

## Chapter 12

### MISCELLANEOUS ISSUES

#### 12.1 Housekeeping of Departmental Elephants

The Tiger Reserve has a total of 5 departmental elephants belonging to different age and sex classes whose services are utilised for wildlife tourism and intensive patrolling throughout the year. In view of the above, it is imperative that the departmental elephants stay in good health. This calls for an effective housekeeping, regular health checkups and timely prophylaxis of the pachyderms at the various pickets throughout the Tiger Reserve. The programme includes the following:

- Guidelines issued by the Park Management for day to day housekeeping of departmental elephants should be strictly followed
- Due precautions should be exercised while dealing with elephants in “musth”
- Since the habitat has a pastoral history of livestock grazing, the prescribed prophylactic immunisation schedule should be scrupulously followed
- The habitat of Pench Tiger Reserve is dry deciduous so Elephants should not be used in extreme heat
- Apart from the mahawats a characutter should also be sanctioned for each elephant to ensure the basic housekeeping
- Elephants that show fear in tiger habitats should not be used alone

Captive elephants tend to lose their inherent disease resistance owing to substantial change in their feeding habits. Similarly, they are also exposed to several diseases of domestic animals due to increased interaction with them.

Many diseases like Anthrax, Blue Tongue, Rinderpest, TB, Pasteurellosis, Trypanosomiasis etc. have been reported in captive elephants (Mikota et al., 1984). Though the information regarding susceptibility and prevalence of diseases is meager, the diseases like Anthrax and BQ are common in animals of this area. Captive elephants are also prone to parasitic infections of alimentary tract. Therefore, the apprehension calls for a strict and regular schedule of vaccination.

For maintenance of health and well being of captive elephants an annual health monitoring programme is essential before each vaccination schedule. The annual health-monitoring schedule must include the following parameters:

- Pulse and respiration rate
- Body weight

- Blood examination for blood parasites, blood chemistry and haematology
- Urine and fecal examination for parasites
- Care of feet
- management of nutrition

As early recognition of disease is very important for its prevention and control, regular monitoring of fecal and urine samples for colour, quantity, endoparasitic infestations, and food habits apart from observations relating to movements of body parts are essential.

### **Vaccination & Deworming Schedule**

The vaccination programme should be as per the prevalence and previous reports on outbreaks of infectious diseases in the area. It is essential that vaccination should be completed before monsoon. Sometimes, though rarely, vaccine may cause reaction in the form of anaphylaxis. Therefore, it is desirable that the vaccination should be done in the supervision of qualified wildlife vet.

**Table No. - 116**

<b>S.No.</b>	<b>Vaccine/ Medicine</b>	<b>Month of Vaccination</b>	<b>Periodicity</b>
1.	FMD polyvalent vaccine	May/ June-Nov./ Dec.	Every 6 months
2.	HS Vaccine	April/ May	Annually
3.	BQ Vaccine	April/ May	Annually
4.	Anthrax Vaccine	April/ May	Annually
5.	Deworming schedule	March-Sept.	Every 6 months

## **12.2 Wildlife Health Monitoring**

### **12.2.1 Disease surveillance and Prophylactic Immunization:**

Protected areas are established with an aim to conserve components of biodiversity to maintain their status in the natural ecosystem to protect the species from premature extinction. Outbreak of fatal diseases among the population of wild animals has lost considerable wild fauna in the past. Large-scale mortality of Bison in South India during (1968 and 1975) and Kajiranga National Park (1981) by Reinderpest and by Foot and Mouth Disease (FMD) in 1952 had been reported in the past. Dissemination of a number of diseases, like; Reinderpest, FMD, Anthrax, TB and Rabies are common in wild animals. In order to maintain the good health status of the wild animals, efforts for disease surveillance is extremely important in the Protected Areas.

There is a great competition of survival among wild ungulates and cattle for both forage and water. The domestic animals come in contact with wild animals, particularly ungulates at common grazing fields and at waterholes. Due to this, chances of the transmission of various fatal infectious diseases from livestock, to wild

animals, namely Rinderpest (RP), Anthrax, Foot and Mouth Disease (FMD), Haemorrhagic Septicaemia (HS) etc., are extremely high. It is also known that there are few diseases which are communicable to carnivores from diseased ungulates; e.g. Rabies, Anthrax, Hydatidosis and Trypanosomiasis (Arora, 1994)

Free-ranging wild animals are as susceptible to diseases as any other living beings. Diseases have been a major cause of local extirpation of a number of wild animal species in India. With the increasing interaction between wild and domestic animals, the chances of disease transmission amongst them are high. Therefore, similar to the attempts made for recording the occurrence of disease outbreaks in wild animals of protected regions, efforts should also be made to know the occurrence of specific infectious and contagious diseases in domestic animals at the periphery of the protected wildlife areas. Until and unless different epizootiological cycles of various parasitic and infectious diseases are delineated, it will not be possible to plan out measures to eradicate these diseases from free ranging wild animals.

For maintenance of health of wild animals, it is essential to monitor and survey the parasitic and infectious diseases periodically so that necessary actions could be taken to prevent disease outbreaks and control large-scale mortality. Surveillance programmes will be a major aid in the implementation of long-term health management plan on the appropriate measure to maintain healthy population of wild animals and guarding them against the risk of sudden and heavy mortality or morbidity in Protected Areas. This can be best achieved by preventing transmission of diseases between wild and domestic and in-between wild animals by manipulating the factors involved in the transmission. Establishing the database for forecasting the diseases by performing epizootiological studies in and around the Protected Areas round the year is of utmost importance and needs attention. To study the prevalence of parasitic, infectious and epidemic diseases one study was granted to Veterinary college Jabalpur.

During the study Faecal samples of 311 wild animals (chital - 132, sambar - 59, nilgai -53, gaur - 23, Tiger -7, dhole- 11, Jackals - 9, common langur - 11 and peafowl - 6) were collected from the core area of Pench Tiger Reserve. Faecal samples of 314 domestic animals (cattle -186, buffalo - 62 and goat - 66) were collected from the buffer zone. The domestic animals at the peripheral villages were clinically examined for parasitic and infectious diseases and information about the history of disease outbreak in the area was gathered. Each sample was examined for parasitic infection by qualitative concentration technique and positive samples were subjected to quantitative technique to determine egg/oocyst load. The results so accrued, were correlated between different species, seasons and areas of the Park to assess the prevalence of endoparasite infection. Blood samples of 24 domestic animals were collected for haematological and serological studies to know the prevalence of diseases like foot and mouth disease, bluetongue, rinderpest, brucellosis, haemorrhagic septicaemia, schistosomosis and blood protozoan infections. (cattle -12, buffalo - 6 and goat - 6) were collected for haematological and serological studies to know the prevalence of diseases; Necropsy of a chital fawn, an adult chital (kill), an elephant calf and 2 adult sambars was conducted. Body condition of 100 wild herbivores and 100 domestic animals was evaluated by judging the condition of the animals based on visual examination of the degree of protuberance

of bony processes on the body surface and condition of skin coat. (chital - 40, sambar - 25, nilgai - 25 and gaur -10) and 100 domestic animals (cattle - 40, buffalo - 30 and goat - 30) was also evaluated.

The results of survey revealed that the wild animals and resident livestock population are infected with one or the other seasonally and topographically fluctuating parasitic infections. In wild herbivores, the rate of prevalence of parasitic infection was found to be 32.79% with maximum infection of strongyles (27.54%). The overall prevalence was highest (41.66%) during rainy season. The highest prevalence was recorded in nilgai (35.84%), followed by gaur (30.4%), chital (29.54%) and sambar (28.81%). The rate of prevalence in wild carnivores was 55.55% with highest infection of *Sarcocystis* sp. (33.33%) and highest (88.88%) during summer season. Jackal showed maximum infection (66.6%), followed by dhole (54.5%) and tiger (42.85%). Among omnivores 29.41% animals were positive. Strongyles and *Strongyloides* sp. dominated with 23.52% infection of each. The prevalence was highest (66.66%) during rainy season.

Interestingly, the rate of prevalence of parasitic infection was higher in domestic animals (47.70%) as compared to their wild counterparts with maximum infection of strongyles (38.83%). Similar to wild herbivores, the prevalence of parasitism was highest during rainy season [cattle (62.06%), buffalo (50%) and goats (45%)]. Maximum infection was recorded in cattle (53.22%) followed by buffalo (43.54%) and least in goats (36.36%).

The area-wise prevalence of parasitic infection in wild herbivores was highest (52.17%) in beat 1-6 and least (12.12%) in beat 24-29. In domestic animals as well, the highest (54.32%) prevalence was recorded in the villages of central zone adjoining beat 1-6. Similarly, the infection in domestic animals in villages of west zone near to beat 24-29 was least (32%). Qualitatively the load of the parasitic infection in and around a particular area also showed similar pattern in both wild and domestic animals. The EPG/ OPG in domestic animals as compared to their wild counterparts suggests the former to be responsible for dissemination of infection amongst wild animals also. In present survey, the parasitic infection in wild herbivores and domestic counterparts in an area appeared topographically to be parallel denoting the fact that the infection is being maintained in the environment through aegis of domestic animals.

Serum samples of domestic animals revealed 11 animals (5 cattle, 4 buffaloes and 2 goats) positive for FMD by LPB ELISA method. One cow and 2 buffaloes with history of abortion were positive for brucellosis and 3 cattle in apparently healthy condition showed doubtful reaction by standard tube agglutination test. Three cattle and 2 goats were positive for schistosomiasis with 2 cattle and 1 goat showing + reaction and 1 cattle and a goat showing +++ reaction by Cercarian Hullen Reaction. The high prevalence of infectious diseases in domestic animals of Pench Tiger Reserve is an alarming sign for the Park authorities as these animals intermingle with the wild animal population thus exposing them to a number of hazardous diseases.

During the survey, the average value of total erythrocyte count, haemoglobin concentration and packed cell volume in domestic animals were much lesser than the

values of normal healthy animals. The interpretation of erythrocyte indices revealed microcytic hypochromic anaemia in some animals and macrocytic hypochromic anaemia in few animals. The mean total leucocyte count was high with elevated lymphocyte and eosinophil counts. The mean total plasma protein values in domestic animals were significantly lower. The findings are suggestive of high prevalence of infectious and parasitic diseases. The present study did not reveal any blood protozoan infections, which could probably be due to non-prevalence of ticks on the body of animals and absence of insect vectors in their proximity.

Among wild animals, the body condition of 48% animals was judged to be in good, 34% in average and only 18% in poor condition, whereas in domestic animals only 19% animals were in good, 63% in average and 18% in poor body condition. The picture indicates that the wild animals are in better body condition and health status as compared to the resident livestock. The reason attributed to the current scenario might be higher parasitic load and stress condition in the later.

Postmortem examination of a chital fawn, an adult chital (kill) and an elephant calf did not reveal significant changes indicative of any disease. The gross, histopathological and microscopic examination of the carcass of two sambars was suggestive of pasteurellosis. The disease in sambars might have been transmitted from domestic animals of buffer area, as both the carcasses were found at the periphery of the park. The detail of seasonal prevalence of parasitic infection in wild carnivore, omnivores and herbivore & area wise prevalence of infection in wild animals is given in **Annexure No. – 57 (A, B, C & D)**.

In free ranging Wild animals, only a fraction of mortalities due to diseases are visible at a time, except during epizootics, when the mortality exceeds the rate of predation and scavenging. Hence, the impact of diseases visible in these animals is far lesser than the actual scenario. Therefore it is essential to understand the magnitude of disease problem in free-ranging wild animals. More recent investigations by conservation agencies have shown that diseases and parasites are a decimating factor affecting population dynamics of wild animals.

It is of utmost importance to carry out epizootiological studies covering at least 3 complete years so as to generate information on prevalence of infectious and parasitic diseases and various climatic factors influencing the rate of infection. This will help in proper mapping and developing a forecasting system on various infections among native wild animals. This contribution will be a major aid in the implementation of long-term health management plan and guarding the wild animals from the risk of sudden and heavy mortality or morbidity. To achieve the above objective need of establishing a well-equipped field veterinary laboratory is of utmost importance along with the trained staff.

#### **(A) Prophylactic Immunization:**

Some disease which are common to this area and are epidemic in nature and spread by both wild and domestic animals, preventive treatment against these diseases by the means of prophylactic immunization to the domestic animals be given. Domestic

cattle, which may transmit the disease among wild fauna, can be vaccinated to prevent the occurrence of FMD, Reinderpest, BQ and HS.

Such immunization is carried out in 99 villages located within a radius of 5 Km. from the National Park and Sanctuary. It is believed that an animal can cover maximum distance of 5 Km. to graze and browse.

Prophylactic immunization to cover FMD, BQ and HS are regularly carried out with the help of Veterinary Department of Seoni and Chhindwara district every year, to reduce the chances of spread of disease from cattle to the wildlife.

### **Cattle Immunization**

S.No.	Year	No. of domestic cattle immunized
01	2005-06	46328
02	2006-07	43416
03	2007-08	42428
04	2008-09	41792
05	2009-10	39773
06	2010-11	39872
07	2011-12	39474

### **(B) Disease Surveillance:**

A quick disease reporting detection treatment system only can achieve proper disease surveillance. In the case of wild animals, detection of disease is only based on observation on animal behaviour and their day to day activities. Concept of landscape epidemiology that associates the occurrence of a certain disease with the existing landscape may also be kept in the mind. The knowledge of animal species typical to the given area and particular disease maintained and spread by them may be extremely useful in disease detection and treatment. If such a disease is detected, its prophylactic treatment by immunization, water hole treatment or aerosol immunization can be done. To protect and maintain wildlife in PA with good health, it is necessary to achieve disease surveillance of –

- (i) Native wild population
- (ii) Domestic cattle of adjoining villages

### **Parameters for the monitoring of wild animals health –**

1. General examination
  - i. Physical examination
  - ii. Clinical observation

2. Laboratory investigations
  - i. Faecal examination
  - ii. Heamatological examination
  - iii. Serological examination
3. Study of kill / Mortality
4. Detailed post-mortem examination
5. Collection of material for laboratory examination

The detail about the general examination, Laboratory investigation, study of kill / mortality, Post mortem examination and collection of material of laboratory examination is given in **Annexure no. – 58**

### **12.3 Mortality Survey**

This should be continued as before every six months. The camp staff should be suitably instructed to collect all mandibles/ skulls from the habitat for an assessment of species specific/ age – specific mortality.

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