

A CASE STUDY

Population dynamics of the family passeridae at Visnagar, North Gujarat

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The study was carried out at Visnagar city area and its vicinity. Visnagar is a taluka place of Mehsana district, North Gujarat, India. Wagtails, sparrow, petronia, weaverbird, silverbill are the members of the family Passeridae. It is a largest family among all the families, according to number of species. Birds of the family are small size gregarious and arboreal. It was observed that family passeridae had abundant population. Different species of the family Passeridae maintain their lives with association of human culture due to their omnivore's diet, selection of nesting site near human location and feeding habit at feeding station as well as home ground due to these factors this family has high number of population.

Population is a group of interbreeding organisms of the same kind occupying a particular space. Each population is a structural component of the ecosystems, through which energy and nutrient flow and it is characterized by density (Smith, 1980). Mac Arthur and Mac Arthur (1961) for the first time gave the concept of diversity and niche differentiation. There after many ecologists have constrained their attentions for understanding the true ecological relationship of bird's communities. Ali and Ripley (1983) stated that India's avifauna is one of the most interesting in the world and provides ample opportunity to study "Population ecology".

The urban environment was selected for its related avian biodiversity to evaluate its population ecology. The urban environment is not a natural environment, it is completely man-made. The urban environment even conceptually cannot be designed to bring nature into the urban human settlement. The major influencing

factor on the composition and distribution of bird species is the direct human intervention. The diversity recorded in such a human impacted area must not mislead one to those of large green parks and reserves in urban areas, as they support high species diversity because these protected urban areas are the habitat fragments of highly diverse ecosystem (Schaefer, 1994).

MATERIALS AND METHODS

Study area :

For the study of population dynamics of the family Passeridae, Visnagar city area and its vicinity was selected. Visnagar is a taluka place of Mehsana district, which is about 750 years old. It is situated between 23°42' N and 71°34' E above 127 m.s.l. Being a taluka place, it is surrounded by rural areas.

To evaluate the population dynamics of the avifauna on urban environment, four sites were selected. These sites were considered as variable sub-habitats. Each site differs from another on the basis of vegetation, food sources, human activities, pollution, water availability, nesting sites, comfort roost etc. Direct count method was employed for the estimating population of each species of the family. It is a method in which the bird encountered by the observers along with census route is counted. Checklist was prepared. The following parameters were considered and calculation was made with usual formula:

- Average population per visit
- Relative dominance
- % Frequency
- Abundance per hectare
- Density per hectare

The population of the Family was

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recorded for one year.

RESULTS AND DISCUSSION

Wagtails, sparrow, petronia, weaverbird, silverbill are the members of the family Passeridae. It is a largest family among all the families, according to number of species. Birds of the family are small size gregarious and arboreal.

During the study period, it was observed that family Passeridae has abundant population. Different species of the family maintain their lives with association of human culture due to their omnivore's diet, selection of nesting site near human location and feeding habit at feeding station as well as home ground and because of these factors, this family has high number of population (Table 1). As per observations, family has the highest density. Record of individual species of the family on the bases of population dynamic is as follows :

Table 1 : Bird wise average population (AP), relative dominance (RD) and population status (PS) in study area in 2003

Sr. No.	Name of birds	AP	RD	PS
1.	Yellow wagtail	1	0.02	UN
2.	Citrine wagtail	1	0.02	UN
3.	White-browed wagtail	9	0.15	UN
4.	White wagtail	8	0.13	UN
5.	House sparrow	599	10.07	AB
6.	Baya weaver	8	0.13	UN
7.	Chestnut-shouldered petronia	18	0.30	C
8.	Indian silver bill	41	0.69	C

AP : Average population RD : Relative dominance
F : Frequency D : Density
Ab : Abundance

Yellow wagtail (Motacilla flava) :

Uncommon. Migrant. Recorded near water edges. (AP - 1, RD - 0.02%, F - 57%, D - 0.004, Ab - 0.007).

Citrine wagtail (Motacilla citreola) :

Uncommon. Migrant. Recorded near water edges. (AP - 1, RD - 0.02%, F - 57%, D - 0.004, Ab - 0.007).

White-browed wagtail (Motacilla maderaspatensis) :

Uncommon. Resident. Breeding not recorded. Encounter very less in number throughout the area. (AP - 9, RD - 0.15%, F - 100%, D and Ab - 0.04).

White wagtail (Motacilla alba) :

Uncommon. Resident. Breeding not recorded. Encounter very less in number throughout the area. (AP

- 9, RD - 0.15%, F - 100%, D and Ab - 0.04).

House sparrow (Passer domesticus) :

Common. Resident breeder. Ubiquitous in this area. More common near human habitation. Always found in large party in shrub of outskirts area. Mostly it is grainivorous, observed it to feed upon kitchen scraps and insects. Breeding but observed throughout the year. (AP - 599, RD - 10.07%, F - 100%, D and Ab - 2.53).

Chestnut-shouldered petronia (Petronia xanthocollis):

Uncommon. Resident. Breeding not recorded. Infrequently seen near cultivated area. Affects all types of habitats in outskirts area. (AP - 18, RD - 0.30%, F - 65%, D - 0.08, Ab - 0.12).

Baya weaver (Ploceus philippinus) :

Uncommon. Resident breeder (Plate Fig. - 3.8). Except summer, it is recorded throughout the year in outskirts area. An interesting fact noticed was the close association of the Indian silverbill in pre-nesting stage. Breeding seen in between May and September months. (AP - 41, RD - 0.69%, F - 65%, D - 0.17, Ab - 0.27).

Indian silverbill (Lonchura malabarica) :

Common. Resident breeders. Seen throughout the year in outskirts area. Affecting open shrub, cultivated patches and wetland area. It habitually utilizes old nest of baya. So, it is a nest parasite of baya. (AP - 71, RD - 0.69%, F - 65%, D - 0.17, Ab - 0.27).

Abbreviations:

AP-Average population, F-Frequency, Ab-Abundance, RD-Relative dominance, D-density

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