CHAPTER VI

SUMMARY OF THE FINDINGS

In the present study of biological and microbiological aspects of whitebacked vultures, population of permanent feeding ground and roosting sites, habit and habitat, feeding and scavenging behaviour, and microbes of food, faeces and water were dealt in depth which are as given below.

(1) Population at permanent feeding ground and roosting sites.

The number of vultures at permanent feeding ground of Korakendra and on different roosting sites showed a strong relationship between them. The results show that the population at permanent feeding ground is inversely proportional to the population of roosts. The congregation of vultures at Korakendra started even before the sun rise and the congregation reached its peak by 10 o'clock. This period was marked by congregation of birds at the feeding ground and availability of food. This was the best period for the visiting birds to get food without any external interference at the permanent feeding ground.

The maximum number of whitebacked vultures remained almost constant from the 1000 hrs to 1600 hrs. The maximum number of birds observed in one time was 693. The constant number of vultures at feeding ground attributed mainly to the interference from workers and different activities of vultures at feeding ground. The number of vultures gradually decrease from 1600 hrs onwards as the individuals gradually leave the feeding ground after 1600 hrs to the different roosts. Between 1700 to 1800 hrs the number of birds again increase because of non interference of
workers and the extent of hunger of birds which is related to nearness of roosting and feeding ground.

Similar observations were made at different roosting sites. The number of vultures gradually decrease as the day advanced from 0700 to 1000 hrs. The number of vultures decrease almost to nil from 1000 to 1600 hrs. The change in the number of vultures was attributed to:

(i) Congregation of vultures at permanent feeding ground of Korakendra.
(ii) Vultures flying / circling in search of food other than Korakendra feeding ground and
(iii) Vultures soaring in thermals.

The number of vultures gradually increase from 1600 hrs onwards as the individuals gradually leave the permanent feeding grounds to the roosting sites. At 1800 hrs again there was sudden decrease in the number of vultures at the roosts which was attributed to:

(i) Non interference of workers at Korakendra feeding ground.
(ii) The degree of Hunger of vultures, from proximal roosting sites. Far roosting vultures leave the permanent feeding ground soon after 1600 hrs, as they can go in thermals to their destination without wasting energy.

(2) Habit and Habitat:

Vultures visit the permanent feeding ground of Korakendra
regularly. Vultures preferred to roost in the very near vicinity of the permanent feeding ground. The vultures which are roosting at longer distant places were found to have some source of food in the surrounding areas, though not regular. As a result of this, distant roosting vultures visiting Korakendra arrived a little late in the morning and left for the roost a little earlier in the evening as compared to the vultures roosting close to Korakendra, which visit the site very early in the morning and leave late in the evening. In case of nearest roosting vultures, they spend very little energy to find food. Even in case of distant-roosting vultures, energy is considerably saved by leaving Korakendra during day light hours, thereby utilising thermal currents, for soaring flight.

At the roosting sites vultures on waking up were found yawning, stretching legs and wings, preening, showing very much neck movement, spreading wings but rarely fighting.

At Korakendra feeding ground eight activities namely wing span, flapping, flying, moving, eating/pecking, fighting (aggressive), neck movement and preening were recorded percentage wise. It was found that more than 50% action/time was given for eating and more than 25% to safety and less than 25% to other activities. By simulating the natural feeding in the aviary it was found that vultures were quite tolerant to the researchers presence. Adults were always the first to come to eat and were followed by mixed aged group. In the first instance vultures were not taking cropful of food, but coming again to fill the crop. Subadults/ juveniles were always slow eaters due to inexperience
in removing flesh from the carcasses. There is a possibility of much mortality in subadults/juveniles in nature. Sometimes there used to be vehement fight while feeding. After food vultures used to clean their beak against hard materials and if facilities are available used to drink water and take bath also. After this they performed general activities like flapping/hovering/flying, preening, fighting for perch and so on.

Human interference through labourers was recorded as one of the most important factor which was debarring vultures from food at permanent feeding ground of Korakendra. Because of this, the nearest roosting vultures dropped in whenever there was safety while the distant roosting birds stayed on throughout the day.

(3) Feeding and Scavenging Behaviour:

Feeding potentials of vultures at different intervals was observed on the captive birds. These experiments were conducted on the individual birds and on groups. It was observed that when food was given daily, the average consumption rate of individual vulture was c.300 gm and of groups it was c.290 gm, and at two, three, four and five-day interval it increased substantially from 518 to 715 gm. From the different feeding trials it was observed that there was similarity in the food consumption of individuals and group of birds provided the quality of food was same and there was no external danger/disturbance.

When the experiment was conducted with putrefied meat, it was found that the consumption rate decrease with the increase of putrefication and hunger. On an average, the consumption rate was
408 gm, 283 gm and 161 gm, when meat was putrefied for two, four and six days and length of hunger was four, six and eight-days respectively.

From the experiment on feces of vultures it was found that on an average 10.90 gram (dry weight) of feces were deposited daily by each bird. By comparing the data of food and feces it was found that the ratio was 8:1 (both were dry weight). The feces constitute 13.45 % of total food consumption. The rest of the food is utilised for normal metabolism as well as other activities of vultures. The capacity of vultures to consume large quantities of dead meat show that vultures are very much helpful in cleaning carcasses which otherwise can produce health hazards by polluting the environment.

4 Organisms of Uncooked meat:

Total 18 samples of uncooked meat were analysed and 71 isolates were encountered. The meat was from dead animals and it is quite possible that some of these organisms are contaminants but the rest were endogenous flora.

5 Organisms of Putrefied meat:

Total three samples were analysed and 19 isolates were encountered. Although there were a majority of putrefying organisms some were the contaminants also.

6 Organisms of faecal matter after giving uncooked meat:

Total 96 samples were analysed and 565 isolates were encountered. Some of these organisms were present in uncooked
meat as well as faecal matter and therefore there is a possibility that they could either be natural inhabitants of the digestive tract of the vultures or these organisms are ingested with the food and passed through the digestive tract alive.

(7) Organisms of faecal matter after giving cooked meat:

Total 80 samples were analysed and 218 isolates were encountered. Most of the organisms remained same as above. Those organisms which were encountered in the uncooked meat but not after giving the cooked meat were therefore are the organisms which form the true faecal flora of the vultures digestive tract.

(8) Organisms of Water:

Total three samples were analysed and number of isolates were encountered. The organisms present in the water are the known ubiquitous ones which generally thrive under a variety of conditions and were similar to those encountered in the cooked, uncooked meats as well as the feaces.

(9) Experimental Pathogens:

From the present study of vulture's food and faeces it can be concluded that most of the bacterial flora encountered in the meat, are also encountered in the faeces. But most of these and other organisms were also isolated from the feaces when sterile food was given. From this it may be concluded that some of these microbes are the normal inhabitant of vultures, introduced into the intestinal tract possibly in an early stage of life when the stomach juices were less acidic.
No new or unknown pathogens were encountered. It can therefore be concluded from the present study that the vultures may be acting as mechanical and or latent carriers of many virus born diseases but further extensive study is required to prove this conclusively. From the experimental vultures which were fed the viruses, only antibodies could be detected of the RD and ALC viruses. But non for the FMD and RP.

Vultures are the effective scavengers in nature as they give the pollution free environment by removing the carcasses quickly. But the role in disease transmission, if any, is very complicated. So, further work is required to draw any firm conclusion.

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