. Soc. London* 1830: 7-9. [= V]
- Walton, H. J. (1900) Notes on birds collected in Kumaon. *J. Asiatic Soc. Bengal* 69: 155-168. [= W]
- Whistler, H. (1931b) (Description of new races.) *Bull. Brit. Orn. Club* 52: 40-41. [= Wh]
- Whympers, S. L. (1902a) Occurrence of the Chesnut-headed Shortwing (*Oligura castaneicoronata*) and nesting of the Black-chinned Yuhina (*Yuhina nigrimenta*) in Kumaon. *J. Bombay Nat. Hist. Soc.* 14: 607. [= Why]
- Whympers, S. L. (1902b) Birds' nesting in Kumaon. *J. Bombay Nat. Hist. Soc.* 14: 624-626. [= Whym]
- Yahya, H. S. A. (1990c) Waking time of some birds in Kumaon hills. *Newsletter for Birdwatchers* 30(5 & 6): 16. [= Y]
- Young, L., Garson, P. J. and Kaul, R. (1987) Calling behaviour and social organization in the Cheer Pheasant: implications for survey technique. *World Pheasant Association J.* 12: 30-43.
- Young, L. and Kaul, R. (1987) Conservation of Himalayan pheasants in Kumaon. Pp. 684-691 in Y. P. S. Pangley and S. C. Joshi, eds., *Western Himalaya: environment, problems and development*, 2. Nainital: Gyanodaya Prakashan. [Y&K]

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## APPENDIX

### Bird species recorded in Kumaon during surveys from 1995-1997 and by other authors

SPECIES	Altitudinal range (m) (1995-1997 surveys)	Almora		Nainital		Pithoragarh	
		Localities	Other refs	Localities	Other refs	Localities	Other refs
CHUKAR <i>Alectoris chukar</i>	1800				I, S		T&S
BLACK FRANCOLIN <i>Francolinus francolinus</i>	1600-1800	3, 10	B, T, W		H, I, K&S, M, R, T	2	An, T, T&S
HILL PARTRIDGE <i>Arborophila torqueola</i>	2000-2400	3, 11, 12, 14	N	18	H, I, K&S, T, Y	2, 5-7	
HIMALAYAN QUAIL <i>Ophrysia superciliosa</i>					K&S		
WESTERN TRAGOPAN <i>Tragopan melanocephalus</i>			Gray				
SATYR TRAGOPAN <i>Tragopan satyra</i>	2800-3100	6			I		
KOKLASS PHEASANT <i>Pucrasia macrolopha</i>	1800-2600	3, 6, 14	G&H, Gr, L, T, W		H, I, K&S, M, T, Y, Yo	2, 8	Br, T
HIMALAYAN MONAL <i>Lophophorus impejanus</i>	2600-3200	6	T, W		I, T		T
RED JUNGLEFOWL <i>Gallus gallus</i>			T		H, T		Br, T
KALIJ PHEASANT <i>Lophura leucomelanos</i>	1800-2500	3, 6, 10-12, 14, 15	Ah, O, T, W	1, 13, 16-18	Ahm, H, I, K&S, Si, T, Y, Yo	2-9	Br, T, T&S
CHEER PHEASANT <i>Catreus wallichii</i>	2500	11	Ha, II, W		H, I, K&S, Ra, T, Yo		

SPECIES	Altitudinal range (m)	Almora		Nainital		Pithoragarh	
		Localities	Other refs	Localities	Other refs	Localities	Other refs
INDIAN PEAFOWL <i>Pavo cristatus</i>			T		T		T
MALLARD <i>Anas platyrhynchos</i>					H, T		
SPECKLED PICULET <i>Picumnus innominatus</i>	2200		G		K&S	5	
GREY-CAPPED PYGMY WOODPECKER <i>Dendrocopos canicapillus</i>			W		K&S		T
BROWN-FRONTED WOODPECKER <i>Dendrocopos auriceps</i>	1800-2200	3,,10, 11,14	Br, G, T, W	16,17	H, K&S, M, Sr, T	4-9	
FULVOUS-BREASTED WOODPECKER <i>Dendrocopos macei</i>					K&S		
YELLOW-CROWNED WOODPECKER <i>Dendrocopos maharattensis</i>			B, T		K&S		
RUFIOUS-BELLIED WOODPECKER <i>Dendrocopos hyperythrus</i>	2100-2700	3,6,11,15	G, W	1,13,16,17	Ah, Br, K&S, O	2-9	
HIMALAYAN WOODPECKER <i>Dendrocopos himalayensis</i>	1800-2100	3,6,10-12, 14,15	Br, G, T, W	13,17	Ah, Br, H, I, K&S, Si, Sr	2-9	T
RUFIOUS WOODPECKER <i>Celeus brachyurus</i>					K		
LESSER YELLOWNAPE <i>Picus chlorolophus</i>	1800-2200	3,19	G		K&S		
GREATER YELLOWNAPE <i>Picus flavinucha</i>	1700-2400	3,8			Ko, K&S	2,8	T&S, Whym
STREAK-THROATED WOODPECKER <i>Picus xanthopygaeus</i>			O		K&S		T
SCALY-BELLIED WOODPECKER <i>Picus squamatus</i>	1800-2400	3,10,11, 14,19	G, T, W		H, K&S, M, Sr, T	2,8,7	
GREY-HEADED WOODPECKER <i>Picus canus</i>	1800-2500	3,10-12, 14	G, W	16-18	K&S	2,4,8-9	T
BLACK-RUMPED FLAMEBACK <i>Dinopium benghalense</i>							T
GREATER FLAMEBACK <i>Chrysocolaptes lucidus</i>			W		K&S		
GREAT BARBET <i>Megalaima virens</i>	1800-2600	3,6,10, 11,19	B, G, T, W	1,16,18	Ah, H, I, K&S, Si, Sr, T, Y	2,5,8,9	T&S
BROWN-HEADED BARBET <i>Megalaima zeylanica</i>					M		T
LINEATED BARBET <i>Megalaima lineata</i>					K&S		
BLUE-THROATED BARBET <i>Megalaima asiatica</i>	2100		W		K&S	4	
COPPERSMITH BARBET <i>Megalaima haemacephala</i>					S		T
INDIAN GREY HORNBILL <i>Ocyclus birostris</i>					K&S		
GREAT HORNBILL <i>Buceros bicornis</i>					H		
COMMON HOOPOE <i>Upupa epops</i>	1800-2200	3,11,14	Br, T, W		M, Si, Sr, T	8,9	T&S
INDIAN ROLLER <i>Coracias benghalensis</i>	800					Jauljivi	T, T&S
DOLLARBIRD <i>Eurystomus orientalis</i>			W		Sh		
COMMON KINGFISHER <i>Alcedo atthis</i>			W		H, M		
WHITE-THROATED KINGFISHER <i>Halcyon smyrnensis</i>	1000	Salyani	T		H, M, Sr		T&S
CRESTED KINGFISHER <i>Megaceryle lugubris</i>			W		H, I, T		T, T&S
PIED KINGFISHER <i>Ceryle rudis</i>	12300			Bearsinghia	M		
BLUE-BEARDED BEE-EATER <i>Nyctornis athertoni</i>					K&S		
GREEN BEE-EATER <i>Merops orientalis</i>					M, S		T
CHESTNUT-HEADED BEE-EATER <i>Merops leschenaulti</i>	2100				Si	9	T&S
PIED CUCKOO <i>Clamator jacobinus</i>			Br, W				
CHESTNUT-WINGED CUCKOO <i>Clamator coromandus</i>					I		

SPECIES	Altitudinal range (m)	Almora		Nainital		Pithoragarh	
		Localities	Other refs	Localities	Other refs	Localities	Other refs
LARGE HAWK CUCKOO <i>Hierococyx sparveriioides</i>	2000-2500	3, 10, 11, 14			H, T, Y	2, 7	
INDIAN CUCKOO <i>Cuculus micropterus</i>	1900-2400	3, 6, 10, 12	B, T, W			4, 8	
EURASIAN CUCKOO <i>Cuculus canorus</i>	1800-2400	3, 6, 11, 12	B, Br, T, W		H, I, T	7	
ORIENTAL CUCKOO <i>Cuculus saturatus</i>			B, T, W		H, T		
ASIAN KOEL <i>Eudynamys scolopacea</i>			Br, T				
GREATER COUCAL <i>Centropus sinensis</i>					I, S		
ALEXANDRINE PARAKEET <i>Psittacula eupatria</i>					K&S		
ROSE-RINGED PARAKEET <i>Psittacula krameri</i>	900			M		T Baram	
SLATY-HEADED PARAKEET <i>Psittacula himalayana</i>	1800-2400	3, 14	G, R, T, W	13	Ah, Br, H, K&S, M, Sr, T	2-5, 8	T, T&S
PLUM-HEADED PARAKEET <i>Psittacula cyanocephala</i>	1800-2200	3, 10, 14	T		I, K&S, S, T		T, T&S
RED-BREASTED PARAKEET <i>Psittacula alexandri</i>	2300			13	Br, K&S		
HIMALAYAN SWIFTLET <i>Collocalia brevirostris</i>							T&S
WHITE-THROATED NEEDLETAIL <i>Hirundapus caudacutus</i>	2000-2600	6, 11, 14			?Sr	4, 5, 9	
WHITE-RUMPED NEEDLETAIL <i>Zonavena sylvatica</i>	1800-2400	3, 11, 15, 19				8, 7	
ASIAN PALM SWIFT <i>Cypsiurus balasienis</i>	2000-2500	3, 6				8, 7	
ALPINE SWIFT <i>Tachymarptis melba</i>	1900-2600	3, 6, 11	R, T		H, K&S, Sr, T	5, 8	Koe: Rathi
COMMON SWIFT <i>Apus apus</i>	1800-2400	3					
FORK-TAILED SWIFT <i>Apus pacificus</i>	1900		?W Salyani				
HOUSE SWIFT <i>Apus affinis</i>			Br, R, T, W		Br, H, K&S, T		T&S
MOUNTAIN SCOPS OWL <i>Otus spilocephalus</i>			B, G, T		H, T		
COLLARED SCOPS OWL <i>Otus bakkamoena</i>	2000		Salyani				
SPOT-BELLIED EAGLE OWL <i>Bubo nipalensis</i>							T&S
TAWNY FISH OWL <i>Ketupa flavipes</i>							Br
BROWN WOOD OWL <i>Strix leptogrammica</i>	1800-2400	3	?W		H	2	
TAWNY OWL <i>Strix aluco</i>					H, T		
COLLARED OWLET <i>Glaucidium brodiei</i>	1800-2500	3	R, T	16	H, K&S, Si, T, Y	2, 8, 9	
ASIAN BARRED OWLET <i>Glaucidium cuculoides</i>	2000		G Salyani		H, K&S, M, T		T&S
JUNGLE OWLET <i>Glaucidium radiatum</i>			?W		K&S		
SPOTTED OWLET <i>Athene brama</i>	900					Baram	
BROWN HAWK OWL <i>Ninox scutulata</i>	2000		Salyani				
GREY NIGHTJAR <i>Caprimulgus indicus</i>	1600-2300	3, 19		13		4-8, 9	
LARGE-TAILED NIGHTJAR <i>Caprimulgus macrurus</i>	1700-2200	3			M		
ROCK PIGEON <i>Columba livia</i>	1200		Gh, W			Didihat	T, T&S
HILL PIGEON <i>Columba rupestris</i>	2400-2700	10, 11, 12					
SNOW PIGEON <i>Columba leuconota</i>	2000-2600	6				5, 8	D, T&S
ORIENTAL TURTLE DOVE <i>Streptopelia orientalis</i>	1200-2500	3, 6, 10-12, 14, 19	G, T, W	1, 13, 16-18	H, K&S, M, Si, T	2-8, 9	Br, T&S

SPECIES	Altitudinal range (m)	Almora		Nainital		Pithoragarh	
		Localities	Other refs	Localities	Other refs	Localities	Other refs
LAUGHING DOVE <i>Streptopelia senegalensis</i>			Br, O, T		H, T		
SPOTTED DOVE <i>Streptopelia chinensis</i>	1800-2000	10	G, T, W		H, Sr, T	2	T, T&S
EURASIAN COLLARED DOVE <i>Streptopelia decaocto</i>	1800-2400	3,10,15	T, W		I	2	T, T&S
EMERALD DOVE <i>Chalcophaps indica</i>	900					Baram	
YELLOW-FOOTED GREEN PIGEON <i>Treron phoenicoptera</i>					H		
WEDGE-TAILED GREEN PIGEON <i>Treron sphenura</i>	1800-2400	3,10	Br, T, W		H, I, T	2,5,8	
WHITE-BREASTED WATERHEN <i>Amaurornis phoenicurus</i>					S		
RUDDY-BREASTED CRAKE <i>Porzana fusca</i>					Har		
COMMON MOORHEN <i>Gallinula chloropus</i>					M		
COMMON COOT <i>Fulica atra</i>					I		
EURASIAN WOODCOCK <i>Scolopax rusticola</i>					H, I, K&S, T		
COMMON SNIFE <i>Gallinago gallinago</i>	1800	3					
COMMON REDSHANK <i>Tringa totanus</i>							T&S
GREEN SANDPIPER <i>Tringa ochropus</i>					H, I, T		
GREAT THICK-KNEE <i>Esacus recurvirostris</i>					K&S		
IBISBILL <i>Ibidorhyncha stuthersii</i>					K&S		
LONG-BILLED PLOVER <i>Charadrius placidus</i>					K&S		
LITTLE RINGED PLOVER <i>Charadrius dubius</i>					H, T		
RED-WATTLED LAPWING <i>Vanellus indicus</i>	1200	Basarkhet	R, T		M		T
SMALL PRATINCOLE <i>Glareola lactea</i>					K&S		
WHISKERED TERN <i>Chlidonias hybridus</i>					H, I, T		Br
OSPREY <i>Pandion haliaetus</i>					I		
BLACK-SHOULDERED KITE <i>Elanus caeruleus</i>					S		
BLACK KITE <i>Milvus migrans</i>	1800	3	Br, G, O, T, W		Br, H, I, M, Sr, T		T, T&S
RED KITE <i>Milvus milvus</i>			N&D				
BRAHMINY KITE <i>Haliastur indus</i>					H, T		
LESSER FISH EAGLE <i>Ichthyophaga humilis</i>					H, T		T
LAMMERGEIER <i>Gypaetus barbatus</i>	1800-3000	3,6,11,12	Br, G, I, N, T, W	1,13,18	Br, H, I, K&S, M, Si, T	2-7	T, T&S
EGYPTIAN VULTURE <i>Neophron percnopterus</i>			Br, G, I, T		H, I, K&S, M, T		T&S
WHITE-RUMPED VULTURE <i>Gyps bengalensis</i>			G, O, T		H, K&S, Sr, T		
LONG-BILLED VULTURE <i>Gyps indicus</i>			O, T		K&S		T
HIMALAYAN GRIFFON <i>Gyps himalayensis</i>	1800-3000	3,6,11,12, 14,15,19	G, O, T	1,13,16,18	Ah, H, K&S, M, Sr, T	2-9	T, T&S
EURASIAN GRIFFON <i>Gyps fulvus</i>					K&S		T
RED-HEADED VULTURE <i>Sarcogyps calvus</i>	2000-2200	3	Br, G, O, T		Br, H, I, K&S, M, T	2,5,8	T
CINEREOUS VULTURE <i>Aegyptius monachus</i>					K&S		
CRESTED SERPENT EAGLE <i>Spilornis cheela</i>	1900-2500	3,6,11,12	T, W	1,13,18	K&S, T	2-7	T, T&S



SPECIES	Altitudinal range (m)	Almora		Nainital		Pithoragarh	
		Localities	Other refs	Localities	Other refs	Localities	Other refs
PALLID HARRIER <i>Circus macrourus</i>							T&S
CRESTED GOSHAWK <i>Accipiter trivirgatus</i>					K&S		
SHIKRA <i>Accipiter badius</i>	2200	3	O, T				
?BESRA <i>Accipiter virgatus</i>			?W				
EURASIAN SPARROWHAWK <i>Accipiter nisus</i>	1600-2700	3,11,14				2-7	T&S
NORTHERN GOSHAWK <i>Accipiter gentilis</i>	1700-2400	3				8, 7	
WHITE-EYED BUZZARD <i>Butastur teesa</i>			Br				
COMMON BUZZARD <i>Buteo buteo</i>					K&S		
LONG-LEGGED BUZZARD <i>Buteo rufinus</i>					H, K&S, T		
BLACK EAGLE <i>Ictinaetus malayensis</i>	1800-2500	3,10,14		1,13	H, I, K&S, M, T	2,5,8	
STEPPE EAGLE <i>Aquila nipalensis</i>			G		H, K&S, T		
IMPERIAL EAGLE <i>Aquila heliaca</i>					H, T		
GOLDEN EAGLE <i>Aquila chrysaetos</i>			R, T		K&S		
BONELLI'S EAGLE <i>Hieraetus fasciatus</i>	2000-2300	3	Br			8	
CHANGEABLE HAWK EAGLE <i>Spizaetus cirrhatus</i>	1700-1800	3	} G		Br	5,8	
MOUNTAIN HAWK EAGLE <i>Spizaetus nipalensis</i>	2200-2400	3	}		K&S	2	
COLLARED FALCONET <i>Microhierax caerulescens</i>			R, T				Br
COMMON KESTREL <i>Falco tinnunculus</i>	1800-2400	3,11,12, 14,19	Br, G, O, T, W	1	H, T	2-7	T&S
EURASIAN HOBBY <i>Falco subbuteo</i>	1800	10	?W		K&S, Sr		
LAGGAR FALCON <i>Falco jugger</i>					H		
PEREGRINE FALCON <i>Falco peregrinus</i>					K&S		T
LITTLE GREBE <i>Tachybaptus ruficollis</i>					H, T		
?GREAT CRESTED GREBE <i>Podiceps cristatus</i>					?I		
HORNED GREBE <i>Podiceps auritus</i>					Dr		
INDIAN CORMORANT <i>Phalacrocorax fuscicollis</i>				M			
GREAT CORMORANT <i>Phalacrocorax carbo</i>					H, T		
CATTLE EGRET <i>Bubulcus ibis</i>					S		
INDIAN POND HERON <i>Ardeola grayii</i>					M, S		
BLACK STORK <i>Ciconia nigra</i>	1200		G				
?ASIAN FAIRY BLUEBIRD <i>Irena puella</i>		Basarkhet			M!		
GOLDEN-FRONTED LEAFBIRD <i>Chloropsis aurifrons</i>					K&S		
ORANGE-BELLIED LEAFBIRD <i>Chloropsis hardwickii</i>	2300		W			4	Whym
BAY-BACKED SHRIKE <i>Lanius vittatus</i>							Br
LONG-TAILED SHRIKE <i>Lanius schach</i>			Br, G, Gh		M		T, W
GREY-BACKED SHRIKE <i>Lanius tephronotus</i>	2100-2200	3,11,12			K&S	2,5,8	T&S
EURASIAN JAY <i>Garrulus glandarius</i>	1800-2500	3,6,10-12, 14,15,19	O, T, W	1,13,16-18	H, K&S, S, Sr, T	2-9	Br

SPECIES	Altitudinal range (m)	Almora		Nainital		Pithoragarh	
		Localities	Other refs	Localities	Other refs	Localities	Other refs
BLACK-HEADED JAY <i>Garrulus lanceolatus</i>	1800-2400	3,6,10-12,14,15,19	G, T, W	1,13,16-18	H, I, K&S, Si, T	2-7	Br, T
YELLOW-BILLED BLUE MAGPIE <i>Urocissa flavirostris</i>	2100-2600	6,10-12,19	T, W		M	2-7	
RED-BILLED BLUE MAGPIE <i>Urocissa erythrorhyncha</i>	1800-2200	3,10,11,14,19	G, T, W	16	Ah, H, I, K&S, M, Sr, T	2,5,8	T, T&S
COMMON GREEN MAGPIE <i>Cissa chinensis</i>							Whym
RUFIOUS TREEPIE <i>Dendrocitta vagabunda</i>			G				
GREY TREEPIE <i>Dendrocitta formosae</i>	1800-2300	3,10,11,14,15,19	W	18	K&S, M	2,5	T, T&S
SPOTTED NUTCRACKER <i>Nucifraga caryocatactes</i>					K&S		
RED-BILLED CHOUGH <i>Pyrhcorax pyrrhcorax</i>							T&S
YELLOW-BILLED CHOUGH <i>Pyrhcorax graculus</i>	2600	11					T&S
HOUSE CROW <i>Corvus splendens</i>	1700-2000	3,12,14,15,19	B, T, W	1,13,16-18	Si, T	2,4,7,9	Br, T
LARGE-BILLED CROW <i>Corvus macrorhynchos</i>	1800-2800	3,6,10-12,14,15,19	G, T, W	1,13,16-18	H, I, K&S, M, Si, Sr, T, Y	2-9	Br, T, T&S
BLACK-NAPED ORIOLE <i>Oriolus chinensis</i>	2200	3					
EURASIAN GOLDEN ORIOLE <i>Oriolus oriolus</i>			Br, R, T, W				T&S
BLACK-HOODED ORIOLE <i>Oriolus xanthornus</i>				S			
MAROON ORIOLE <i>Oriolus traillii</i>	1800-2400	3,11,15			K&S	2-9	
BLACK-WINGED CUCKOOSHRIKE <i>Coracina melaschistos</i>	2100-2400	3,6,11	W		H, T	2,5-9	
LONG-TAILED MINIVET <i>Pericrocotus ethologus</i>	1800-2300	3,6,10-12,14,,19	G, W	1,13,17,18	H, K&S	2-7	Br, T
SHORT-BILLED MINIVET <i>Pericrocotus brevirostris</i>			T		Ro, T		
SCARLET MINIVET <i>Pericrocotus flammeus</i>	1800-2100	3,6,10-12,14,19			Si, Sr	2-8	
BAR-WINGED FLYCATCHER-SHRIKE <i>Hemipus picatus</i>	2100	3,10	R, T		K&S, M		
YELLOW-BELLIED FANTAIL <i>Rhipidura hypoxantha</i>	2100-2500	6,11,14,15,19	G, W		H, K&S, T	2,5,8	
WHITE-THROATED FANTAIL <i>Rhipidura albicollis</i>	1800-2400	3,10		13,16	K&S, M, Si	4,8,7	T, T&S
WHITE-BROWED FANTAIL <i>Rhipidura aureola</i>							T
BLACK DRONGO <i>Dicrurus macrocerus</i>			T		H, Si, Sr, T		T, T&S
ASHY DRONGO <i>Dicrurus leucophaeus</i>	1700-2600	3,6,10-12,14,19	G, T, W	1	H, T	2,5,8	Br
WHITE-BELLIED DRONGO <i>Dicrurus caerulescens</i>					K&S		
BRONZED DRONGO <i>Dicrurus aeneus</i>	1700	3			K&S	2	
LESSER RACKET-TAILED DRONGO <i>Dicrurus remifer</i>	1800			17			T
SPANGLED DRONGO <i>Dicrurus hottentotus</i>	1800-2100	3,10,19			K&S	5,8	
ASIAN PARADISE-FLYCATCHER <i>Terpsiphone paradisi</i>			Br, W		I		T&S
BROWN DIPPER <i>Cinclus pallasii</i>	2100-2500	6,11	W		K&S	8	T
BLUE-CAPPED ROCK THRUSH <i>Monticola cinclorhynchus</i>	1800-2400	3,6	Br, T, W	1	Br, H, Sr, T	8	
CHESTNUT-BELLIED ROCK THRUSH <i>Monticola rufiventris</i>	2100-2500	3,11,12,14,15	Br, W	13	Br, H, K&S, T	2,5-7	
BLUE ROCK THRUSH <i>Monticola solitarius</i>			R, T, W		H, K&S		
BLUE WHISTLING THRUSH <i>Myophonus caeruleus</i>	1800-2700	3,6,10-12,14,15,19	G, T, W	13,16-18	Ah, H, I, K&S, M, Si, Sr, T	2,5-7	Br, T, T&S
?PIED THRUSH <i>Zoothera wardii</i>			?W				

SPECIES	Altitudinal range (m)	Almora		Nainital		Pithoragarh	
		Localities	Other refs	Localities	Other refs	Localities	Other refs
PLAIN-BACKED THRUSH <i>Zoothera mollissima</i>					K&S		
LONG-TAILED THRUSH <i>Zoothera dixonii</i>	2100-2300	3			K&S		
SCALY THRUSH <i>Zoothera dauma</i>	2100-2400	3,6,11	R, T		H, K&S, T	2-5,7	
LONG-BILLED THRUSH <i>Zoothera monticola</i>			?W		K&S		
TICKELL'S THRUSH <i>Turdus unicolor</i>	2200-2400	3,6,11, 14,19	?W	1,16	Br, S	5,8	
WHITE-COLLARED BLACKBIRD <i>Turdus albocinctus</i>	2300-2800	6,11		13	Ah, H, K&S, Sr, T	7	
GREY-WINGED BLACKBIRD <i>Turdus bouboul</i>	2100-2600	3,6,10,11, 14,19	Br, G, T, W	16-18	H, I, K&S, M, S, T	2,5-7	T
CHESTNUT THRUSH <i>Turdus rubrocanus</i>					H, K&S, S, T		
DARK-THROATED THRUSH <i>Turdus ruficollis</i>	1800-2200	3,10,11, 14,19	W	16,18	H, K&S, T	5,8,9	
MISTLE THRUSH <i>Turdus viscivorus</i>	1900-2400	3,6,10-12, 14,15	T	13,16,18	H, I, K&S, T	2,5-7	
DARK-SIDED FLYCATCHER <i>Muscicapa sibirica</i>	1800-2300	3,6,10-12,19			M	2,8,7	
ASIAN BROWN FLYCATCHER <i>Muscicapa dauurica</i>			O, T		H, T		
RUSTY-TAILED FLYCATCHER <i>Muscicapa ruficauda</i>	2500	Wacchum			K&S, Si		
SLATY-BACKED FLYCATCHER <i>Ficedula hodgsonii</i>	900						
RUFUS-GORGETED FLYCATCHER <i>Ficedula strophliata</i>	1800-2100	3,6,10,11	G	18	K&S	2,8,7	
RED-THROATED FLYCATCHER <i>Ficedula parva</i>					K&S		
SNOWY-BROWED FLYCATCHER <i>Ficedula hyperythra</i>						Baram	
LITTLE PIED FLYCATCHER <i>Ficedula westermanni</i>	1800-2000	3,10			K&S	2,5	
ULTRAMARINE FLYCATCHER <i>Ficedula superciliiaris</i>	1800-2600	3,6,10-12, 14,19	Br, T, W		Br, H, K&S, Si, Sr, T	2,5-7	
SLATY-BLUE FLYCATCHER <i>Ficedula tricolor</i>			R, T		K&S		T
VERDITER FLYCATCHER <i>Eumyias thalassina</i>	1800-2500	3,6,10-12, 14,19	T, W	16-18	Ah, H, I, K&S, M, Si, Sr, T	2-8,9	Br, T
SMALL NILTAVA <i>Niltava macgrigoriae</i>	2100-2300	3		18	K&S	2	T
RUFUS-BELLIED NILTAVA <i>Niltava sundara</i>	1800-2400	3,6,11,12,14, 15,19		13,18	H, K&S, Sr, T	2-9	T&S
GREY-HEADED CANARY FLYCATCHER <i>Culicicapa ceylonensis</i>	1700-2400	3,6,10-12,14, 15,19	Br, W	1,13,16-18	Br, H, K&S, Si, Sr, T	2-9	
SIBERIAN RUBYTHROAT <i>Luscinia calliope</i>					K&S		
WHITE-TAILED RUBYTHROAT <i>Luscinia pectoralis</i>					K&S		T
INDIAN BLUE ROBIN <i>Luscinia brunnea</i>	2100-2300				Si	5,9	
ORANGE-FLANKED BUSH ROBIN <i>Tarsiger cyanurus</i>	2000-2400	3,6,10,12, 14,15	G	1,13,17,18	H, K&S, T	2,8	
GOLDEN BUSH ROBIN <i>Tarsiger chrysaeus</i>					K&S		
WHITE-BROWED BUSH ROBIN <i>Tarsiger indicus</i>	1800-2200	3,11				2,5-7	
ORIENTAL MAGPIE ROBIN Baram <i>Copsychus saularis</i>		900		Br, R, T, W		M	
RUFUS-BACKED REDSTART <i>Phoenicurus erythronota</i>					K&S		
BLACK REDSTART <i>Phoenicurus ochruros</i>			Gh				
BLUE-CAPPED REDSTART <i>Phoenicurus coeruleocephalus</i>	1800-2300	3,6			K&S	2-5	
BLUE-FRONTED REDSTART <i>Phoenicurus frontalis</i>	1800-2200	3,6,10,15,19		13,17	H, K&S, T	2,8	
WHITE-CAPPED WATER REDSTART <i>Chaimarrornis leucocephalus</i>	1800-2500	3,6,11,14	R, T		H, I, K&S, M, Si, T	2,5,8	T

SPECIES	Altitudinal range (m)	Almora		Nainital		Pithoragarh	
		Localities	Other refs	Localities	Other refs	Localities	Other refs
PLUMBEOUS WATER REDSTART <i>Rhyacornis fuliginosus</i>	2100-2600	6,11	T, W		H, K&S, Si, T	8	T, T&S
LITTLE FORKTAIL <i>Enicurus scouleri</i>	2100-2600	6			K&S	8	T&S
SLATY-BACKED FORKTAIL <i>Enicurus schistaceus</i>					K&S		T&S, Whym
SPOTTED FORKTAIL <i>Enicurus maculatus</i>	1800-2300	3,10,11,19	Br, R, T, W	18	Br, H, I, K&S, T	2,5,8	T, T&S
PURPLE COCHOA <i>Cochoa purpurea</i>			Br		Br, M		Whym
COMMON STONECHAT <i>Saxicola torquata</i>	900		T, W		H, M, T		
PIED BUSHCHAT <i>Saxicola caprata</i>	1800-2200	3,11	T, W		K&S, T	8	Br, T
GREY BUSHCHAT <i>Saxicola ferrea</i>	1800-2400	3,6,10-12,14,19	G, R, T, W	16,18	H, K&S, Si, Sr, T	2,5-9	Br
DESERT WHEATEAR <i>Oenanthe deserti</i>	2100	3			M		
?SPOT-WINGED STARLING <i>Saroglossa spiloptera</i>			?W				
CHESTNUT-TAILED STARLING <i>Sturnus malabaricus</i>			Br, W				
BRAHMINY STARLING <i>Sturnus pagodarum</i>			Br		R		
COMMON MYNA <i>Acridotheres tristis</i>	1800-2200	3,6,10,11,19	Br, G, T, W	1,16,18	Br, H, Sr, T	2-5,8	T, T&S
BANK MYNA <i>Acridotheres ginginianus</i>					M		
JUNGLE MYNA <i>Acridotheres fuscus</i>	1800-2300	3	Br, R, T		Br, K&S	9	T
HILL MYNA <i>Gracula religiosa</i>					I		
CHESTNUT-BELLIED NUTHATCH <i>Sitta castanea</i>	1800-2000	3,10	G, K&W, W		K&S, M		
WHITE-TAILED NUTHATCH <i>Sitta himalayensis</i>	2100-2600	3,11,12,14,15	Br, W	1,13,16-18	Br, H, K&S, Si, Sr, T	2-9	
VELVET-FRONTED NUTHATCH <i>Sitta frontalis</i>			B, T, W		M		
WALLCREEPER <i>Tichodroma muraria</i>	2600	19	G		K&S	8	T
EURASIAN TREECREEPER <i>Certhia familiaris</i>	1800-2400	3		13,16	Ah	2,8,7	
BAR-TAILED TREECREEPER <i>Certhia himalayana</i>	1800-2600	3,10,11,12,14,15,19	Br, F, G, T, W	1,13,16-18	Br, H, I, K&S, R, Si, Sr, T	2-9	T
RUSTY-FLANKED TREECREEPER <i>Certhia nipalensis</i>							W
WINTER WREN <i>Troglodytes troglodytes</i>	2100-2400	6,11	T	13	T	8	
FIRE-CAPPED TIT <i>Cephalopyrus flammiceps</i>	2100-2500	3,6				2	
RUFIOUS-NAPED TIT <i>Parus rufonuchalis</i>	2200-2700	3,6			M	2,8	T
RUFIOUS-VENTED TIT <i>Parus rubidiventris</i>	2100-2400	6,11			K&S	2,5,8	
SPOT-WINGED TIT <i>Parus melanolophus</i>	2100-2700	3,6,10-12,14,15,19	W	1,13,16,18	H, Si, Sr, T	2-7	Br, T
?COAL TIT <i>Parus ater</i>	2200-2600	11				2,8	
GREY-CRESTED TIT <i>Parus dichrous</i>	2200-2600	11			H	8,7	
GREAT TIT <i>Parus major</i>	1800-2000	3,10	Br, G, O, W		M, T	2,5,8	
GREEN-BACKED TIT <i>Parus monticolus</i>	1800-2500	3,6,10-12,14,15,19	G, T, W	1,13,16-18	Ah, Br, H, K&S, M, Si, Sr, T	2-9	
BLACK-LORED TIT <i>Parus xanthogenys</i>	1800-2600	3,6,10,11,15,19	G, O, T	1,13,16,17	Ah, Br, H, K&S, M, Si, Sr	2,4,8,9	T
YELLOW-BROWED TIT <i>Sylviparus modestus</i>			Br, G		Br, K&S		
BLACK-THROATED TIT <i>Aegithalos concinnus</i>	1800-2500	3,6,10-12,14,15,19	G, T, W	1,13,16-18	H, K&S, M, Si, Sr, T	2-9	Br
WHITE-THROATED TIT <i>Aegithalos niveogularis</i>	2000-2600	3,14,15		1,16,18	H	2-8,9	

SPECIES	Altitudinal range (m)	Almora		Nainital		Pithoragarh	
		Localities	Other refs	Localities	Other refs	Localities	Other refs
PLAIN MARTIN <i>Riparia paludicola</i>					K&S		
EURASIAN CRAG MARTIN <i>Hirundo rupestris</i>					K&S		
BARN SWALLOW <i>Hirundo rustica</i>	1800-2400	3,6,11,15,19	Br	1,13,17,18		4,5	
WIRE-TAILED SWALLOW <i>Hirundo smithii</i>	1000		W				Br
RED-RUMPED SWALLOW <i>Hirundo daurica</i>			B, Br, G, W		Br		Baram
NEPAL HOUSE MARTIN <i>Delichon nipalensis</i>	2100	3			K&S		
GOLDCREST <i>Regulus regulus</i>	2300			13	K&S		
BLACK-CRESTED BULBUL <i>Pycnonotus melanicterus</i>					K&S		
RED-WHISKERED BULBUL <i>Pycnonotus jocosus</i>					M, Whi		
HIMALAYAN BULBUL <i>Pycnonotus leucogenys</i>	1800-2600	3,6,10-12,14,15,19	Br, G, T, W		H, K&S, M, Si, Sr, T	2-9	T, T&S
RED-VENTED BULBUL <i>Pycnonotus cafer</i>	1800-2000	3,11	Br, G, W		H, M, Si, T	2,8	T, T&S
ASHY BULBUL <i>Hemixos flavala</i>	2300	11			K&S		Whym
MOUNTAIN BULBUL <i>Hypsipetes maclellandii</i>	2000				H, K&S, T		
BLACK BULBUL <i>Hypsipetes leucocephalus</i>	1800-2500	3,6,10-12,14,15,19	G, T, W	Jilling 1,13,16-18	Br, H, K&S, M, T	2-8,9	
BRIGHT-HEADED CISTICOLA <i>Cisticola exilis</i>			W		Sm		
STRIATED PRINIA <i>Prinia criniger</i>	1800-2100	3			H, K&S, T	7	?Br
GREY-BREASTED PRINIA <i>Prinia hodgsonii</i>					K&S		
JUNGLE PRINIA <i>Prinia sylvatica</i>					K&S		
ASHY PRINIA <i>Prinia socialis</i>	1000						And Baram
PLAIN PRINIA <i>Prinia inornata</i>					K&S		
ORIENTAL WHITE-EYE <i>Zosterops palpebrosus</i>	1800-2200	3,10,11,12,14,19	Br, G, T, W	1,16-18	Br, H, K&S, M, Si, T	2,5,8	T
CHESTNUT-HEADED TESIA <i>Tesia castaneocoronata</i>	2300				K&S, T	8	Why
BROWNISH-FLANKED BUSH WARBLER <i>Cettia fortipes</i>					K&S		
CHESTNUT-CROWNED BUSH WARBLER <i>Cettia major</i>	2100-2300	3			K&S	8	
ABERRANT BUSH WARBLER <i>Cettia flavolivacea</i>	1800-2200	3,10			K&S	8	
GREY-SIDED BUSH WARBLER <i>Cettia brunnifrons</i>					K&S		
SPOTTED BUSH WARBLER <i>Bradypterus thoracicus</i>	2100-2300	3,11					
BLYTH'S REED WARBLER <i>Acrocephalus dumetorum</i>			Br				
COMMON CHIFFCHAFF <i>Phylloscopus collybita</i>			Br				
SMOKY WARBLER <i>Phylloscopus fulgiventis</i>					K&S		
TICKELL'S LEAF WARBLER <i>Phylloscopus affinis</i>	2100-2600	3,6,10,11,14			K&S, Si	2,8,7	
SULPHUR-BELLIED WARBLER <i>Phylloscopus griseolus</i>			Br				
BUFF-BARRED WARBLER <i>Phylloscopus pulcher</i>	2000-2200	3			K&S	2,8	
ASHY-THROATED WARBLER <i>Phylloscopus maculipennis</i>	1800-2200	3,10,11	?G	17	K&S	8,7	
LEMON-RUMPED WARBLER <i>Phylloscopus chloronotus</i>			G		K&S		
HUME'S WARBLER <i>Phylloscopus humei</i>	1800-2600	3,6,10-12,14,15,19		1,13,16-18	Br, H, K&S, T	2,5-9	

SPECIES	Altitudinal range (m)	Almora		Nainital		Pithoragarh	
		Localities	Other refs	Localities	Other refs	Localities	Other refs
LARGE-BILLED LEAF WARBLER <i>Phylloscopus magnirostris</i>	2100-2400	3,12		13		2,8	
GREENISH WARBLER <i>Phylloscopus trochiloides</i>	2100-2300	3,14	?B, ?W		H, T	2,5-7	
WESTERN CROWNED WARBLER <i>Phylloscopus occipitalis</i>	2000-2600	3,6,10,19	?W	18	H, T	5-7	
BLYTH'S LEAF WARBLER <i>Phylloscopus reguloides</i>	1800-2400	3,11,12,14			M	2,5,8	
GOLDEN-SPECTACLED/WHISTLER'S WARBLER <i>Seicercus burkii/whistleri</i>	1900-2400	3,6,10-12			K&S	2,5,7	
GREY-HOODED WARBLER <i>Seicercus xanthoschistos</i>	1800-2600	3,6,10-12, 14,15,19	Br, G, T, W	1,13,16-18	H, K&S, T	2,8-9	T
BLACK-FACED WARBLER <i>Abroscopus schisticeps</i>	1900-2500	6,11				5,8	
WHITE-THROATED LAUGHINGTHRUSH <i>Garrulax albogularis</i>	1800-2600	3,6,10-12, 14,15,19	B, T, W	1,13,16-18	Ah, Br, H, I, K&S, T	2-7	T
STRIATED LAUGHINGTHRUSH <i>Garrulax striatus</i>	1800-2700	3,6,11,12, 14,19		16,18	H, K&S, Sr, T	2,5,8	
WHITE-CRESTED LAUGHINGTHRUSH <i>Garrulax leucolophus</i>	2000		W	Jilling	H, I, K&S, T, V		T, T&S
RUFIOUS-CHINNED LAUGHINGTHRUSH <i>Garrulax rufogularis</i>					K&S		
STREAKED LAUGHINGTHRUSH <i>Garrulax lineatus</i>	1800-2500	3,6,10-12, 15,19	Br, G, T, W	13,16-18	Br, H, K&S, Si, Sr, T	2-9	T
VARIEGATED LAUGHINGTHRUSH <i>Garrulax variegatus</i>	2200-2700	3,11	?W	13		8,7	
CHESTNUT-CROWNED LAUGHINGTHRUSH <i>Garrulax erythrocephalus</i>	2300-2600	3,6,11,19	Br	16	Br, H, K&S, T	2,8	
RUSTY-CHEEKED SCIMITAR BABBLER <i>Pomatorhinus erythrogenys</i>	1800-2500	3,6,10,11	Br, G, O, T		H, K&S, T	2-5,9	
WHITE-BROWED SCIMITAR BABBLER <i>Pomatorhinus schisticeps</i>					Br		
STREAK-BREASTED SCIMITAR BABBLER <i>Pomatorhinus ruficollis</i>	1800-2400	3	?W			8,7	
SCALY-BREASTED WREN BABBLER <i>Pnoepyga albiventer</i>	1900-2400	3,6,11			K&S		
BLACK-CHINNED BABBLER <i>Stachyris pyrrhops</i>			?W		K&S		
JUNGLE BABBLER <i>Turdoides striatus</i>							T
SILVER-EARED MESIA <i>Leiothrix argentauris</i>	2200	3					
RED-BILLED LEIOTHRIX <i>Leiothrix lutea</i>					H, K&S, T		
CUTIA <i>Cutia nipalensis</i>	2100-2400	3				2,8	
WHITE-BROWED SHRIKE BABBLER <i>Pteruthius flaviscapis</i>	2000-2300	3,19		1,17	H, K&S, T	2-8	
GREEN SHRIKE BABBLER <i>Pteruthius xanthochlorus</i>					K&S		
BLUE-WINGED MINLA <i>Minla cyanouoptera</i>	2100-2300		W	16,18	H, K&S, T	9	
CHESTNUT-TAILED MINLA <i>Minla strigula</i>	2100-2500	3,6,11,12		1,18	T	2,5-7	
WHITE-BROWED FULVETTA <i>Alcippe vinipectus</i>	2000-2500	6,11				2,5,8	
RUFIOUS SIBIA <i>Heterophasia capistrata</i>	1800-2600	3,6,10-12, 14,15,19	B, G, T, W	1,13,17,18	H, K&S, Si, Sr, T	2-9	T, T&S
WHISKERED YUHINA <i>Yuhina flavicollis</i>	1900-2700	3,6,11,14	?W	1,17,18	H, K&S	2-8	
STRIPE-THROATED YUHINA <i>Yuhina gularis</i>	2100-2600	6				2,7	
BLACK-CHINNED YUHINA <i>Yuhina nigrimenta</i>					K&S		Why, Whym
BLACK-THROATED PARROTBILL <i>Paradoxornis nipalensis</i>	2300					5,8	
LESSER WHITETHROAT <i>Sylvia curruca</i>	2100	3	Br				
ASHY-CROWNED SPARROW LARK <i>Eremopterix grisea</i>					K&S		
ORIENTAL SKYLARK <i>Alauda gulgula</i>			Br				T

SPECIES	Altitudinal range (m)	Almora		Nainital		Pithoragarh	
		Localities	Other refs	Localities	Other refs	Localities	Other refs
THICK-BILLED FLOWERPECKER <i>Dicaeum agile</i>					K&S		
YELLOW-BELLIED FLOWERPECKER <i>Dicaeum melanoxanthum</i>	2200	Wacchum	P				
FIRE-BREASTED FLOWERPECKER <i>Dicaeum ignipectus</i>	2100-2500	3,11			K&S	4,5	
PURPLE SUNBIRD <i>Nectarinia asiatica</i>			Br, T		S, T		T&S
MRS GOULD'S SUNBIRD <i>Aethopyga gouldiae</i>	2100-2600	14	?W			5,8,9	
GREEN-TAILED SUNBIRD <i>Aethopyga nipalensis</i>	2000-2500	3,6,10-12, 14,15	G	1,16	H, K&S, T	2,5-7	
BLACK-THROATED SUNBIRD <i>Aethopyga saturata</i>	2100-2200	3,6,11,12, 15,19	?W	16,18	K&S	2,5-7	
CRIMSON SUNBIRD <i>Aethopyga siparaja</i>	900					Baram	
FIRE-TAILED SUNBIRD <i>Aethopyga ignicauda</i>	1800-2300	11,14					
HOUSE SPARROW <i>Passer domesticus</i>	1800-2000	3,14,19	Br, T, W		Br, H, M, Sr, T	2,8	T, T&S
RUSSET SPARROW <i>Passer rutilans</i>	2100	3	G, T, W		H, K&S, Sr, T		T&S
EURASIAN TREE SPARROW <i>Passer montanus</i>	1900-2200	3,10,11, 14,19		13		2-9	T
CHESTNUT-SHOULDERED PETRONIA <i>Petronia xanthocollis</i>			B, T				
WHITE WAGTAIL <i>Motacilla alba</i>	2300	Wacchum	Gh		H, M, Si, T		T&S
WHITE-BROWED WAGTAIL <i>Motacilla maderaspatensis</i>			Gh!, W		K&S		
YELLOW WAGTAIL <i>Motacilla flava</i>					M		T
GREY WAGTAIL <i>Motacilla cinerea</i>	1800-2200	3,10,11,12	W		H, K&S, M, Si, T	2,8,9	T, T&S
PADDYFIELD PIPIT <i>Anthus rufulus</i>			W		K&S		T
LONG-BILLED PIPIT <i>Anthus similis</i>			Br, Hu, W		H, T		
TREE PIPIT <i>Anthus trivialis</i>			?W				Br
OLIVE-BACKED PIPIT <i>Anthus hodgsoni</i>	1800-2300	3,6,10, 11,14			H, K&S, T	5	
ROSY PIPIT <i>Anthus roseatus</i>					K&S		
UPLAND PIPIT <i>Anthus sylvanus</i>			W		K&S		Br, T&S
ALTAI ACCENTOR <i>Prunella himalayana</i>					H, K&S		
RUFIOUS-BREASTED ACCENTOR <i>Prunella rubeculoides</i>	1800-2400		G		K&S		
BLACK-THROATED ACCENTOR <i>Prunella atrogularis</i>					K&S		
BLACK-BREASTED WEAVER <i>Ploceus benghalensis</i>					Am <sup>3</sup>		
STREAKED WEAVER <i>Ploceus manyar</i>					Am <sup>3</sup>		
BAYA WEAVER <i>Ploceus philippinus</i>					Am <sup>2</sup>		
FINN'S WEAVER <i>Ploceus megarhynchus</i>					A, A&C, Al, Am <sup>1</sup> , Fi, Hum		
RED AVADAVAT <i>Amandava amandava</i>							T&S
INDIAN SILVERBILL <i>Lonchura malabarica</i>					K&S		
WHITE-RUMPED MUNIA <i>Lonchura striata</i>			W				
SCALY-BREASTED MUNIA <i>Lonchura punctulata</i>	2100	3	G, Gh, W		K&S, M		
FIRE-FRONTED SERIN <i>Serinus pusillus</i>	2500	6			K&S, Si		
YELLOW-BREASTED GREENFINCH <i>Carduelis spinoides</i>	2100-2500	3,11,12,14, 15,19	Br, G, T, W	13	Br, H, K&S, Si, Sr, T	2,8	T, T&S

SPECIES	Altitudinal range (m)	Almora		Nainital		Pithoragarh	
		Localities	Other refs	Localities	Other refs	Localities	Other refs
EUROPEAN GOLDFINCH <i>Carduelis carduelis</i>	2500	6			H, K&S, T		
PLAIN MOUNTAIN FINCH <i>Leucosticte nemoricola</i>					K&S		
SPECTACLED FINCH <i>Callacanthus burtoni</i>	2500	6			H, K&S, T		
DARK-BREASTED ROSEFINCH <i>Carpodacus nipalensis</i>	2000-2500		N&L	17	K&S	2	
COMMON ROSEFINCH <i>Carpodacus erythrinus</i>	1800-2400	3,10,14,15,19	Br, G, Gh, T, W		K&S, Si, T	2,8	T, T&S
PINK-BROWED ROSEFINCH <i>Carpodacus rodochrous</i>	2100-2400	3,14	G	17	H, K&S, T		
VINACEOUS ROSEFINCH <i>Carpodacus vinaceus</i>	2100-2300	3,6,11,14		1	J, K&S	8,7	
SPOT-WINGED ROSEFINCH <i>Carpodacus rodopeplus</i>	2300-2500	6,11					
SCARLET FINCH <i>Haematospiza sipahi</i>					K&S, Rob		
BROWN BULLFINCH <i>Pyrrhula nipalensis</i>	2200-2500	6,11			K&S	8	
RED-HEADED BULLFINCH <i>Pyrrhula erythrocephala</i>			?W				
BLACK-AND-YELLOW GROSBEEK <i>Mycerobas icteroides</i>	2100-2700				H, K&S, T	2,7	
COLLARED GROSBEEK <i>Mycerobas affinis</i>	2500				H, K&S	7	
SPOT-WINGED GROSBEEK <i>Mycerobas melanozanthos</i>	2400	6			H, K&S, T		
CRESTED BUNTING <i>Melophus lathami</i>	1700-1900	3	W			5,8	Br
ROCK BUNTING <i>Emberiza cia</i>	1800-2300	3,11,12	G, W	13	H, K&S, Si, T	8	Mo, T&S
WHITE-CAPPED BUNTING <i>Emberiza stewarti</i>					K&S		
CHESTNUT-EARED BUNTING <i>Emberiza fucata</i>	2000-2400	3,6,11			K&S	2,5-7	

See Table 1 and Figure 1 for the names and locations of the localities

See the references for an explanation of the codes in the 'Other refs' column