A SURVEY OF CROP DAMAGE BY WILD ANIMALS IN KERALA

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Introduction

The forest area in Kerala is highly fragmented due to settlements and enclosures. Enquiries with forest officials and cultivators revealed that crop loss in agricultural fields, especially adjoining the forest areas, is very high in Kerala. This is due to straying of wild animals such as Wild Boar, Elephant, Porcupine and Deer from the forest to the agriculture fields. Due to this situation, the hostility between animals and villagers in the fringe of the forest areas is increasing.

At present Kerala has about 24% of the forests under the protected areas. Wild animals in these areas are guarded against poaching. Due to this population of many animals such as Sambar, Wild Boar, Porcupine and Elephant are increasing. Consequent to this, the man-wildlife conflicts are also increasing in certain areas.

Man-wildlife interactions in Karnataka especially the conflict between elephants and man has been studied by Sukumar (1985) and Appayya (1992). Crop raiding and economic losses due to Elephants were studied in Bihar by Mishra (1971) and Datye (1993). Similar studies were also conducted in Western Ghats, specially in Nilgiris, by Sukumar (1990), Balasubramanian *et al.* (1993) and Ramesh Kumar and Sathyanarayana (1993). According to Santiapillai and Jackson (1990) elephants kill about 100 to 200 people, each year in India. No information is available on this subject from Kerala.

The conversion of forests into large scale monoculture plantations of teak and rubber, shifting cultivation, hydro-electric projects and encroachments, reduce the life support system of wild animals in the forests of Kerala. This survey was conducted from January 1994 to July 1994, to collect preliminary data on depredation to agricultural crops by wild animals.

Methods

The data were collected from the office records of the Divisional Forest Offices and from discussions with the field staff of Kerala Forest Department. The details gathered include animals involved in crop damage, species of crop damaged, compensation claimed by farmers, and amount sanctioned by the Forest Department.

Enquiries were also made with the cultivators in Wynaad, Neyyar, Peppara and Chinnar Wildlife Sanctuaries to collect information on patterns of cultivation, animals involved in crop damage and the type of protection methods employed. Areas like Munnar and Attappady were also visited for gathering field data.

Results

Pattern of crop damage : In Kerala, the major crops destroyed by wild animals are paddy (*Oryza sativa*), coconut palm (*Cocos nucifera*), plantains (*Musa* sp.), arecanut (*Areca catechu*), coffee (*Coffea arabica*), tea (*Thea sinensis*), rubber (*Havea braziliensis*), cashew (*Anacardium occidentale*), oil palm (*Elaeis guineensis*), pepper (*Piper nigrum*), mango tree (*Mangifera indica*), jack tree (*Artocarpus heterophyllus*), sugarcane (*Saccharum officinarum*), tapioca (*Manihot utilissimum*), mulberry (*Morus alba*), lemon (*Citrus* sp.), *Colocasia* sp., *Alocasia* sp., ginger (*Zingiber officinalis*), sweet potato (*Ipomaea batatus*), lemon grass (*Cymbopogon citratus*) and few medicinal plants.

Maximum crop damage was recorded in Wynaad Wildlife Sanctuary followed by Wynaad North, Wynaad South, Kozhikode and Munnar Forest Divisions. Less destruction of crops was recorded in Kannur, Nilambur South, Nilambur North, Mannarkad, Ranni Divisions and in Idukki and Trivandrum Wildlife Divisions. Only less harm was reported from Mankulam, Thenmala, Palakkad, Vazhachal, Chalakudi, Thrissur and Malayattur Forest Divisions. There was no crop depredation in Silent Valley National Park, Periyar Tiger Reserve, Parambikulam Wildlife Sanctuary, Kothamangalam, Kottayam, Konni, Punalur and Trivandrum Divisions.

Animals involved in crop damage : Elephant (*Elephas maximus*), Wild Boar (*Sus scrofa*), Porcupine (*Hystrix indica*), Gaur (*Ros gaurus*), Sambar (*Cervus unicolor*), Bonnet Macaque (*Macaca radiata*), Common Langur (*Presbytis entellus*), Barking Deer (*Muntiacus muntjak*), Mouse Deer (*Tragulus meminna*), Blacknaped Hare (*Lepus nigricollis*), Malabar Giant Squirrel (*Ratufa indica*), and Peafowl (*Pavo cristatus*) were causing damage to the agricultural crops in Kerala. Among these, Elephant and Wild Boar did maximum damage to agriculture crops all over Kerala. Elephants were mainly involved in damaging crops like coconut palm, plantains, arecanuts, rubber, coffee, pepper and paddy. Wild Boar destroyed mainly tapioca, sweet potato and lemon grass. Gaur was involved in the damage of sugarcane, mulberry, paddy and other cash crops in the Marayur Range of Munnar Division. In Neyyar and Peppara Wildlife Sanctuaries, and Agasthyavanam Biological Park of Trivandrum Wildlife Division, Wild Boar, Elephant, Mouse Deer and Barking Deer were making severe damage. Sambar was damaging crops in Mannarkad Range of Mannarked Division and Elephants were destroying crops in Agali and Attappadi Ranges in Palghat District. Other animals caused only little harm to the crops in Kerala.

Compensation and control measures : The total compensation claimed by cultivators all over Kerala for the period starting from 1985 to 1993 is around Rs. 1,06,24,689. Kerala Forest Department has sanctioned an amount of Rs. 8,69,227 as compensation (Table 1). In some places the cultivators have not claimed any compensation, but only reported the damage to the Forest Department based on which the forest officials assessed it and paid compensations.

In order to reduce the animosity towards wild animals and to prevent crop loss, electric fences using energizers were installed by the Forest Department in Peppara, Neyyar and Wynaad Wildlife Sanctuaries. They are effective in stopping Elephants from entering the fields.

Table 1

Compensation claimed by cultivators and sanctioned by the Kerala Forest Department during 1985-1993.

Divisions	Claimed (Rs.)	Sanctioned (Rs.)
Wynaad Wildlife	48,50,549	2,40,505
South Wynaad	22,30,824	1,23,828
Mannarkad	9,14,500	3,315
Nilambur South	5,42,225	43,040
Munnar	5,16,680	43,600
Kozhikode	5,09,101	21,630
Calakudi	3,76,090	6,175
Kannur	2,21,320	15,990
Idukki	1,70,750	24,000
Palakkad	1,35,900	800
Malayattur	50,000	0
North Wynaad	47,500	3,30,492
Vazhachal	24,000	0
Mankulam	16,000	3,000
Nilambur North	11,250	1,500
Periyar Tiger Reserve	5,000	500
Thenmala	3,000	802
Kothamangalam	0	1,500
Ranni	0	3,550
Trivandrum Wildlife	0	5,000
Total	1,06,24,689	8,69,227

Traditional control measures based on mechanical and chemical methods are employed by cultivators and tribals and these are also effective in controlling the wild animals entering from the agriculture field. Mechanical methods include erecting thorny bush barriers, stone walls, barbed wire fencing, displaying colour cloths, threatening with fire and keeping watch and ward on watch towers. They also used crackers to frighten away the wild animals. Indigenous chemical methods such as placing bath soap in a coconut shell at night, spraying kerosine or waste oil on the path of Wild Boar or smaller mammals such as Blacknaped Hare, Mouse Deer are also practiced.

Discussion

Elephants cause severe damage to crops in Kerala. this is because raiding elephants prefer cultivated crops. According to Sukumar (1985), Balasubramanian *et al.* (1993) and Ramesh Kumar and Sathyanarayana (1993) ragi and paddy were major crop items raided by the Elephants in the forest of Karnataka and Niligiris. But in Kerala, coconut palm, sugarcane, cocoa, arecanut and paddy were the main items of crops raided by Elephants.

In most of the Forest Divisions, Wild Boar is involved in causing heavy damage due to its high density of population. This may be compared to the problems created by over abundant populations of Nilgai and Black Buck in Haryana and Madhya Pradesh (Chauhan and Sawarkar, 1989).

Out of the compensation claimed by people, only 8.2% was sanctioned by the Forest Department. This is due to the lack of funds. According to Santiapillai and Jackson (1990) also compensation and insurance for crop damage was sanctioned on a limited basis in Sri Lanka, due to numerous practical problems.

High voltage electric fencing, which gives a sharp non-lethal electric shock, is very effective and relatively cheap method compared to the other methods, for stopping Elephants from entering the agriculture fields (Schultz, 1986, 1988). The electric fences using energizers, can be installed where the man-wildlife conflict is a serious problem.

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SUMMARY

A survey was conducted to determine the crop damage by wild animals in Kerala. The data were collected from the office record of the Divisional Forest Offices and by visiting the field. Major crops destroyed by wild animals in Kerala are paddy (*Oryza sativa*), coconut palm (*Cocos nucifera*), plantains (*Musa* sp.), arecanut (*Aareca catechu*), coffee (*Coffea arabica*), tea (*Thea sinensis*), rubber (*Havea braziliensis*), cashew (*Anacardium occidentale*), oil palm (*Elaeis guineensis*), Pepper (*Piper nigrum*), Sugarcane (*Saccharum officinarum*), tapioca (*Manihot utilissium*), etc. Maximum crop damage was recorded from the Wynaad Wildlife Sanctuary, Elephant (*Elephas maximus*), Wild Boar (*Sus scrofa*), Porcupine (*Hystrix indica*), Gaur (*Bos gaurus*), Sambar (*Cervus unicolor*), Bonnet Macaque (*Macaca radiata*), Common Langur (*Presbytis entellus*) are the main animals involved in crop damage. Out of the total compensation claimed only 8.2% was disbursed by the Forest Department. It is found that high voltage electric fencing using energizer is very effective for stopping elephants from entering agricultural fields.

केरल में पशुओं द्वारा फसल को होने वाली क्षति का सर्वेक्षण

ए० वीरमणि व इ०ए० जयसन

सारांश

केरल में जंगली पशुओं द्वारा फसल को होने वाली क्षति का निश्चय करने के लिए एक सर्वेक्षण किया गया है । ये आंकड़े वन मण्डल अधिकारी के कार्यालय से तथा क्षेत्र में स्वयं जाकर इकट्ठे किए गए । केरल में वन्य पशुओं द्वारा नष्ट की जाने वाली प्रधान फसलें धान (*ओराइजा सेटाइवा*), नारियल (*कोकोस न्युसिफेरर*), केला (*म्यूसा* की जाति), सुपारी (*एरिका केटेच्यु*), कहवा (*कौफिया अरेबिका*), चाय (*थिया साइनेंसिस*), रबड़ (*हीबिया ब्राजिलिएंसिस*), काजू (*एनाकार्डियम आक्सिडेण्टेल*), तेल-ताड़ (*इलाइस गिनीन्सि*), मारिच (*पाइपर नाइग्रम*), गन्ना (*सैक्केरम आफिसिनेरम*), टैपिओका (*मैनिहोट युटिलिसियम*), इत्यादि हैं । फसल को सबसे अधिक हानि वायनाड वन्य प्राणी अभयारण्य में आलेखित हुई । फसल को हानि पहुचाने में प्रधान भाग लेने वाले हाथी (*एलिफस मैक्सिमस*), जंगली सुअर, (*सुस स्क्रोफा*), सेही (*हायस्ट्रिक्स इण्डिका*), गौर (*बोस गौरस*), सांभर (*सेर्वुस उनिकलर*), बोनेट बन्दर (*मकाका रेडियाटा*), सामान्य लंगूर (*प्रैसबायटिस एण्टेलुस*) हैं । मांगे गए कुल हरजाने का केवल 8.2% भाग वन विभाग ने चुकाया । यह पाया गया है कि अधिक वोल्टता वाली बिजली की तार बाड़, जिसमें ऊर्जाकारक लगा हुआ हो, हाथियों का खेतों में घुसना रोकने के लिए बहुत प्रभावकारी रहती है ।

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Snippets ENVIRONMENT

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