

## Domestic and wildlife damage to crops and mitigation strategies around Rajiv Gandhi National Park (Karnataka)

■ M. MAHADEVA MURTHY, N. SHIVKUMAR, G.M. DEVGIRI, N. SWAMI RAO AND T.K. NAGARATHNA

**Article Chronicle :**

**Received :**  
02.03.2013;  
**Revised :**  
23.04.2013;  
**Accepted :**  
26.05.2013

**Key Words :**

Crop and live stock damage, Elephant proof trench, Mitigation strategies, Rajeev Gandhi National Park

**SUMMARY :** A study was undertaken in the Rajeev Gandhi National Park, Karnataka to assess the crop and live stock damage caused by wild animals and to recommend mitigation strategies to control or prevent such damage. The fringe areas of the park are inhabited by tribals who traditionally cultivate food crops for their livelihood. The large population of herbivores and carnivores in the park area live in harmony as long as there is sufficient food and water. They usually do not stray out of the park area if left undisturbed. However, encroachment of the forest area for raising plantations and cultivation of crops in forest fringes attracts the wild animals during cropping and dry seasons. The wild animals stray out and cause wide spread damage to standing crops and plantations by trampling and uprooting. They also attack domestic and livestock browsing in the forest and humans entering into forest area for collection of forest products, collection of fuel wood and other activities. Thus, a conflict between man and animal has been a constant feature in the national park. The study conducted in seven ranges of Rajeev Gandhi National Park revealed that, damage and destruction of crops resulted in crop loss, injury and loss of human and cattle lives and damage to plantation crops. The findings indicated that, coffee, coconut, paddy, ragi, cotton, and tobacco are the major crops grown in the fringe areas and the maximum damage and loss to these crops is caused by elephants and wild boars. Tigers and leopards also caused greater loss of life among domestic animals like cattle, sheep, and dogs. This study recommended that, protective measures like construction or renovation of EPT (Elephant Proof Trench), fencing with electric fence or any other mechanical barrier to control the movements of wild animals and human activity within the park area have to be taken to prevent or minimize man-animal conflict and crop loss by wild animals.

**HOW TO CITE THIS ARTICLE :** Murthy, M. Mahadeva, Shivkumar, N. Devgiri, G.M. Rao, N. Swami and Nagarathna, T.K. (2013). Domestic and wildlife damage to crops and mitigation strategies around Rajiv Gandhi National Park (Karnataka). *Asian J. Environ. Sci.*, 8 (1): 46-48.

**Author for correspondence :**

**M.MAHADEVAMURTHY**  
Department of Forestry and Environmental Science, University of Agricultural Sciences, G.K.V.K., BENGALURU (KARNATAKA) INDIA  
Email: mmmurthy@rediffmail.com, mmmurthy2013@gmail.com

See end of the article for **Coopted authors**

National parks in India shelter large number of wild life. As long as there is sufficient food and water they live in harmony with nature. The large biodiversity of plants existing in the National Parks supports variety of herbivores like elephants, deers, sambar, bison and others. This in turn supports carnivorous animals like tiger and cheetah. Thus, a harmonious prey-predator system exists in the park and their balance is maintained by nature. However, in some of the parks, this harmony and the delicate ecosystems that have been built over the years disturbed due to human activity in the fringe areas and also inside the park area.

Encroachment of forest land for cultivation of crops and other activities attract wild animals towards the field crops grown inside and around park area causing damage to standing crops (Manjrekar, 2000). The wild animals not only destroy standing crops but also cause harm to the forest dwellers and their livestock. This has lead to man-animal conflict in the forest fringe area of National Park. In order to understand the causes of wild life damage to the crops, domestic animals and human beings and also to suggest suitable management practices to minimize the damage caused by wild animals, a study was undertaken in the Rajiv Gandhi National park in

Karnataka.

The Rajiv Gandhi National park in the Nagarahole range in Coorg District of Karnataka covers an area of 643 sq kms (KFD Statistics, 2007). The park area comprises of most deciduous forest, dry deciduous forest, scrubs and a few pockets of swamps. The swamps which are locally called as Hadlus shelter several herbivores and large number of birds. The wild life habitat in the National Park is ideal for large species of wild animals like elephant, bison, sambar, deers, wild boars, and others. It also provides ideal habitat for many species of birds. The fringe area of the park is dotted with many villages and hamlets. The villagers practice agriculture and grow food crops like finger millet, paddy and some fruit like banana, jack fruit, coconut and cotton grown in small pockets in the fringe area of the forest. All the sides of the park area is surrounded by coffee plantations which incidentally shelter many animals and birds.

### EXPERIMENTAL METHODOLOGY

The study was undertaken in 14 forest fringe villages

representing fringes in Nagarahole. The villages and respondents were selected randomly for collecting information on the nature and extent of damage caused by wild animals using a pre-listed questionnaire. The major components of the questionnaire included, extent of land holding, crops grown, live stock owners and the extent and quantum of damage, loss caused to the crops, livestock and human beings. The data were collected from a total of 280 respondents representing 20 persons in each of the 14 villagers surrounding the park.

### EXPERIMENTAL FINDINGS AND DISCUSSION

The findings indicate that, the major damage caused to the crops in all ranges were due to elephants and wild boars. The damage caused by other wild life was negligible. The frequency of their visit to cropped area varied according to the season. The frequency of their visit was maximum during summer and monsoon months coinciding with jack fruit season and when there is scarcity of food and water in the forest.

The nature of damage caused by wild animals included

**Table 1 : Nature and extent of crop damage at Nagarahole range in 2 villages**

| Crops   | No. of instance of damage | % of Crops grown | Average cultivated area (acres) | Causes of damage | Average area damaged (acres) | % loss | No. of plants lost /quintals | Cost loss per animal (Rs.) | Total cost of respondents (Rs.) |
|---------|---------------------------|------------------|---------------------------------|------------------|------------------------------|--------|------------------------------|----------------------------|---------------------------------|
| Coffee  | 24                        | 60.00            | 141.0                           | Elephant         | 36.0                         | 25.4   | 300 pl                       | 9,000 (@ Rs. 30/pl         | 2,88,000.00<br>(12,000x 24)     |
|         |                           |                  |                                 | Wild boar        | 18.0                         | 12.7   | 100 pl                       | 3,000                      |                                 |
| Coconut | 08                        | 20.0             | 14.0                            | Elephant         | 4.2                          | 30.0   | 30 pl                        | 3,000 @Rs. 100/pl          | 24,000.00                       |
| Paddy   | 10                        | 25.0             | 35.0                            | Elephant         | 7.2                          | 20.5   | 10 Q                         | 2500 @ Rs. 250/Q<br>750    | 32,500.00                       |
| Banana  | 05                        | 12.5             | 4.1                             | Elephant         | 0.10                         | 2.4    | 6 pl                         | 120 @ Rs. 20/pl            | 600.00                          |
|         |                           |                  |                                 |                  |                              |        |                              |                            | 3,45,100.00                     |

Total No. of respondents: 40

**Table 2 : Extent of Damage caused due to wild animals in different ranges**

| Sl. No. | Range            | Damages recorded / reported |              |                             |                 |
|---------|------------------|-----------------------------|--------------|-----------------------------|-----------------|
|         |                  | Human beings                |              | Livestocks/Domestic animals |                 |
|         |                  | Elephant                    | Tiger        | Tiger                       | Leopard         |
| 1.      | Nagarahole       | 2 (injured)                 | -            | 2 (cattles killed)          | 3 (dogs killed) |
| 2.      | Kallahalla       | 1 (death)                   | -            | 2 (cattles killed)          | 2 (dogs killed) |
| 3.      | Anechowkuru      | 1 (death)                   | -            | 2 (sheep killed)            | -               |
| 4.      | Veeranahosahally | 3 (injured)                 | 1 (injured)  | 3 (cattles injured)         | -               |
| 5.      | Metikuppe        | -                           | 1 (attacked) | -                           | -               |
| 6.      | Antharasanthe    | -                           | -            | -                           | 1 (dog killed)  |
| 7.      | D.B. Kupee       | 1 (death)                   | -            | 2 (cattles killed)          | -               |

trampling of standing crops, breaking of coffee branches, browsing of ragi and paddy ear heads and tender cotton bolls. Young coconut trees are uprooted and the tender and succulent shoots are eaten particularly by elephants. In case of banana plants, the entire fruit bunch is eaten away damaging and destroying the whole plant in the process. Wild boars damage every crop in the vicinity by digging and uprooting the plants particularly cotton plants where the damage is maximum. The major crops grown in the vicinity of the park are coffee (60%), paddy (25%) and coconut (20%), banana and jack fruits grown in scattered pockets and in coffee plantations. Maximum loss by wild animals was caused to the coffee crops (25.4%) by elephants and (12.7%) by wild boars. The economic value of damage and loss of crops is estimated at Rs. 2.8 lakhs in Nagarahole range alone.

In all the ranges, elephants, tigers and leopard caused maximum injury to human lives and domestic cattle (Table 1). Villages going to the park area for collection of fuel wood, minor forest products and grasses often become victims of these wild animals, so also cattle and sheep which graze in the forest are attacked by elephants, tiger and leopard. They often cause injury and even death to domestic animals and human beings. In case of domestic cattle, tiger and leopard cause greater damage in all the ranges. The leopard also caused death even to the domesticated dogs particularly during night times.

The study also indicated that, there is a strong justification for strengthening protective measures like improving Elephants Proof Trenches (EPT) and construction of permanent mechanical barrier like branded wire fence around the park and other protective measures like fencing and strengthening and developing alternative sources to meet the requirement of forest fringe village communities (Table 2).

---

#### Coopted Authors' :

**T.K. NAGARATHNA**, AICRP on Sunflower, University of Agricultural Sciences, Gandhi Krishi Vignan Kendra, BENGALURU (KARNATAKA) INDIA

**N. SHIVKUMAR**, Zonal Agricultural Research Station, V.C. Farm, MANDYA (KARNATAKA) INDIA

**G.M. DEVAGIRI AND N. SWAMI RAO**, College of Forestry, PONNAMPET (KARNATAKA) INDIA

---

#### REFERENCES

**KFD** (2007). Statistics related to forests in Karnataka provided by "Statistics". *Online Webpage of the Forest Department*. Government of Karnataka, (2007).

**Nima Manjrekar** (2000). A walk on the wild side, An information guide to national parks and wildlife sanctuaries of Karnataka, *Karnataka Forest Department*, Wildlife Wing.

  
 ★★★★★ of Excellence ★★★★★