



Diversity of Birds in Suburban Habitat (Human Habitat) in a Small Area of Mandi H.P.

Monika Panchani

Associate Professor

G.C. Bassa. Mandi.

Email- monaharipanchani@gmail.com

ABSTRACT

In present scenario urbanization is on progress and man is disturbing the natural habitat of several species. New roads, dams, mines, buildings and other developments strongly contribute to habitat loss of avians. But in spite of negative effects of urbanization it has been also observed that it has increased species richness and diversity of birds by increasing habitat heterogeneity in a landscape. Increase in the number of human-associated species in suburban habitat indicates progressive urbanization

of the area. The human habitat may have higher avian species richness. A significantly higher density of Jungle Myna, Common Myna and Red/Yellow - billed Blue Magpie in suburban habitat has been noticed and wide distribution of House Sparrow and Blue Rock Pigeon in the same habitat may be due to availability of high feeding and nesting opportunities. This study has been carried out in suburban habitat (human habitat) in small area of Mandi H.P. The diversity of birds with total of 86 species spread over 12 orders and 30 families were recorded.

Key words: *Urbanization, Human Habitat, Heterogeneity, Bird Diversity,*

INTRODUCTION

In present scenario urbanization is on progress and man is disturbing the natural habitat of several species. New roads, dams, mines, buildings and other developments strongly contribute to habitat loss in the Western Himalayas, damaging forests, both directly and indirectly and by displacing people into forest areas (Bird Life International 2003). But in spite of negative effects of urbanization it has been observed that it has also increased species richness and diversity by increasing habitat heterogeneity in a landscape. The human habitat has higher avian species richness. Birds adapt to the urban/suburban ecosystem both physiologically (changes in stress hormones), and behaviorally (e.g., changes in foraging behavior, extending the breeding season). The increase in population density is related to the increase in food abundance, and probably to the reduction in predation pressure. According to the random sampling hypothesis (Connor and McCoy, 1979), urban environments should have higher species diversity because cities attract more individuals from the regional species pool. Urbanization increases the abundance of feral pigeons, swallows, swifts, and a few other species that breed in walls. As vegetation cover increases toward the rural parts of the city, species diversity increases (Emlen, 1974; Mills et al., 1989; Chace and Walsh, 2006; Sandstrom et al., 2005).

However, most studies on urban bird species diversity detect a low diversity for the number of individuals “sampled” (Emlen, 1974; Mills et al., 1989; Sewell and Catterall, 1998; Marzluff, 2001; Chace and Walsh, 2006). During the last decade urban ecosystems have therefore become ecological challenges in conservation, restoration, and reconciliation ecology (Miller and Hobbs, 2002; Rosenzweig, 2003).

Himachal Pradesh (30° 22' - 33° 13' North and 75° 36' - 79° 02' East) is situated in the northwest of India in the Himalayan ranges. Mandi (31° 42' 25'' North and 76° 55' 54'' East) is a small town at an average altitude of 1,044 meters (3425 ft). It is second most populous town after Kangra in the state. In Himachal Pradesh, nearly 400 species of birds have been recorded at different elevations. Total of 390 species of birds have been identified till now from the State (Grimmett and Inskipp 2003). Mahabal (2005) recorded Muscicapidae family as the largest family comprising 105 species. A number of studies in H.P. also revealed the same Muscicapidae family as the largest (Narang and Singh 1995; Mattu and Thakur 2006; Thakur et al 2002, 2006, 2010). In Mandi study was carried in Sarkaghat (Mandi) and revealed the presence of 102 species of birds belonging to 77 genera spread over 34 families and 14 orders (Thakur et al., 2010).

For this paper, study was carried for one year in the small landscape of suburban area of Mandi H.P. The study area included different habitats within 32 km in

suburban region on one side surrounded by thick pine forest, fields and on other side connected to urban town area. It consisted of degraded gentle slopes, small running water body(seasonal),thick vegetation cover a large number of fruit such as citrus, guava, pomegranate, pear, peach and mulberry and many wild and ornamental plants fields and adjoining pine forest.

MATERIALS AND METHODOLOGY

The survey techniques included visual encounter survey and spot counts etc. These studies were carried in different seasons of the year by using binoculars and direct observations. The identification of birds according to their status is based on Ali and Ripley (1983;2007) and Grimm et al (1999). Residential status of the birds has been identified as Resident(R), Local movement (LM) Winter visitor (WV) Summer visitor (SV). All observed birds were categorized as Near threatened (NT) and Least concerned (LC) according to IUCN categorization (2010).

RESULT AND DISCUSSION

The study was restricted in 32 km area only so there could be variation within the same town as different species were recorded in different small patches. Total of 86 species spread over 12 orders and 30 families were recorded (Table:1). According to IUCN 2010 categorization out of these species all were least concern(LC) and none was found in Endangered(EN)category(Table:1).There were no birds recorded in order Podicipediformes, order Pelecaniformes, O. Anseriformes, and O. Charadriiformes (Table-1). On analyzing the distribution of bird species it revealed maximum no (51) in order Passeriforms(Table:1;Fig 1). In Order Passeriforms, family Muscicapidae was found to be the largest family represented by the maximum species of birds (20) (Table: 1;Fig:2). In India study by Manakadan and Pittie (2001) revealed Muscicapidae family to be the largest with 370 species. In Himachal Pradesh Mahabal (2005) recorded Muscicapidae family as the largest family comprising 105 species. A number of studies in H.P. also revealed the same Muscicapidae family as the largest (Narang and Singh1995;Mattu and Thakur 2006;Thakur et al 2002,2006,2010).

In Muscicapidae family the birds were observed maximum in subfamily Turdinae:10;Timaliinae:03;:03;Muscicapinae:03.andRhipidurinae:01respectively(Table:1;Fig:3). Although urbanization increases total bird densities, it appears that only a few species contribute to this increase. Cities consist of mixtures of built habitats and green patches (Emlen, 1974; Mills et al., 1989; Chace and Walsh, 2006; Sandstrom et al., 2005). Indeed, cities are normally inhabited with high densities of human commensal or synanthropic species, many of which are invasive e.g., house sparrow, feral pigeon, Eurasian starling(Blair, 2001; McKinney, 2006).

After analyzing the data on residential status it was revealed that out of total 86 species , 41 were resident(R) 21-resident/local movement(R/LM),7-Winter visitor(WV) and 9-Summer visitor(SM) Resident and summer visitor(RS)3 and Resident and winter visitor (RW)5. (Table: 1;Fig:4). In other study in Himachal Pradesh 123 altitudinal migrants,61winter visitor,33 residents 28 summer visitors 4 winter influx and 1 summer influx were recorded (Thakur et al.,2010).

CONCLUSION

Urbanization is on increase in and around suburban area but in spite of negative effects of urbanization it has been observed that it has also increased species richness and diversity of birds by increasing habitat. These findings indicate that urban/suburban ecosystems do not draw a random set of species from the regional pool, but rather favor a small group of birds that appear to adapt well to this novel ecosystem. During the last decade urban ecosystems have therefore become ecological challenges in conservation, restoration, there is a need for designing sustainable urban ecosystems that support species-rich bird communities also includes maintaining key ecosystem services, such as clean air and water, waste decomposition, and pest control.

Table.1: Systematic list of Birds recorded in suburban area in Mandi (Himachal Pradesh) SV=9.,WV=7.,R=40., R/LM= 21.,RW=5.,RS=3.

S.No	Order/Family	Common Name	Res .Status	IUCN Status
	1.Order: Ciconiiformes			
	<i>(1)Family: Ardiidae</i>			
1.	Egretta garzetta	(Little Egret)	R/ LM	LC
2.	Bubulcus ibis	(Cattle Egret)	R/ LM	LC
	2.Order: Falconiformes			
	<i>(2)Family: Accipitridae</i>			
3.	Elanus caeruleus	(Black-shouldered Kite)	R/ LM	LC
4.	Milvus migrans	(Black Kite)	R	LC
5.	Gyps bengalensis	(Indian White-backed Vulture)	R	LC
6.	Gyps himalayensis	(Himalayan Griffon)	R	LC
	3.Order: Galliformes			
	<i>(3)Family: Phasianidae</i>			
7.	Francolinus francolinus	(Black Francolin)	R	LC
8.	Francolinus pondicerianus	(Grey Francolin)	R	LC
9.	Perdica asiatica	(Jungle Bush-Quail)	R	LC
10.	Gallus gallus	(Red Junglefowl)	R	LC
11.	Pavo cristatus	(Indian Peafowl)	R	LC
	4.Order: Gruiformes			
	<i>(4)Family: Rallidae</i>			
12.	Gallinula chloropus	(Common Moor hen)	RW	LC
	5.Order: Columbiformes			
	<i>(5)Family: Columbidae</i>			
13.	Columba livia	(Blue Rock Pigeon)	R	LC
14.	Streptopelia senegalensis	(Little Brown Dove)	R	LC

15.	Streptopelia chinensis	(Spotted Dove)	R	LC
16.	Streptopelia decaocto	(Eurasian Collared-Dove)	R	LC
	6.Order: Psittaciformes			
	<i>(6)Family: Psittacidae</i>			
17.	Psittacula eupatria	(Alexandrine Parakeet)	R /LM	LC
18.	Psittacula krameri	(Rose-ringed Parakeet)	R	LC
	7.Order: Cuculiformes			
	<i>(7)Family: Cuculidae</i>			
19.	Cuculus micropterus	(Indian Cuckoo)	R /LM	LC
20.	Cuculus canorus	(Common Cuckoo)	R /LM	LC
21.	Eudynamis scolopacea	(Asian Koel)	R /LM	LC
	8.Order: Strigiformes			
	<i>(8)Family: Strigidae</i>			
22.	Athene brama	(Spotted Owlet)	R	LC
	9.Order: Apodiformes			
	<i>(9)Family: Apodidae</i>			
23.	Hemiprocne coronata	(Crested tree swift)	R	
24.	Apus affinis	(House Swift)	R	LC
25.	Cypsiurus balasiensis	(Asian palm swift)	R	LC
	10.Order: Coraciiformes			
	<i>(10)Family: Alcedinidae</i>			
26.	Alcedo atthis	(Small Blue Kingfisher)	R/ LM	LC
27.	Halcyon smyrnensis	(White-breasted Kingfisher)	R	LC
	<i>(11)Family: Meropidae</i>			
28.	Merops orientalis	(Small Bee-eater)	SV	LC
	<i>(12)Family: Coraciidae</i>			
29.	Coracias benghalensis	(Indian roller)	R	
	<i>(13)Family: Upupidae</i>			
30.	Upupa epops	(Common Hoopoe)	WV	LC
	11.Order: Piciformes			
	<i>(14)Family: Capitonidae</i>			
31.	Megalaima virens	(Great Barbet)	R /LM	LC
32.	Megalaima asiatica	(Blue-throated Barbet)	SV	LC
33.	Megalaima haemacephala	(Coppersmith Barbet)	S V	LC
	<i>(15)Family: Picidae</i>			
34.	Dendrocopos nanus	(Brown capped pygmy woodpecker)	RW	
35.	Dinopium benghalense	(Lesser Golden-backed Woodpecker)	RW	LC
	12.Order: Passeriformes:			
	<i>(16)Family: Hirundinidae</i>			
36.	Hirundo rustica	(Common Swallow)	R /LM	LC

37.	Hirundo smithi	(Wired tailed swallow)	R/LM	
38.	Hirundo daurica	(Red-rumped Swallow)	RS	LC
39.	Delichon dasypus	(Asian House-Martin)	RS	LC
	(17)Family: Motacillidae			
40.	Motacilla alba	(White Wagtail)	WV	LC
41.	Motacilla maderaspatensis	(Large Pied Wagtail)	R /LM	LC
42.	Motacilla cinerea	(GreyWagtail)	WV	LC
	(18)Family: Campephagidae			
43.	Pericrocotus cinnamomeus	(Small Minivet)	R/ LM	LC
	(19)Family: Pycnonotidae			
44.	Pycnonotus leucogenys	(Himalayan Bulbul)	R	LC
45.	Pycnonotus cafer	(Red-vented Bulbul)	R	LC
46.	Hypsipetes leucocephalus	(Black Bulbul)	R	LC
	(20)Family: Muscicapidae			
	Subfamily: Timaliinae			
47.	Turdoides striatus	(Jungle Babbler)	R	LC
48.	Chrysomma sinensis	(Yellow eyed Babbler)	R	LC
	Subfamily: Muscicapinae			
49.	Eumyias thalassina	(Verditer Flycatcher)	SV	LC
50.	Culicicapa ceylonensis	(Grey-headed Flycatcher)	R /LM	LC
51.	Tersiphone paradisi	(Asian paradise Flycatcher)	R/ LM	LC
	Subfamily: Turdinae			
52.	Monticola solitarius	(Blue Rock-Thrush)	R	
53.	Myiophonus caeruleus	(Blue Whistling-Thrush)	R/ LM	LC
54.	Turdus ruficollis	(Dark-throated Thrush)	WV	LC
55.	Copsychus saularis	(Oriental Magpie-Robin)	R /LM	LC
56.	Saxicoloides fulicata	(Indian Robin)	R	LC
57.	Phoenicurus ochruros	(Black Redstart)	WV	LC
58.	Chaimarrornis leucocephalus	(White-capped Redstart)	WV	LC
59.	Enicurus maculatus	(Spotted Forktail)	SV	LC
60.	Saxicola torquata	(Common Stonechat)	R /LM	LC
61.	Saxicola caprata	(Pied Bushchat)	RS	LC
62.	Saxicola ferrea	(Grey Bushchat)	SV	LC
	Subfamily: Sylviinae			
63.	Prinia criniger	(Brown Prinia)	R	LC
64.	Prinia socialis	(Ashy Prinia)	R	LC
65.	Orthotomus sutorius	(Common Tailorbird)	R	LC
	Subfamily: Rhipidurinae			
66.	Rhipidura hypoxantha	(Yellow-bellied Fantail-Flycatcher)	WV	LC
	(21)Family: Corvidae			
67.	Urocissa erythrorhyncha	(Red-billed Blue Magpie)	R /LM	LC

68.	Urocissa flavirostris	(Yellow billed Blue Magpie)	R	LC
69.	Dendrocitta vagabunda	(Indian Treepie)	R	LC
70.	Dendrocitta formosae	(Grey Treepie)	R	LC
71.	Corvus splendens	(House Crow)	R	LC
72.	Corvus macrorhynchos	(Jungle Crow)	R	LC
	(22)Family: Dicruridae			
73.	Dicrurus macrocercus	(Black Drongo)	R	LC
	(23)Family: Emberizidae			
	Subfamily: Emberizinae			
74.	Melophus lathami	(Crested Bunting)	R	LC
75.	Emberiza cia	(Rock Bunting)	R /LM	LC
	(24)Family: Estrildidae			
76.	Lonchura punctulata	(Spotted Munia)	R	LC
	(25)Family: Fringillidae			
77.	Carpodacus erythrinus	(Common Rosefinch)	R /LM	LC
	(26)Family: Nectariniidae			
78.	Nectarinia asiatica	(Purple sunbird)	SV	LC
	(27)Family: Passeridae			
	Subfamily: Passerinae			
79.	Passer domesticus	(House Sparrow)	R	LC
80.	Passer rutilans	(Cinnamon Tree Sparrow)	SV	LC
81.	Petronia xanthocollis	(Yellow-throated Sparrow)	SV	LC
	(28)Family: Paridae			
82.	Parus major	(Great Tit)	R	LC
83.	Parus monticolus	(Green-backed Tit)	RW	LC
	(29)Family: Sittidae			
84.	Tichodroma muraria	(Wallcreeper)	RW	LC
	(30)Family: Sturnidae			
85.	Acridotheres tristis	(Common Myna)	R	LC
86.	Acridotheres fuscus	(Jungle Myna)	R	LC

Summer visitor(SV)=9., Winter visitor(WV)=7., Resident(R)=41., Resident&Local migratory (R/LM)= 21., Resident & Winter (R/W)=5., Resident & Summer(RS)=3.

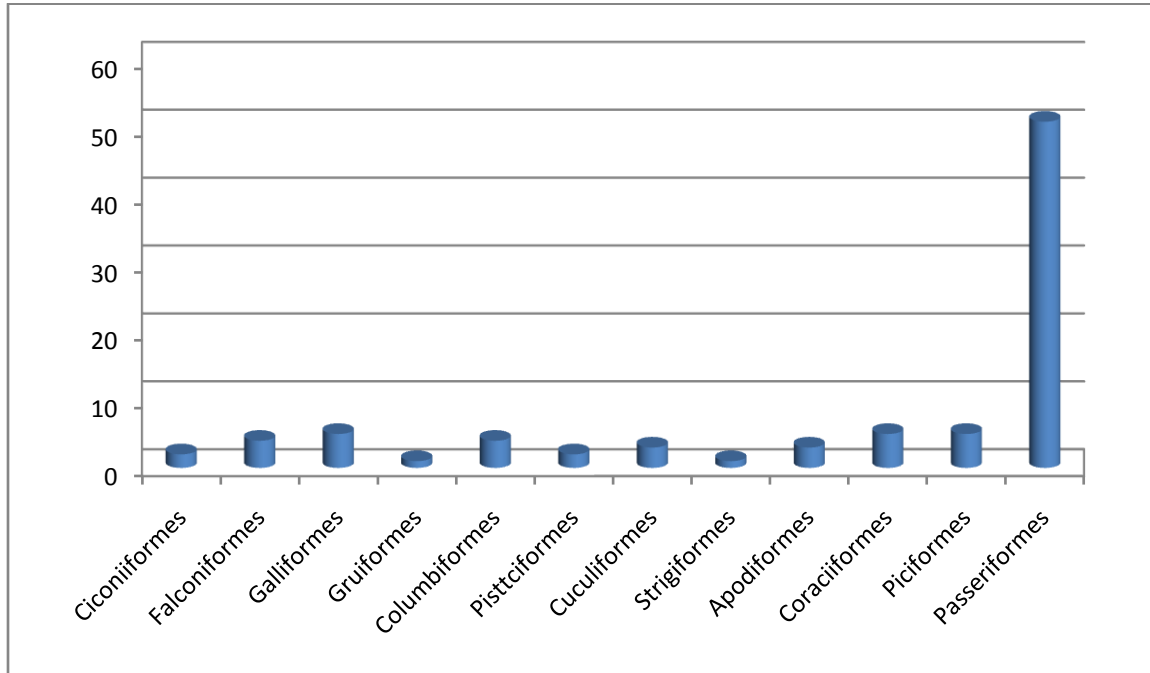


Fig.:1 Distribution of bird species in different orders.

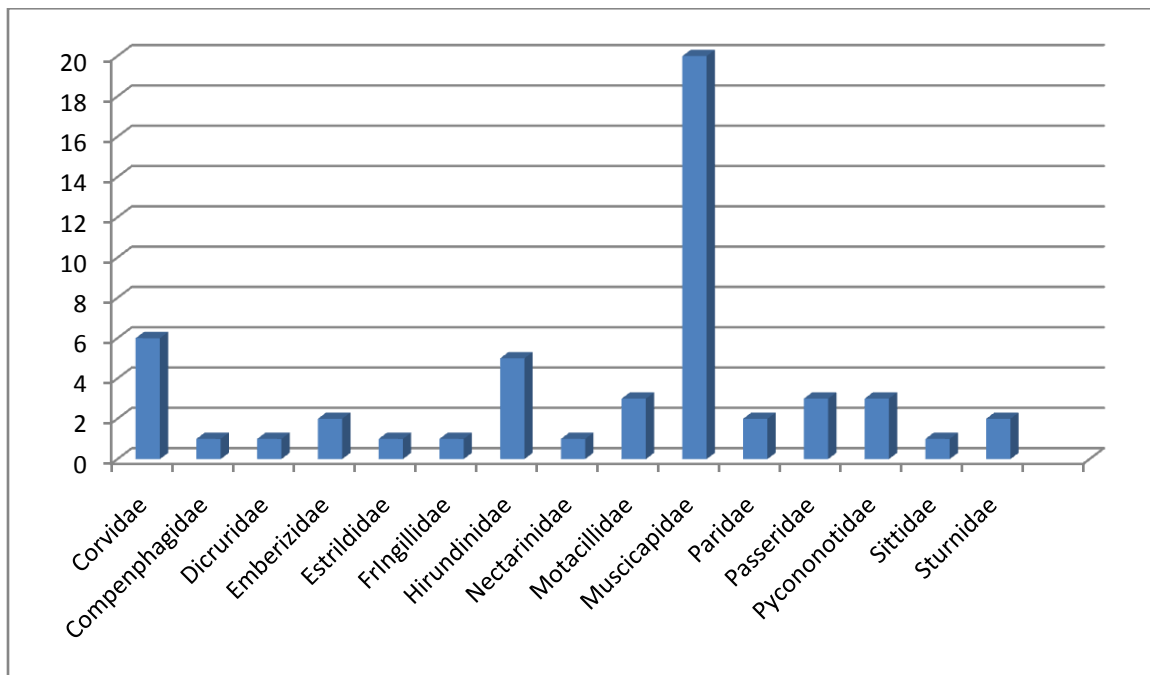


Fig :2. Distribution of bird species in different families in order Passeriformes

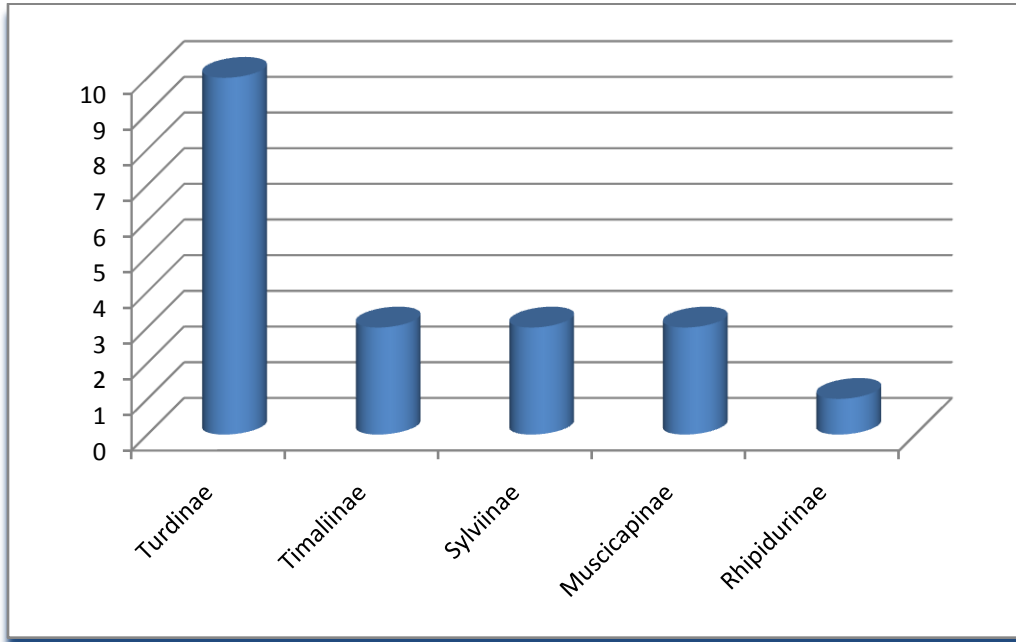


Fig :3. Distribution of bird species in different Subfamilies in Family Muscicapidae

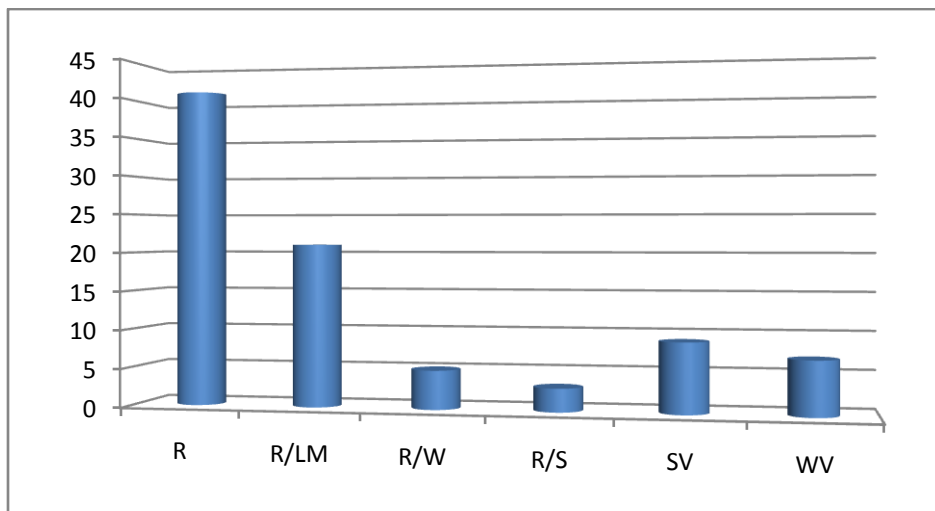


Fig :4. Distribution of bird species showing Residential status. SV=9.,WV=6.,R=41., R/LM=21,R/W=5.,RS=2.

REFERENCES

1. Ali, S. and Ripley, S. D (1987). *Compact Handbook of the Birds of India and Pakistan* (Second Edition). Oxford University Press, Delhi.
2. Ali, S. and Ripley, S. D (2007). *Handbook of the birds of India and Pakistan*. Second impression. Oxford University Press.

3. BirdLife International (2003). *Saving Asia's threatened birds: a guide for government and civil society*. BirdLife International. Cambridge, U.K
4. Blair, R.B.(2001). Creating a homogeneous avifauna *In J.M.* . p. 459–486.
5. Chace, J.F., and J.J. Walsh (2006). Urban effects on native avifauna: A review. *Landscape Urban Plan.* **74**:46–69.
6. Connor, E.F., and E.D. McCoy (1979). The statistics and biology of the species–area relationship. *Am. Nat.* **113**: 791–833.
7. Emlen, J.T.(1974). An urban bird community in Tucson, Arizona: Derivation, structure, regulation. *Condor* **76**:184–197.
8. Grimm, N.B., J.M. Grove, C.L. Redman, and S.T.A. Pickett(2000). Integrated approaches to long-term studies of urban ecological systems. *Bioscience* **50**:571–584.
9. Grimmett, R. and Inskipp, T. (2003) *Birds of Northern India*. Oxford University Press, New Delhi.
10. IUCN (2010). Red list of threatened species.<<http://www.iucnredlist.org>.
11. Mahabal,A. (2005).Aves. In: Fauna ofWestern Himalaya. (ed.: The Director) Zoological Survey of India, Kolkata, **275**-339.
12. Manakadan, R. and Pittie,A. (2001). Standardised common and scientific names of the birds of the Indian subcontinent. *Buceros* **6** (1): 1- 37.
13. Marzluff, J.M. (2001). Worldwide urbanization and its effects on birds. *In J.M.* p. 19–38.
14. McDonnell, M.J., and S.T.A. Pickett (1990). The study of ecosystem structure and function along urban–rural gradients: An unexploited opportunity for ecology. *Ecology* **71**:1231–1237.
15. McKinney, M.L(2006). Urbanization as a major cause of biotic homogenization. *Biol. Conserv.* **127**:247–260.
16. Miller, J.R., and R.J. Hobbs(2002). Conservation where people live and work. *Conserv. Biol.* **16**:330–337.
17. Mills, G.S., J.B. Dunning, Jr., and J.M. Bates (1989). Effects of urbanization on breeding bird community structure in southwestern desert habitats. *Condor* .**91**:416–428.
18. Narang,M.L and Singh,A.P(1995).Birds of Naunicampus of university of Horticulture and Forestry,Solan.H.P.*News letterfor Birdwatchers.* **35**(6):106-108.
19. Rosenzweig, M.L(2003). Win-win ecology. Oxford Univ. Press, Oxford, UK. Sandstrom, U.G., P. Angelstam, and G. Mikusinski. 2005. Ecological diversity of birds in relation to the structure of urban green space. *Landscape Urban Plan.* **77**:39–53.
20. Rutz,C(2008).The establishment of an urban bird population *.Animal Ecology*.1-12([doi:10.1111/j.1365-2656.2008.01420.x](https://doi.org/10.1111/j.1365-2656.2008.01420.x)).
21. Sandstrom, U.G., P. Angelstam, and G. Mikusinski(2005). Ecological diversity of birds in relation to the structure of urban green space. *Landscape Urban Plan.* **77**:39–53.
22. Sewell, S.R., and C.P. Catterall(1998). Bushland modification and styles of urban development: Their effects on birds in south-east Queensland. *Wildl. Res.* **25**:41–63
23. Thakur,M.L.;Mattu,V.K.;Thaur,V and Sharma (2010). Avifauna of Nalagarh valley of H.P. , *J.Himalayan Studies*.**3**(1):36-48.
24. Thakur, M.L.; Mattu, V.K. and Sharma, R.M. (2006). Bird diversity and status in Tara Devi, Shimla, Himachal Pradesh. In: Biodiversity and Environment (Eds.: Pandey B.N. and Kulkarni G.K.).A.P.H. Pub.,NewDelhi.
25. Thakur, M.L.; Paliwal, R.; Tak, P.C.; Mehta, H.S. and Mattu,V.K. (2002). Birds of Kalatop-Khajjiar Wildlife Sanctuary, Chamba (H.P.). *Cheetal* **41** (3&4): 29-36.
26. M.L. Thakur*, V.K. Mattu, N. Mattu, V. N. Sharma, R. Bhardwaj and V.Thakur .(2010) .Bird Diversity in Sarkaghat Valley, Mandi (Himachal Pradesh), India.*Asian J. Exp.Biol. Sci.*Vol.**1**(49):940-950.

