Chapter 3
History of Earlier Study

3.1 Introduction
The sages of ancient India were great lover of nature. They had a very acute sense of observation and had a fairly objective knowledge of animals, both domestic as well as wild. It seems that ancient people in India closely watched and studied the animal behavior with special attention to birds.

3.2 Bird Study- Historical Division:
The history of bird study in India can be better understood if we divide it into categories based on time period as follows-

- Pre-Vedic Period
- Vedic period (2000 BC-400 BC)
- Post-Vedic period (1-1200 AD)
- Moghul period (1525-1757)
- Colonial period (1800-1947)
- Post –Independence period (1947 onwards)

Pre-Vedic Period (10,000-2000 BC)
_Bhela Samhita_ is one of the oldest treatises belonging to the pre-Vedic period (3000 BC) which prescribes the flesh of various birds for treatment of various human diseases. Besides this work there is no other work of repute from this period. But many artifacts belonging this period are available. Clay animals, sculptures, paintings, engravings on rock, pottery, clay tablets, figurines and seals etc. have been found at various excavations sites from Harappa to Inamgaon near Pune. These artifacts belong to various time periods ranging from 3rd millennium BC to 1000 AD. Though various different kinds of birds were represented, parrots (parakeets?) and peacock were the most common.(Dhavlikar 1976) The rock cave paintings from the central India, which are more than 10,000 years old also, depict a few birds.

Vedic Period (2000 BC – 400 BC)
The epics Ramayana and Mahabharata, the Puranas and the Smriti works have several references to animals including birds. Maharishi Valmiki is not only India’s first poet, but is also regarded as the first bird watcher of India. The Chandogya
Upanishad has classified animals into three groups, one of which is that of birds. It further classifies animals into eight classes on the basis of habitats and feeding habits, the birds are put in the last two classes.

The well-known treatise of Ayurveda, the Charaksamhita and the Sushrut Samhita (1st cent.BC) have many references to birds. The former divides the birds into four groups as the peckers, scratchers, water birds and birds of prey. The treatise further describes the properties of their flesh for the use as medicines.

The Rig Veda mentions about 20 birds. The Vishnu Purana mentions returning of geese during winter. The Indo-Aryan were familiar with many birds and kept hill myna and parrots (parakeets !) as pet. They also knew parasiting habit of koel (Dave, 1980).

The ‘Arthashastra’ by Kautilya (4th cent BC) is a treatise on political science and governance. It recommends the protection of auspicious, pleasure and pet birds. It also mentions the use of royal homing pigeons for carrying news and messages. The work also discusses the use of flesh of various birds.

Panchatantra (3rd cent BC) is another treatise on political science and human moral conduct. It is recognized as the book of Indian folk wisdom. Most of the stories are told using various animals and birds as the actors in the stories.

Several Smriti works mention prohibitive rules against killing many birds.

**Post-Vedic Period (300 BC-1200 AD)**

Along with Sanskrit this period is dominated by Prakrit and Pali works. One of the greatest littératures, Kalidasa belongs to this period. He was an ardent nature lover and master of geography. His works have detailed accounts of mountains, rivers, forests and animals. His literature contains frequent references of to birds including peacock, parrots, pigeons, swans, geese and many other water and garden birds. His ‘Raghuvarsh’ mentions flocks of ‘kadamb’ (geese) visiting India from Manasarovar in Tibet across the Himalayas.

In the Jaina work, Tattvarthadhigama Umasvasti (40 AD) has attempted a classification of the animal kingdom on the basis of number of senses. Prasnavyakran (5th AD) mentions over 50 different kinds of birds. The Jataka tales (5th AD) are a series of books and many of them have bird titles like Tittiri (partridge) Jataka, Hansa (swan) Jataka, Baka (heron) Jataka etc. Many Jataka stories mention birds of various kinds.
This is also the period of the Sangam literature (4th to 7th cent AD). The treatises were produced in the Tamil country (present day Tamil Nadu). The work mentions a large variety of animals, both wild and domestic, including birds. There is a detailed discussion on birds with respect to their habits and ecological distribution. This is probably the first time that the distributional aspects are mentioned.

Two important works of the later part of this period are the Sandes Rasaka and Mriga Pakshi shashtra, both belonging to the 13th century. The former mentions changing birds as per the changing seasons. The latter written by Hamsadeva, a Jain sage, is the science of animals and birds. The work has two volumes; the first describes 27 mammals and the second 97 bird species. (Chitampalli & Bhatkhande 1993)

Moghul period (12-17th century)

Many Moghul emperors were keen naturalists. They were fond of hunting and maintained menageries. Their works include the memories of Babur (1494-1529), Akbar (1556-1605) and Jehangir (1605-1627). These were written either by them or by writers appointed by them. Most prominent among them is the ‘Baburnama’-memories of Babur. Baburnama mentions a large variety of game, garden and town birds as well those seen in the nearby jungles. The unique aspect of the memories is the Moghul paintings, which were quite realistic and depicted various animals and birds. These painting have made the memories more authentic. (Ali 1927)

The Marathi saints period (12-17th centuries) coincides with the Moghul period. Maharashtra has a very long and rich saints (sant) tradition ranging from Sant Dyaneshwar (13th century) to Sant Ramdas (17th century). Their treatise include references to animals and birds, with anecdotes describing their greatness and usefulness.

Colonial Period (1800-1947)

The colonial period was mostly the period of collection of information and specimens, for we had very scanty scientific information about our plants and animals.” In the nineteenth century it was hard to study birds without killing them” (Haldane, 1959). This was the era when the Britain had started establishing their empire in every corner of the world. This was also the period when British biologists, scientists, civil and military officers and traders had undertaken the task of collecting
the information about natural resources including biological resources, because there were many gaps in the knowledge and collection became inevitable. Collection was one of the chief ways of gathering information about India’s little known flora and fauna. Many civil and military officers were keen naturalists and sportsmen. Most of the earlier works on India’s natural and wildlife wealth have been contributed not by experts but amateur naturalists. Many geographical expeditions were carried out in different remote parts of the Indian peninsula by the British between 1868 and 1912. These expeditions were responsible for furthering our knowledge about the natural resources. The information thus collected was compiled by many experts to produce first fauna books. The first ever account of birds of the region dates back to 1830’s when Lt.Col.Sykes of the Bombay Army wrote a catalogue of birds observed in the ‘Dukhun’ (Deccan). The overall beginning of the ornithological study in the country is credited to T.C.Jerdon. His pioneer work on the Indian birds—“The Birds of India” was published in 1862-64. Allan Octavian Hume (who also happened to be the founder of the Indian National Congress) edited the “Stray Feathers” (SF) - a periodical dedicated to bird study. Ten volumes of the “SF” were published between 1872 and 1888. The first bird list for any part of the present day Maharashtra appeared in the “SF” in 1876. It was contributed by S.B.Fairbank and covered the Sahyadri Mountains including Matheran & Mahabaleshwar. Many more articles about the birds from western Maharashtra also appeared in the “SF” which included Deccan (Davidson & Wenden,1878;Buttler 1881), South Konkan (G.W.Vidal 1880) and Western Khandesh (J.Davidson 1882,1886). The Deccan list included birds from the grass & scrub country from the eastern margin of the present study area.

The Journal of the Bombay Natural History Society, which started in 1886, has been regularly publishing ornithological papers, notes and checklists for different parts of India. The earlier issues of the journal contained Barne’s articles on nesting birds of western India (1888,1889,1890) followed by Stuart-Baker’s Ducks (1896,1897) and Betham’s nesting accounts (1899,1900,1901,1903) of the Deccan birds.

The Gazetteer of the Bombay Presidency series which appeared in 1885 covered most districts of the then Bombay Presidency including all the districts within the present study area. Every gazetteer described fauna of the concerned district, some providing comprehensive bird list with brief descriptions. For example, The Poona District gazetteer, Vol.-I gives a brief description of game birds whereas volume III
provides a list of 55 water bird species (contributed by Wenden) seen at the Khadakwasla reservoir.

Blanford and Oates’s “Fauna of British India-Bird Series” appeared in four parts from 1889 to 1898. Edward Hamilton Aitken, popularly known as ‘EHA’, was one of the greatest naturalists of his times. His ‘Birds of Bombay’ appeared in 1905. S.H. Prater and Charles McCann, two great natural historians of the subsequent era, also produced some good literature on birds. Trevenen (1922) mostly dealt with the game birds found in and around ‘Poona’. E.C. Stuart-Baker’s revised ‘New Fauna of British India-Bird’ volumes were published in 1922-30. The Popular Handbook’ by Hugh Whistler—the first book for lay bird watcher was published in 1928. This book has been regarded as the one which popularized bird watching as a hobby among the Indian elites during thirties and forties.

**Post-Independent Period:**

Decades following 1940’s were dominated by one man- Dr. Salim Ali, the Doyen of modern Indian ornithology. He started his real forays for birds while a resident of the Pali hill, in Mumbai in late twenties. Large tracts of what is now suburban Mumbai were covered with large forest patches interspersed with paddy fields and coastal marshes. The hills to the north and east were covered with good forest cover. Dr. Ali along with Prater, McCann and Abdulali made most of his earlier collections here. He also collected birds from nearby Western Ghats country.

Though his bird study started during the early part of the twentieth century and his land mark book ‘The Book of Indian Birds’ first appeared in 1944, his classic bird books appeared only during the post-Independent era.

Another keen naturalist and ornithologist of the contemporary era- Humayun Abdulali, Salim Ali’s cousin and one time companion, had also started natural history studies around the same time. In the early thirties he collected birds for St. Xavier’s college museum from Mumbai neighborhoods. This collection helped him in producing a series of papers jointly with Salim Ali, titled “Birds of Bombay and Salsette” which appeared in the journal of the BNHS in 1936-37. Since then Mr. Abdulali contributed on regular basis to the ‘Journal’ on birds of the oriental region in general and western India in particular. His notes dealt with every aspect of bird – nidification, nesting, molting, local movements, mortality, new occurrences, range extension and description of new races from Konkan and Western Ghats country. His
two checklists, one for the state as a whole (1973) and another for the Sanjay Gandhi (Borivli) National Park (1981) have been widely acclaimed and used.

Thanks to efforts by the duo, Salim Ali-H.Abdulali, bird watching started becoming popular past time among the educated middle class the in post-Independence era. As a result many amateur bird watchers came forward to study various aspects of bird behavior. Some of them made bird watching their profession. One among them V. C. Ambedkar, the first research student of Dr.Salim Ali, produced a landmark study on Baya weaver bird (1958, 1964, 1973), most of which was based in Pune. He also contributed a chapter on birds, along with D. N. Mathew to the FAUNA Gazetteer of Maharashtra State (1974).Another ardent conservator and keen bird observer from the Ali clan- Jaffer Futehally served the field of ornithology through the editorship of the ‘Newsletter for Bird Watcher’ since its inception in 1962 for the next four decades. The ‘Newsletter’ marshaled many from Maharashtra to document and write on local birds.

Bro. Navarro of St. Xavier, Mumbai made a brief collection of birds around Khandala in the sixties and seventies and wrote extensively about them (1965, 1967, 1975, 1976, 1978, 1979 & 1980) either on individual species or on the community as a whole. Stairmand D.A.also wrote about birds around Khandala around the same time (1970, 1971, and 1972). Gray Lincoln (1974) has been one of the first researchers to study the birdlife in introduced eucalyptus plantations in the state.

Among the local naturalists the most prominent was Dr.M.V.Apte, who as a doctor of a sanitarium at Lonavala spent almost twenty years there and wrote extensively about birds around Lonavala, Khandala and Pune. (1950, 1951, 1957). Another Pune-based naturalist, Prakash Gole initially wrote about common birds around Pune,(1972,1973). The first ever bird list for the city was contributed by P.Gole in 1972.His ‘March Bird Count for Poona’ (1981) was the first ever bird count not only for the city of Pune but for any city in Maharashtra. The bird census covered about 120 km² of the city area, enumerated about 55000 birds belonging to 130 species. He (1985) also studied the avifauna of the polluted stretches of the Mula-Mutha Rivers and identified some indicator species. He afterwards shifted his attention to Konkan and Western Ghats birds. His ‘Birds of Western Ghats’ is the only bird study for the region with some geographical bias. Purandare K. (1984) did a systematic year-long study of the breeding biology of Black-shouldered kite from a
riverside grove along river Mutha. Nalavade (1981) analyzed the birds of Pune area from geographer’s point of view. A comprehensive checklist covering larger urban area of Pune was published by the Friends of Animals Society (Mundkur & Kelkar, 1981). The checklist covered area up to Simhagad and included about 250 species. Dr. Bharucha’s (1986, 1987, 1988, and 1990) work mostly deals with wetlands and wetland birds around Pune. Ingalhallikar & T. Gole (1987) recorded 290 species for a slightly larger area. Bradbeer’s (1987) list, which was published from London, described 295 bird species that he came across during his stay here in 1985-86. His list covered Pune and adjoining districts of Thane and Raigad. Taej Mundkur an internationally known figure on wetland birds started his career as an amateur bird watcher in Pune. Scores of his miscellaneous notes appeared in the ‘Journal’ and the ‘Newsletter’ during the eighties and nineties.

Dr Anil Mahabal (1990, 1992, and 1993) of the Zoological Survey of India has extensively worked on population, roosting behavior and social biology of communally roosting birds - mynas, parakeets, kites and crows. Most of his work is Pune-based. Mahabal & Lamba’s (1987) systematic list of 329 species and subspecies covered the whole Pune district and was based largely on the bird specimens in possession of the Virus Research Institute and the Western Regional Station (WRS) of the Zoological Survey of India, Pune. Dr S. Naik (1988, 1990) mostly described arrivals of waders and cranes. T. Gole (1987) presented a brief account of owls around Pune followed by a similar account on the birds of prey by Ingalhallikar (1988). Purandare K. (1994) conducted another landmark study on the breeding biology of Whit-browed Wagtail along a stretch of Mutha river. He also provides a checklist of water birds found in the wagtail habitat. Dr. Watve (1989, 1994) worked on the nesting & hunting behavior of Bonelli’s eagle.

Post-1970 passions for hiking and trekking along with bird watching had such an impact that every major town in the state saw formation of trekking groups, nature clubs or bird watching societies. This made the bird check-list a basic document of bird study. As a result many towns, cities, districts and protected areas got their own bird lists. Most of the bird lists were published privately. Some appeared as booklets, many others got published as book articles or in prominent journals and periodicals. Recently many bird lists have been uploaded on various websites, web groups or as bloggs. Some prominent bird lists from the study area other than Pune are: Karnala (Pandya 1982, Marathe 2001), Satara district (Bhate & Patankar 1998) and Konkan
(Katdare & Pande 1999). The last list covers a part of the study area from Raigad and Thane districts.

This surge in publication also saw many checklists coming out of and for Pune. Many of them covered smaller areas - a hill station, an educational campus or a lake such as Katraj lake (Singh 1984), Telco Lake (Mundkur 1988), Khamgaon & other lakes near Pune (Purandare R.1990), Pashan lake (Hollander 1994); Pune University campus (Goel 1976, Wadadekar 2000, Oberoi 2003), Fergusson College campus (Nalavade 1998), NCL Campus (2002), Sinhgad environs (Ingalhallikar 2005).

An urban biodiversity survey of Pune by RANWA, a Pune-based NGO in 1998-2000, also covered the bird fauna (Ingalhallikar et al, 2001) of Pune urban area. Kalpavriksha (2001) published a basic bird guide to cover the Pune district. The first decade of the 21st century saw many landmark studies by Dr. S. Pande. His work deals with various aspects of birds around Pune, Sahyadri and western coast. He is also the lead author of “The Birds of Western Ghats, Kokan and Malabar” (2003) and his pocket guide on birds of Khandala, as a co-author (2008) has become quite popular within a short period of time.

The Asian Waterfowl Census, which has been taking place on regular basis since 1987 covers many water bodies from Pune, Satara and Raigad districts. Many students while doing M. Sc. in Environmental Science or Biodiversity have chosen birds as a core study area for their dissertation. Such dissertations since 1989 have covered a wide range of subjects about birds and include such aspects as hill birds, wetland birds, bird movements, exotic flora & birds, important bird areas etc.

3.3 Zoogeographical Study

Biogeography has always been a neglected branch of both geography and biology. This has been true especially for India where we find very few workers and works on biogeography. Some fundamental aspects of biogeographical research in India are:

- There are few researchers who can be called as professional biogeographers.
- The discipline is looked upon with considerable misgivings.
- The volume of research on biogeographical aspects is very low compared to other branches of geography and ecology.
- The biogeographical research is mostly confined to dividing the country/subcontinent into biogeographical regions, sub regions, divisions and subdivisions.
- Many wildlife and/or ornithological studies look at geographical aspects (distribution etc.) as marginal area of study.

Many earlier workers including Jerdon (1862) dealt with the distributional aspects of birds as a small part of the whole description. Blanford (1870) was probably the first to divide the Indian subcontinent into major zoogeographical divisions. He made a valuable contribution to the zoo-geography of India in 1876, when he drew attention to the presence of African elements in our fauna. Many later workers like Elwes (1873), Wallace (1876), Newton (1893), Gadow (1893), Sclater (1899), Alcock (1910), Annandale (1911), Talbot (1939), Smith (1931,1935,1943), Mahendra (1939) and Prasad (1942) followed the footsteps of Blanford and tried to divide the Subcontinent into various zoogeographical divisions. Most of them made the divisions on the basis of distribution of mammals, reptiles, butterflies and fresh water crustaceans, with the exception of Gadow who used birds as basis for his zoogeographical division.

One of the most intriguing and fascinating aspects of the Indian biogeography is the general similarity in the character and composition of the animal and plant life of South-Western Ghats on the one hand and the North-east Himalayas & the South-east Asia on the other. This similarity has been noticed and commented upon by many successive workers including Salim Ali (1935). Many tried to explain this disjunct distributional pattern through various theories, but the one that stood out prominently and has been debated and challenged was the ‘Satpuda Hypothesis’ by Dr. S. L. Hora (1950). This theory considers the Satpuda range as the migration highway of the Indo-Chinese and the Malayan fauna (eastern elements) between the north-eastern Himalayas and the South-Western Ghats. Dr. Dillon Ripley tried to provide an alternate explanation through his ‘Eastern Ghats hypotheses’, for he considered the Eastern Ghats as the bird migration highway for carrying the eastern elements from the north-east to the south-west. He also discussed the zoo-geographical considerations of the Indian avifauna (1959). Dr. Salim Ali in fact should be

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considered as one of the first zoogeographers of modern India. He was the first to discuss the Satpuda hypotheses from birds’ point of view. He also tried to correlate 15 major forest types of India with their associated bird fauna. Many migration-based studies have strong zoogeography base. The most prominent work in this respect is the migration study of Common teal by Ambedkar & Daniel(1990). Gaston & Zacharias’s (1996) account of distribution of endemic and disjunct birds of Kerala supported with a score of maps is an important zoogeographical work of the recent past, the findings of which are useful for conservation of Kerala birds. There is hardly any notable work about the zoogeography of the northern Western Ghats. P.Gole (1998) was the first to deal with the geographical aspects of birds of the northern Western Ghats. Nalavade & Pande (2003) were probably the first to write about the ornitho-geography of the region. The present study is the first detailed and comprehensive account of the ornitho-geography of the region.

PLATE 3.1: Dr. Salim Ali, the doyen of Indian ornithology, was also a keen zoogeographer. (Source- www.google.co.in/images)