

# **BIRDS OF LAND FILL SITE AND THEIR BEHAVIOUR**

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## **INTRODUCTION**

Birds behaviour differs with respect to its habitat. Birds inhabiting in natural habitat have normal behaviour in terms of feeding, nesting, parental care to the young, courtship, competition etc. But in changed ecological niche, they bring about the adaptation accordingly.

## **BACKGROUND OF THE STUDY SITE**

Eight kilometer north east of heart of Kathmandu city lies a pre-historic place *The Gokarna Safari Park*, a place of adventure from the period of Malla Kings. A place of natural virginity with evergreen natural heritage. This area close to the densely populated capital, is the house of varieties of bird species and few vertebrate fauna. The site is still less polluted and environmentally less disturbed. This noble galaxy of biological fauna are either migrated from the surrounding area or from the distant place. Thus, the Gokarna Safari Park is also known as the living paradise for the bird watchers and nature lovers. ( Appendix I, Photo: 1)

This habitat is a mixture of natural and man managed forest. The adjoining area also serves as a place to dump the domestic waste, normally kitchen refuse, already decomposed in the road side. These refuse serve as a food for some the birds (Photo: 2).

Very close to the park and across the road lies a narrow area, where approximately more than 200 crows and 250 kites are dwelling everyday for the fulfillment of their biological needs food, courtship and other regular behaviors. This unpleasant smelling area is known as Gokarna Dumping Site. After its selection in 1984 A.D. local people are forced to inhale rotten smell and face numerous problems arising from it. Where as in the past they were enjoying with the charming songs and splendid activities of the birds.

## **SCOPE AND LIMITATION**

Nepal is rich in bird Biodiversity. Its distribution and taxonomy has well studied by prominent ornithologists Ali (1981, 82, 89), Ripley (1983, 89), Inskipps (1983, 96), Fleming (1976), Kaji etc. Its relation with growing urbanization, especially dumping site was not yet studied. This study attempts to open an important dimension

of the particular type of birds distribution and behaviors. It was a field study for a duration of little more than half a year. Ordinary binocular and naked eye was the means for bird watching. Secondary data were not available in the field of birds behaviour with respect to sanitary land fill site in Nepal. Therefore little work, has been possible to accomplish.

### **MATERIALS AND METHODS**

A schedule of field visit covering winter and rainy season (February to August 1996) was set for six months. Every Saturday, the team devoted the whole day in the study site. Observations was done in three parts of the visit schedule. Morning 6-9 A.M., 9-12 A.M., 12-3 P.M. Number and types of birds visiting the site with feeding and associated behaviour was observed. Questionnaire, interviews, group discussion were the methods used to collect information. Information was collected with the local people, slum dwellers, solid waste management personnel, and aircraft crews. Both qualitative and quantitative data were collected and processed for result.

### **RESULTS**

There were a few species of birds funds roaming around this site. The dominant species were eagle. The stepped eagle was only winter visitor and was seen in a blue moon only. They were seldom seen after the commencement of April.

### **ACTIVITIES OF CROW**

Crows were found very familiar, social clever and active omnivore bird living in close association with human beings. (Ali S. and Ripley; 1983) They were found voraciously feeding for whole day during the visit duration. The house crows were migrated from the surrounding residential area while the jungle crows were from the jungle of north and south.

They had a diversified range of food as these are omnivore birds. They were taking any things from sewer, rat, flesh, chicken viscera to kitchen refuse, insects, vegetables, grains, egg-fledging, bird pilfered from nest and some domestic fowl from the surrounding area. (Field observation) Actually, they were ground feeder but used to fly away to a desirable distance if fees disturbed. Generally, they flew with morsals on their beak. They fed it when they reach at safety places, e.g. either on tree twigs, rooftops, verandas or clothe strings. They were able to get more food even from very risky doors due to their intelligence and cunningness.

Both intra and inter specific competition was explicitly observed especially on feeding behaviour, other behaviours were not observed during the food capture. They

tried to compete by chasing and fleeing to each other. Although comparatively smaller than kites, they were able to attack and chase the kites easily. The attack was either from the back or from the upper side. Their offensive and attacking tools were weak so generally they used beak and legs. The jungle crow was normally larger than house crow with long feathers, elongated beak, large eyes and completely bright-black body. Daily, they migrated to the field of adjoining jungle of northern and southern side. (Photo: 3 and 4)

They were found very social and conscious bird able to communicate each and every extra ordinary conditions to other. They could immediately convey the situation of danger and contamination of poisonous agents in food with expression of worries. (Field observation)

In case any member of them felt on crisis or died, they use to gather at the particular place as soon as possible and tried to escape the affected member from the situation. In such condition, they produced loud cry which acts as a call bell to other members from far distance. Their feeding ground was frequently getting disturbed by transporting vehicles, sorting machine, slumdwellers, gliding or swifting of kites as well as catapult shooter children. Sometimes, they flew very high in the sky and created problem to air-craft. They used mixture mode of flight i.e. either soaring or flying very high according to the situation.

### **ACTIVITIES OF KITE**

Number of kites are seen encircling high over head across the Dakshindhoka, a site nearby one kilometer towards the city suburb. A close observation from the hillock against the dumping site both by naked eye and with the help of binocular revealed kites soaring in circle like glorified swallows and scaling along close to the ground. They seemed to be quartering to ground systematically in search of food. It was interesting to watch their graceful movements. It was not easy to disturb them during food collection, while they were soaring and gliding swiftly alternatively. During winter, they used to roost on leafless trees in morning hours and came to the feeding ground after sun rise. In case of disturbance, they flew on the sky for a desirable distance and took rest. After feeding, they enjoyed flying in the sky for a long time either singly or in a group. They stayed in nearby Gokarna Safari Park and came to ground early in the morning. After an interval of an hour, they flew either to take rest or to soar in they sky. In winter, most of the time kite enjoyed in taking a sun bath. Their flight was quite unmistakable with its lightness and buoyancy, a mixture of flapping with long leisurely strokes and short glides. The direction continuously remained changing with spirals and cants. During the time, wings became frequently flexed from the first join. They came down in a swift glide, stopped and snatched the food. When felt disturbed, they flew away taking

suitable morsals from the food stock in its powerful grasping legs. Larger fragments those couldn't be eaten in the air were transported to some favorite and suitable perch to feed at leisure. If many members, capture of food by one of the members was exhibited by signaling to others. It was done by chivying and screaming in course of which the desirable booty was frequently changed. But in winter, such activities were not seen as food intake was happened in the ground. It might be because of the warmth of sunlight in the ground. (Photo: 5 and 6)

**Table 1: Monthly data of different species of scavenger birds visiting the SLF**

Month	House Crow	Jungle Crow	Steppe Eagle	Booted Eagle	Pariah Kite	Total Corw	Total Bird	Grand Total
February	261	34	279	71	123	295	473	768
March	293	35	106	33	84	328	223	551
April	387	18	42	21	112	405	175	580
May	615	22	25	07	103	637	135	772
June	905	25	01	02	84	930	87	1017
July	909	12	00	00	97	921	97	1018
August	921	18	00	00	103	930	103	1033

Source: Field observation.

**Table 2: Frequency of movement of vehicles carrying solid waste**

Time	February	March	April	May	June	July	August	Mean
5-9 a.m.	30.5	33.4	36.5	36.3	35.6	36.3	35.4	34.85
9-12 a.m.	19.8	17.4	15.3	22.8	19.2	18.00	20.2	18.93
12 p.m	7.5	11.8	3.75	8.8	9.0	8.5	9.8	8.44

Source: Field observation.

**Table 3: Frequency of bird visit in the SLF Site**

Time	February	March	April	May	June	July	August	Mean
6-9 a.m.	768	551	580	772	1017	1718	1033	819
9-12 a.m.	460	220	235	327	613	502	647	429
12-3 p.m.	185	115	105	163	212	196	218	171

Source: Field observation.

**ENVIRONMENTAL EFFECT**

Solid waste of the Kathmandu metropolis and Lalitpur submetropolis is being managed after opening of the Gokarna Land Fill Site. The project site is being run at the social cost of local people and the environment. Increased traffic of carnivorous birds around the local human settings have created several problems. Crows feel free and familiar to visit the human habitat nearby the dumping site. Crows, because of fearless behaviour, used to take some usable grains, clothes and other materials from the windows, verandas, floor and ground etc. They remained waiting in the electric pole, high tension wire, telephone wire, strings, windows, purloin of house etc. By the time they felt convenient, jumped to the item for capturing. More than ten crows visited the Mulpani and Dakshindhoka villages per minute with rotten foods, vegetables, polythene bags, bones, fleshes etc. on their beaks as morsals. Thus at least six to eight kilogram of solid waste was transported and spread over the roof tops, windows, play grounds and farming fields, but also disturbed the local people by picking the small domestic poultry, vegetables, fruits, seedlings as well as by producing loud noise mainly early in the morning. Nearby villagers were complaining that their maize (main crop) yield had declined by twenty percent compared to the previous years.

The kites and eagles, on the other hand transported large bony flesh, chicken viscera, bone-pieces etc. They transported not only to the surrounding fields but to the nearby water sources, too as they become thirsty after the meal. Thus, the surrounding area of Gokarna Land-Fill Site is going to be more polluted day by day. Water contamination level at this site is yet to be studied. But the direct contamination of biodegradable debris in the water source definitely have produced health problem. Prevalence of gastroenteritis has increased after opening of the Gokarna SLF site. Housefly and gnat number was also tremendously increased during the summer season, with an outburst of epidemics.

Next important fact of the site is that, the Gokarna dumping Site do not match with the situation of Air-port in the respect of distance. The Gokarna area acts as a flight as well as landing route of the most National and some International Air-crafts. Crows and kites are found soaring normally between 10.00 A.M. to 3.00 P.M. at a high distance. It is the busy hour for Air-crafts, too. Some times Air-craft moved forward through below the soaring birds by tilting the craft left and right, up and down etc. The kites being swift-flyers used to unexpectedly change the direction of flight thus creating a maximum chance of collusion with them. Thus, the gathering of soaring birds and business of flight at the same time may result in dangerous accident.

## **CASES OF BIRD STRIKE**

Cases of bird strike are frequent in Pokhara, Tribhuvan International and Nepalgunj airport in Nepal. Four cases of bird strike are reported from Pokhara airport in 1996.

In Tribhuvan International airport eagle and kite were recorded the common soaring birds. Chances of bird strike happened at an average of 500-1000, above ground level. The airport is surrounded by paddy field, Gauchar forest and Pashupati grooves. The Bagmati river is very dirty and different kinds of solid waste along with dead bodies are disposed there. Gokarna SLF being very near to the airport, aggravates the problem further. Thus runways of the airport serving a common path and bathing area for varieties of birds. (Photo: 7)

Thai Airways jet carrying 228 passengers and crews was struck by a group of vultures in Tribhuvan International Airport on October 9, 1996. A-300-600 Jet Airbus was speeding to Bangkok and the event happened after 7 minutes after airborne. No injuries were reported in the accident, though 5 vultures died. The jet was damaged by the force of impact. Jet's engine fan blades were damaged and the area just above the pilot's cockpit window was stained with blood. It was the most serious bird hazard at TIA, as reported by the Civil Aviation authorities.

Bird's hazard are constant threat because vultures come constantly to feed the earthworm in the ground. The worm come out of the ground and die on the runway, this attracts the birds. Proximity of garbage dumping site also attract the birds on the runway, thus makes it impossible to keep the bird away.

## **DISCUSSION AND CONCLUSION**

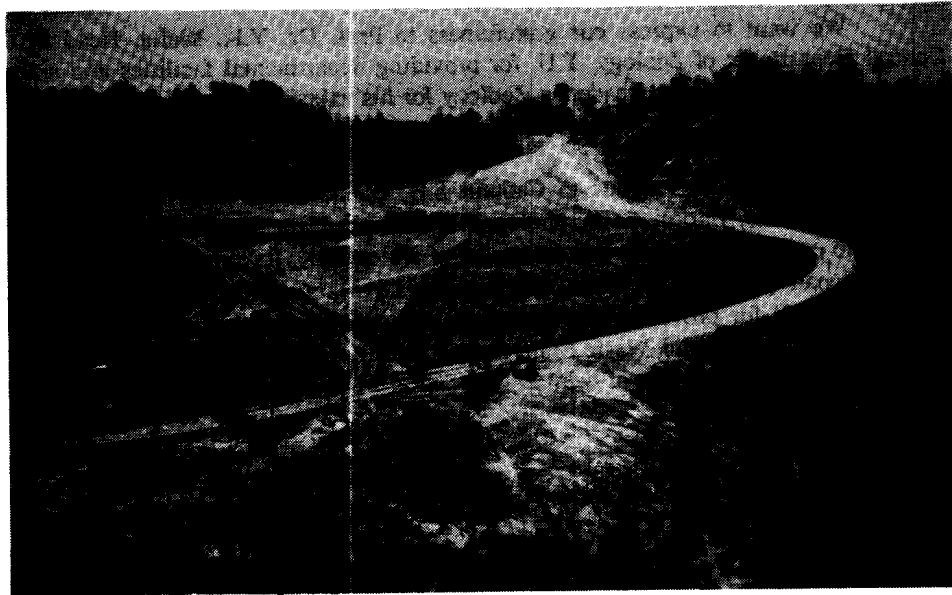
Sanitary Land Fill Site is an important component of any human settlement sector. Especially urban settings are highly influence by SLF site. Gokarna SLF, is very close to the densely populated human settlement area. Its aerial distance with TIA is also not so far. Height attained by the aircraft after take off is almost tallying with the soaring altitude of kites and vultures. Other hazards e.g. earthworms, or leftover of debris on site with the airport. Nearby paddy field also attract the grain eater to the airport. These coincidences of events are resulting in the cases of bird strike. Cases can be minimized or controlled by shifting the SLF to other appropriate site, as per the Civil Aviation Code.

## **ACKNOWLEDGMENTS**

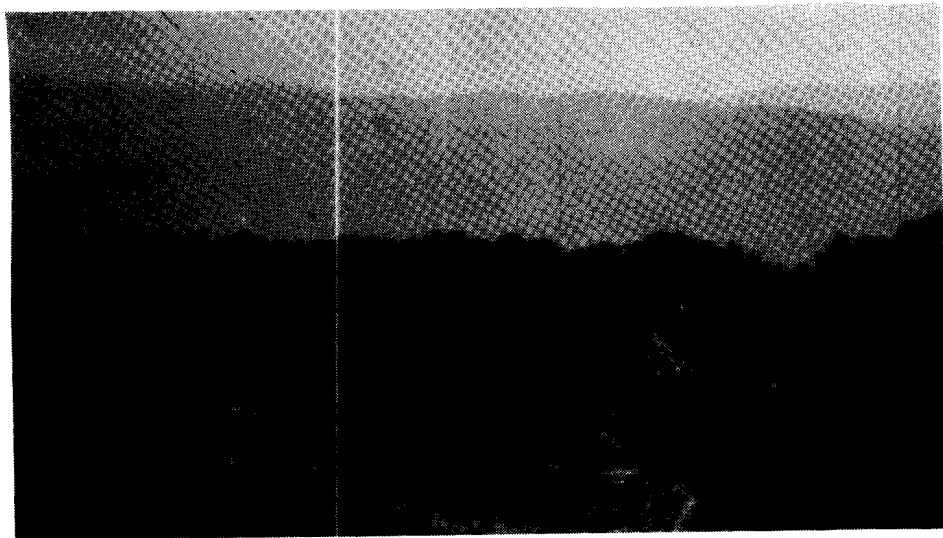
We want to express our gratefulness to Prof. Dr. Y.K. Malla, Head of the Central Department of Zoology, T.U. for providing departmental facilities and sincere advice; Dr. T.K. Shrestha, Reader in Zoology for his valuable suggestions and creative ideas.

Special thanks are due to Captain S.B. Bhattarai (RNAC), for his valuable suggestions, data, informations, photographs etc. We are grateful to other aircraft crews who contributed during this study, out of which M.K. Rayamajhi, R. Bajracharya and B. Nepali (Founder President, BCN), Mr. H.S. Baral, Ananta Bhattarai, Mr. H. Shakya of BCN for providing ornithological expertise information. Mr. Y. Joshi, R. Sitaula, A. Shahi of Solid Waste Management and Resource Utilization Centre, Teku, Kathmandu for various types of help.

**APPENDIX I**

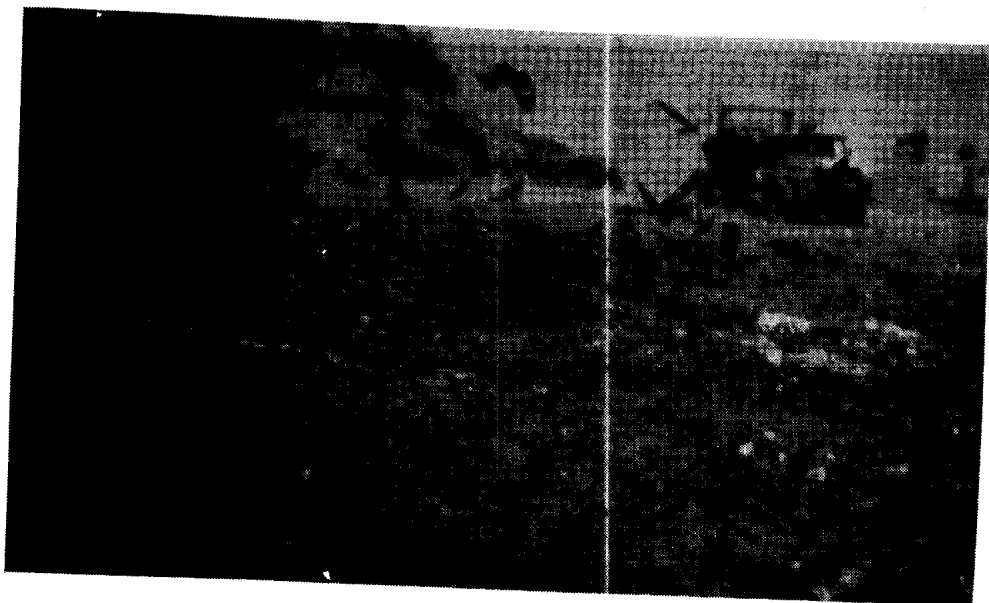


**Photo 1: The proper study area, Gokarna Sanitary Land Fill Cite (LFS);  
in external view**

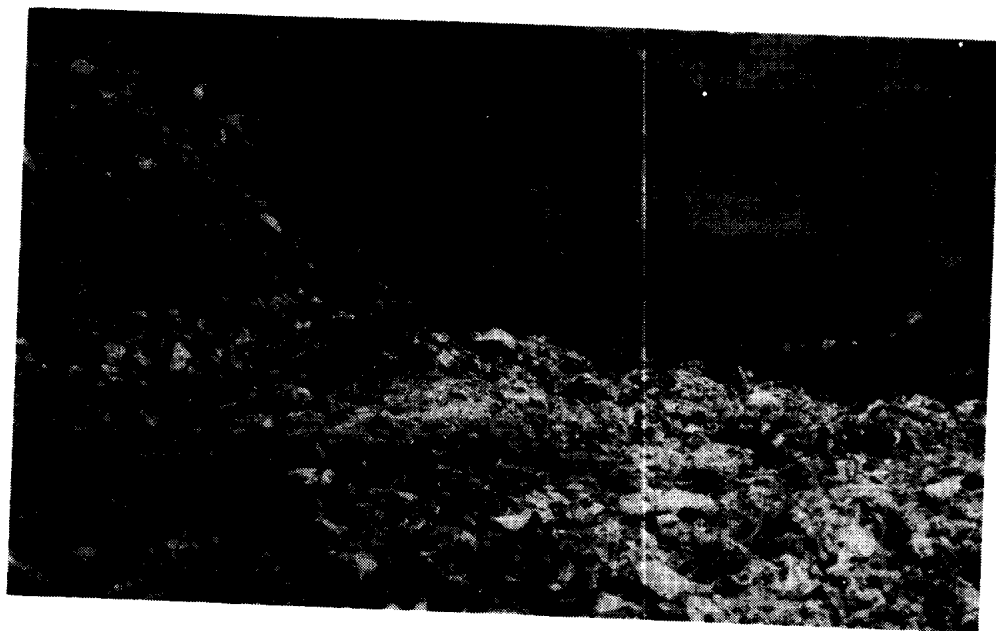


**Photo 2: Gokarna safari park a habitat to birds of LFS**

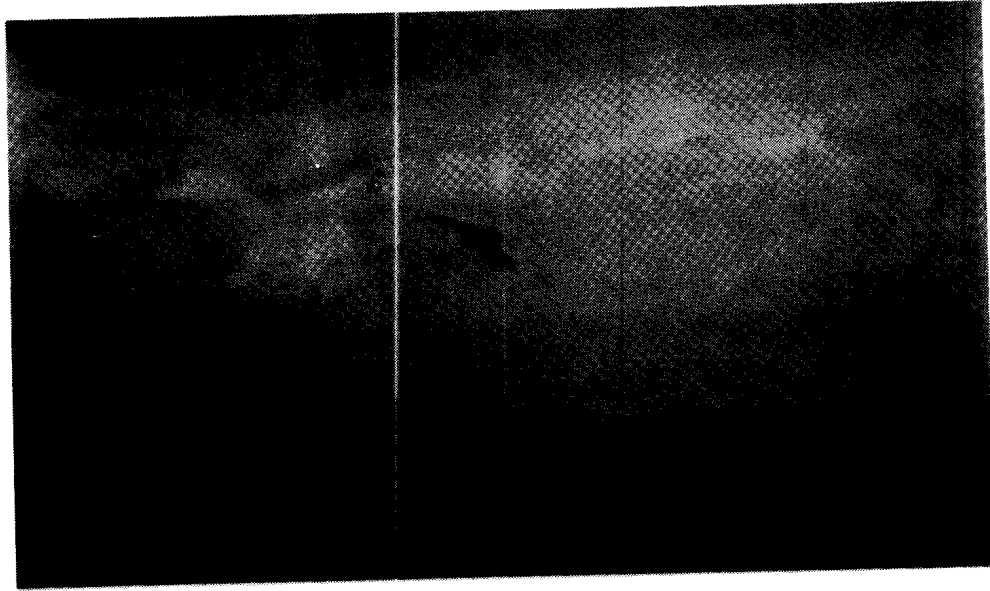




**Photo 3: Raptors enjoying on ground feeding**



**Photo 4: Crows roosting on hill-side due to vehicular dicturbance**



**Photo 5: Pariah kite soaring on the sky**



**Photo 6: Steppe eagle looking for food on the ground**



**Photo 7:** One of the most dangerous Aircraft-bird strike, which had taken place in 1987 near Baitadi. A hole of 2x2 ft. was made on the left wing of RA-craft. The vulture size was 7-9 ft. long wing to wing.

APPENDIX II

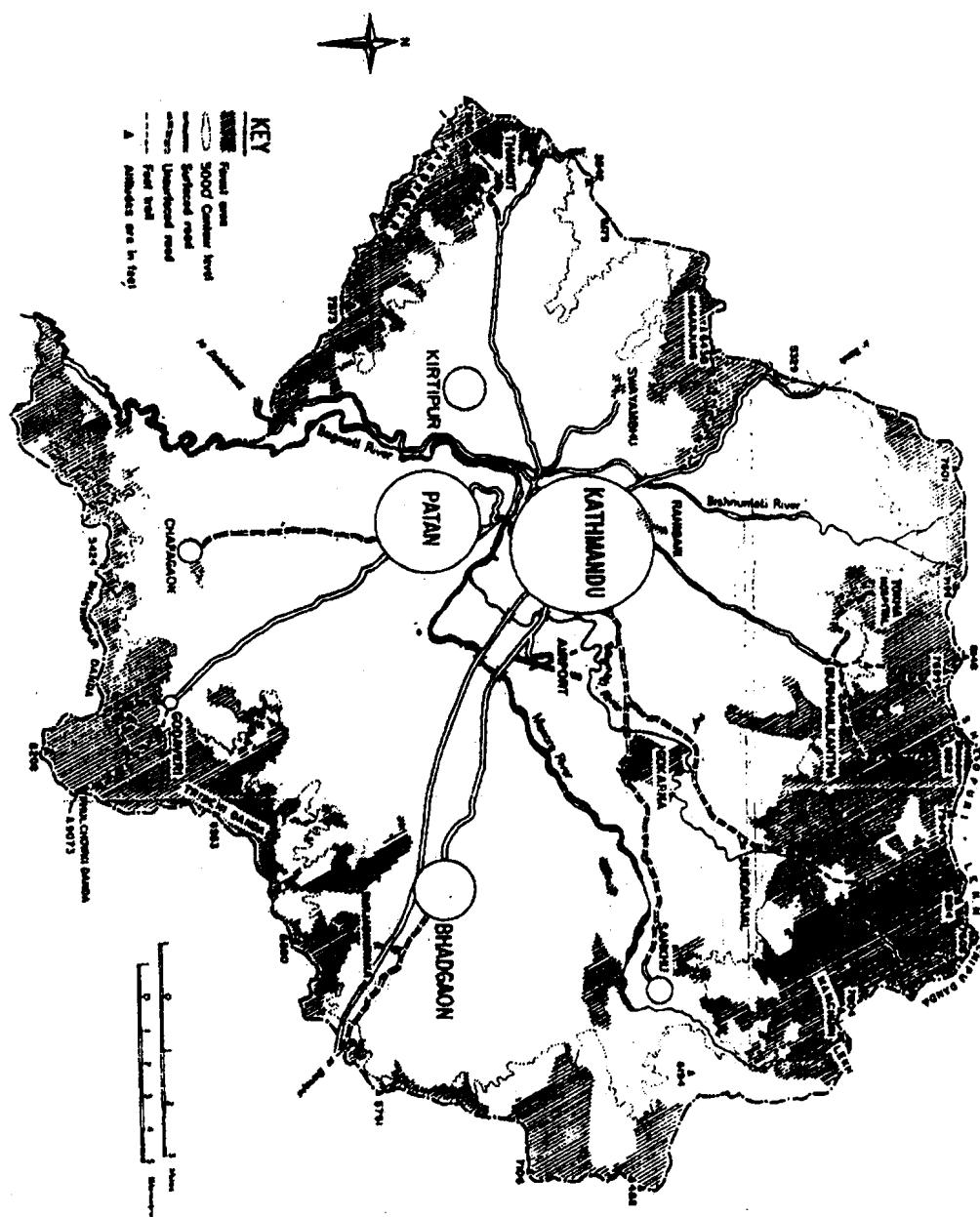


Fig. 1: Map of Kathmandu valley showing forest, scrub forest and important bird conservation areas



Fig. 2: Distribution of House Crow (*Corvus splendens*) in Nepal

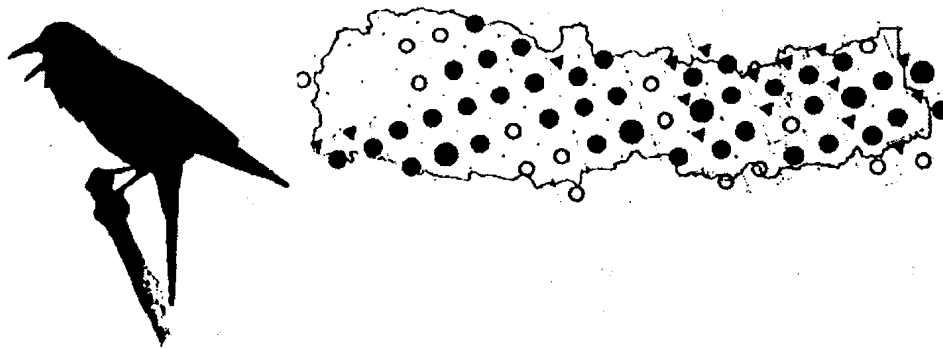


Fig. 3: Distribution of jungle crow (*Corvus macrorhynchos*) in Nepal



Fig. 4: Distribution of Pariah kite (*Mibvus migrans*) in Nepal

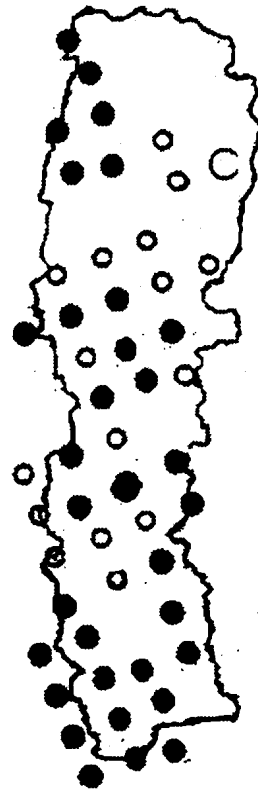
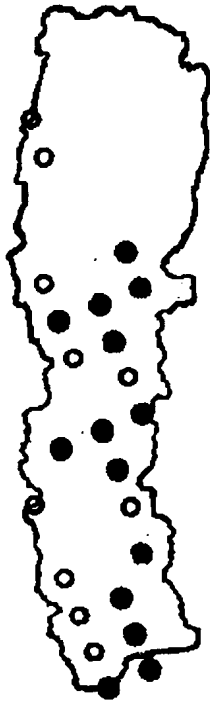
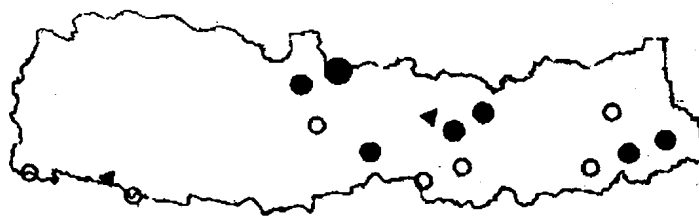


Fig. 5: Distribution of Steppe eagle (*Aquila rapax nipanensis*) in Nepal





**Fig. 6:** Distribution of Booted eagle (*Hieraaetus pennatus*) in Nepal

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