CONSERVATION OF THE CRITICALLY ENDANGERED VULTURES IN WAYANAD AND THE NEIGHBOURING AREAS OF KERALA AS PART OF ESTABLISHING A VULTURE SAFE ZONE IN SOUTH INDIA

A Report of the CEPF-ATREE Western Ghats Small Grants Program 2013 - 2014

Submitted By

Sasikumar C and Vishnudas C.K

Rural Agency for Social and Technological Advancement

Kambalakkad Wayanad

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ATREE Ashoka Trust for Research in Ecology and the Environment

Cover Photo: *Oriental White-backed Vulture*

About RASTA

RASTA is a three decade old grassroots development institution based in Wayanad district of Kerala. It works among rural poor and marginliased communities on issues of Livelihood enhancement, Biodiveristy conservation and natural resources management and womens backwardness. RASTA works have been recognised by Indian government that it received STREE Shakti Pursakar from President of India in 2012. Earlier in 2007, RASTA was shortlisted for UNEP Sasakawa Environment Prize for community oriented biodiversity conservation activities.

Team

SASI KUMAR C

C. K. VISHNUDAS

MANOJ. K

Layout Design: www.pupae.in

CEPF/ATREE – WAYANAD VULTURE CONSERVATION PROJECT

The main objective of the project was to make Wayanad and the neighbouring areas safe for vultures, as part of the proposed South Indian Vulture Safe Zone. The two components of activities were done under the project 1. research (vulture surveys, monitoring the breeding colonies, monitoring the carcasses available for vultures) and 2. advocacy and campaign. The research methodology was as per the protocol developed by Bombay Natural history Society and Royal Society for the Protection of Birds.

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Acknowledgements

First and foremost, we express our sincere gratitude to CEPF/ATREE for supporting this small initiative in the Wayanad landscape to conserve one of the critically endangered group of birds of our country, the vultures. We offer our sincere thanks to Dr.Olivier Landgrand, Executive Director of CEPF, Dr.Jack Tordoff, CEPF , Dr. Bhaskar Acharya, ATREE, Dr.Jagdeesh Krishnaswamy, ATREE, Ms. Chaitanya ATREE and all other team members off ATREE for financial support, linkages and guidance for successfully implementing the project. We thank Ms. Omana T,K, the Director of RASTA for the guidance and administrative support for implementing the project.

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Our thanks to Dr. Anil Zacharia, Veterinary Surgeon and Deputy Director of Agricultural Technology Management Agency(ATMA) for his invaluable support in the project activities especially in the dummy purchase of drugs and providing linkages with the District Association of Veterinary Practitioners. We thank the district committee of the Kerala state Chemists and Druggists Association, Arulagam, the NGO working on vulture conservation in Tamil Nadu, Students of Centre for Wildlife Studies at the University of Veterinary and Animal Sciences, Pookode Wayanad, Director and Staff of MS Swaminathan Research Foundation, Wayanad Centre, Teachers and students of One teacher School at Kallor and the residents of Muthanga, Tholpetty, Kattikulam, Kurichyatt and Chethalayam villages for the invaluable support extended during the project period.

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Summary

Wayanad wildlife sanctuary has a small breeding population of vultures. There were no systematic efforts done in the past to monitor the population and to deploy appropriate conservation measures to protect the species. With the CEPF grant, for the first time the population of White-rumped Vulture, Indian Vulture and Red-headed Vulture has been assessed in the area. We were also able to bring vulture conservation into the forefront of conservation priorities in the sanctuary, where the earlier priorities were large mammals like elephants, tigers etc. Awareness was created among the local people, cattle owners and medical shop owners on the ban of diclofenac in the region. Currently there is a positive awareness among people on the importance of conserving vultures.

The project also succeeded in establishing a network of forest officials, veterinarians, cattle owners and the indigenous communities of Kuruma and Kattunaikka tribals focused on the conservation of vultures. The project monitored the implementation of the ban on veterinary use of diclofenac and other drugs toxic to vultures in and around Wayanad. The project, within a short span of a year has made considerable impact in making the region free of diclofenac, as the surveys in the medical shops of the region indicated. The outcome of the project will help the survival of *Gyps bengalensis, Gyps indicus and Sarcogyps calvus*, in the long run. This is the first time the *Gyps indicus* was recorded in Wayanad WLS in the last two decades.

Activities of the project for the conservation of vultures are accordance with the overall CEPF goal to avoid species extinction at global level by contributing to the conservation of two critically endangered vulture species *Gyps bengalensis, Gyps indicus and Sarcogyps calvus*, two species of which are listed in the species outcomes (p.81) of the Ecosystem Profile with site specific action plans.

Introduction

Vultures were once common and widespread in Asia. But White-rumped Vulture (Oriental White-backed Vulture) *Gyps bengalensis*, Indian Vulture (Long-billed Vulture) *Gyps indicus*, Slender-billed Vulture *Gyps tenuirostris* and Red-headed Vulture *Sarcogyps calvus* have undergone rapid, widespread, and catastrophic population declines in India, Nepal and Pakistan within the last 20 years. The cause of this decline has been identified as diclofenac, a non-steroidal anti inflammatory drug (NSAID) extensively used for the treatment of cattle, which has proven to be fatal to vultures when they feed on carcasses of cattle treated with this drug. Though diclofenac was banned by the Government of India in 2006, it is still available - as 30 ml vial for human use - and conservation of vultures will only be possible if the threat diclofenac is completely removed from the vulture habitats.

These four species of vultures are now categorized as “Critically Endangered” by the IUCN due to the high risk of extinction, and listed on the CEPF Ecosystem as Priority Species for urgent conservation. One of the remaining wild populations of vultures of India survives in some of the protected areas in and around the foot hills of Nilgiris in southern India (the MysoreNilgiri-Waynad-Sathyamangalam landscape). Wayanad Wildlife Sanctuary (Kerala), Mudumalai Tiger Reserve and Sathyamangalam Wildlife Sanctuary (Tamil Nadu), Bandipur National Park and Rajiv Gandhi (Nagarhole) Wildlife Sanctuary (Karnataka) are the protected areas within this region having a remnant vulture population. Four species of vultures are reported from this area: White-backed Vulture, Red-headed Vulture, Indian Vulture and Egyptian Vulture *Neophron percnopterus*. Wayanad Wildlife Sanctuary and the surrounding areas of the Western Ghats fall within the political limits of Kerala state. Wayanad is the only district in Kerala, where vultures still exist.

Map showing Vulture Safe Zone South India.

The concept of Vulture Safe Zone, developed by SAVE (Saving Asia's Endangered Vultures - a consortium of like-minded national and international organisations created to oversee and co-ordinate conservation, campaign and fund-raising activities to help the plight of south Asia's vultures Website - http://www.save-vultures.org/), is to establish through targeted awareness activities and sampling for at least 100 km radius (30,000 sq km) from an agreed centre point at which a breeding population of Vultures survives, so that no diclofenac or other veterinary drugs toxic to vultures are present in cattle carcasses (the main vulture food supply), such that it can be declared Vulture Safe Zone (VSZ). The 100 km radius for defining VSZ is based on tracking data from Oriental white-backed vultures and modelling the predicted rate of population decline assuming no diclofenac within the VSZ and diclofenac levels matching those in India in 2000-2007 outside the VSZ: only when the VSZ is >100 in radius is the population stable. This will ensure that the survival of vultures is no more threatened through poisoned food.

Considering the vulture breeding colony of Moyar river (Sigur) as a central point, a 100 km radius South Indian Vulture Safe Zone could be established covering all current vultures feeding habitats. The inner 50 km radius zone will cover all the protected areas (Wayanad Wildlife Sanctuary (Kerala), Mudumalai Tiger Reserve and Sathyamangalam Wildlife Sanctuary (Tamil Nadu), Bandipur National Park and Rajiv Gandhi (Nagarahole) Wildlife Sanctuary (Karnataka) and will be the Core Zone of South India Vulture Safe Zone. This area is part of the Western Ghats, which is one of the 34 global biodiversity hotspots.

Objectives

1. Making Wayanad and the neighboring districts of Kerala safe for vultures as part of establishing a Vulture Safe Zone in the Mysore-Nilgiri-Wayanad- Sathyamangalam area of south India.

2. Establish a network of tribals, cattle owners, veterinarians, drug control department, forest department, academicians and nature conservation institutions and social welfare organizations to join hands in vulture conservation.

3. Assess the actual breeding population of vultures in the study area.

4. Assess the food availability for vultures.

PROJECT OUTPUTS

Population Estimation of Vultures in Wayanad Wildlife Sanctuary

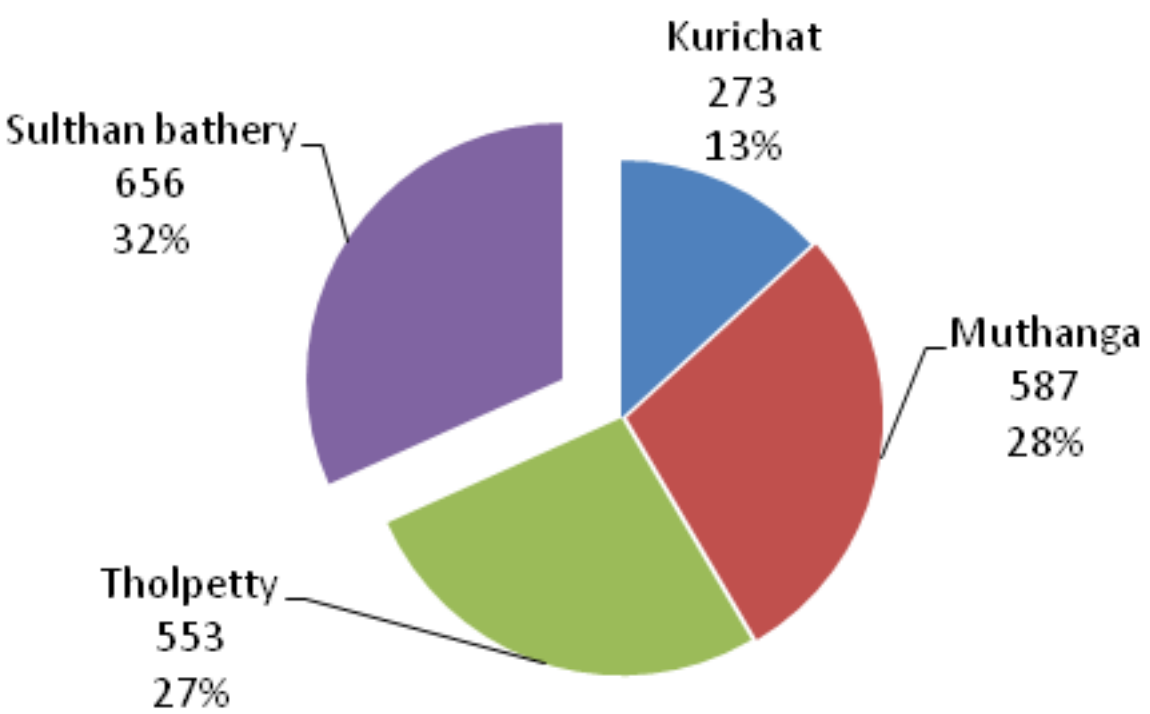
Nest Monitoring

In the breeding season of 2013 – 2014, we identified 12 nests of the White-backed Vulture in the study area in three different ranges (Table 1); out of these, 8 fledglings flew out successfully. This indicates that there was a minimum population of 24 breeding adults and 8 new recruitments during the study period. The breeding activities commenced in the month of October and the last fledgling flew away in the month of July showing a very long breeding period which stretch to the heavy south-west monsoon in the region. We have also established a vulture population monitoring system in the sanctuary with the participation of forest watchers and field staff. This involves recording all possible sighting of vultures in various locations of the sanctuary. This process enabled us to estimate the total population.

In December 2013, a synchronized vulture survey was conducted in the sanctuary in which 35 Oriental White-backed, 5 Red-headed and 2 Indian Long-billed Vultures were recorded.

Apart from surveys we encouraged forest department watchers and staff to record vulture sightings data at a centralised place. This process was successful and the data compiled from all four ranges (23 base camps) showed that from February to June, the average number of vultures sighted in the sanctuary has increased as almost double the sightings of what is there in other months. These are the months when animals from other parts of the landscape moves into Wayanad WLS in search of food and water. Further, April, May and June are the months when juveniles leave the nest also. Average maximum flock size observed was 36 with SE of 11.1 (N=19) (Fig. 1 & 2). However there was a single record of 102 vultures from Maragadha of Muthanga Range during the study period which shows that vultures also congregate from other areas occasionally.

Fig.1 Vulture Count for the year 2013 - Range wise



Sulthan Bathery range had the highest number of counts of Vulture during the study period. The major breeding location of vulture within the sanctuary was at Ottipara in the Bathery Range. Ottipara and Maragadha (Muthanga Range) are the two “vulture hot spots” inside the sanctuary, with the highest number of vulture sightings. Annual count for these two sites is 288 and 335 respectively.

Table 1. Nests of vultures in the different ranges of Wayanad WLS 2013 - 2014.

Range	**Bathery**	**Kurichyat**	**Tholpetty**	
Location	Kaithallam	Kurichyat	Doddadi	Total
No of nests	8	2	2	12
No of chicks	8	2	2	12
Successful fledging	5	2	1	8

Fig. 2 Vulture sightings in Wayanad wildlife Sanctuary (2012-2013)

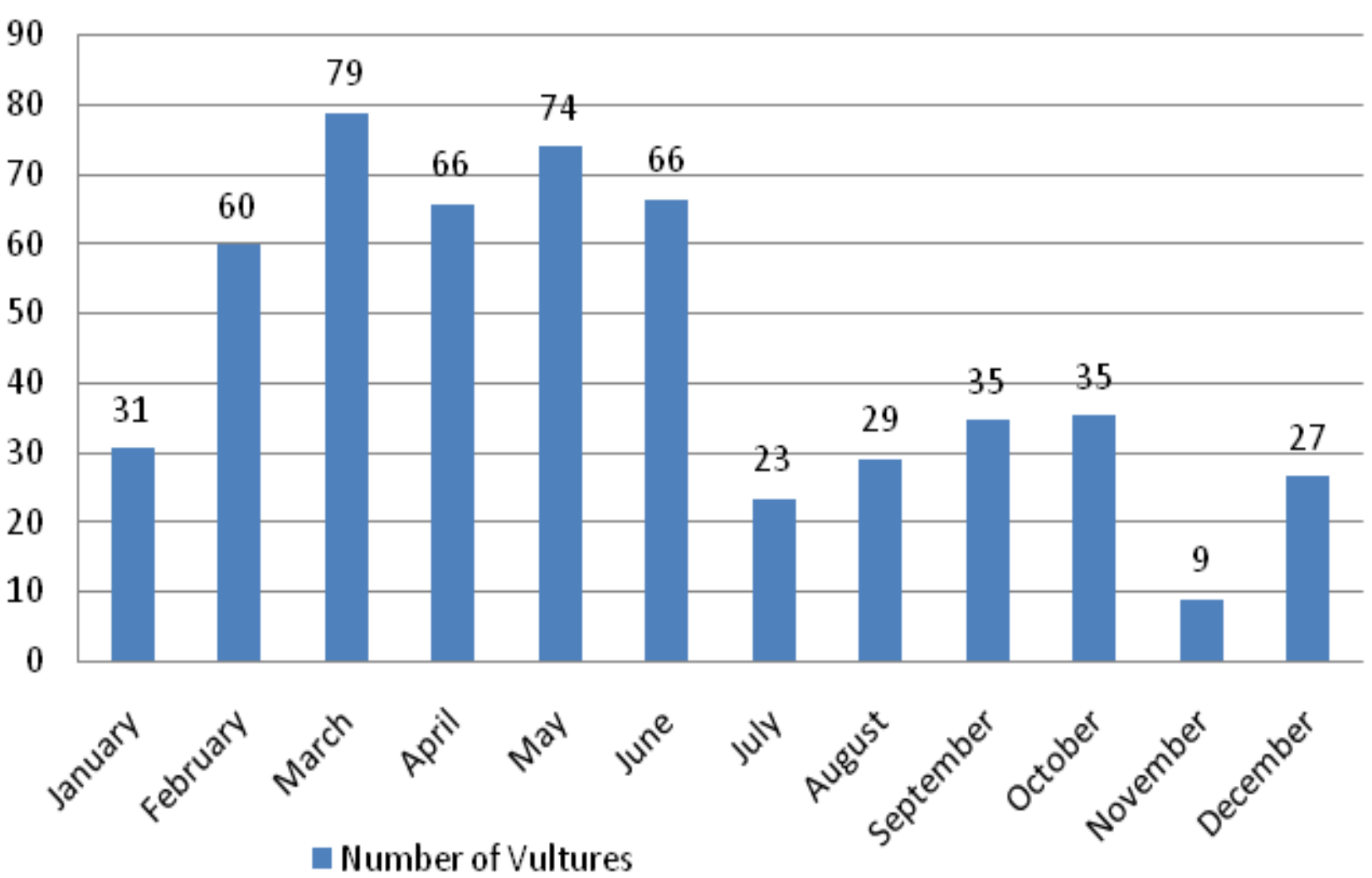
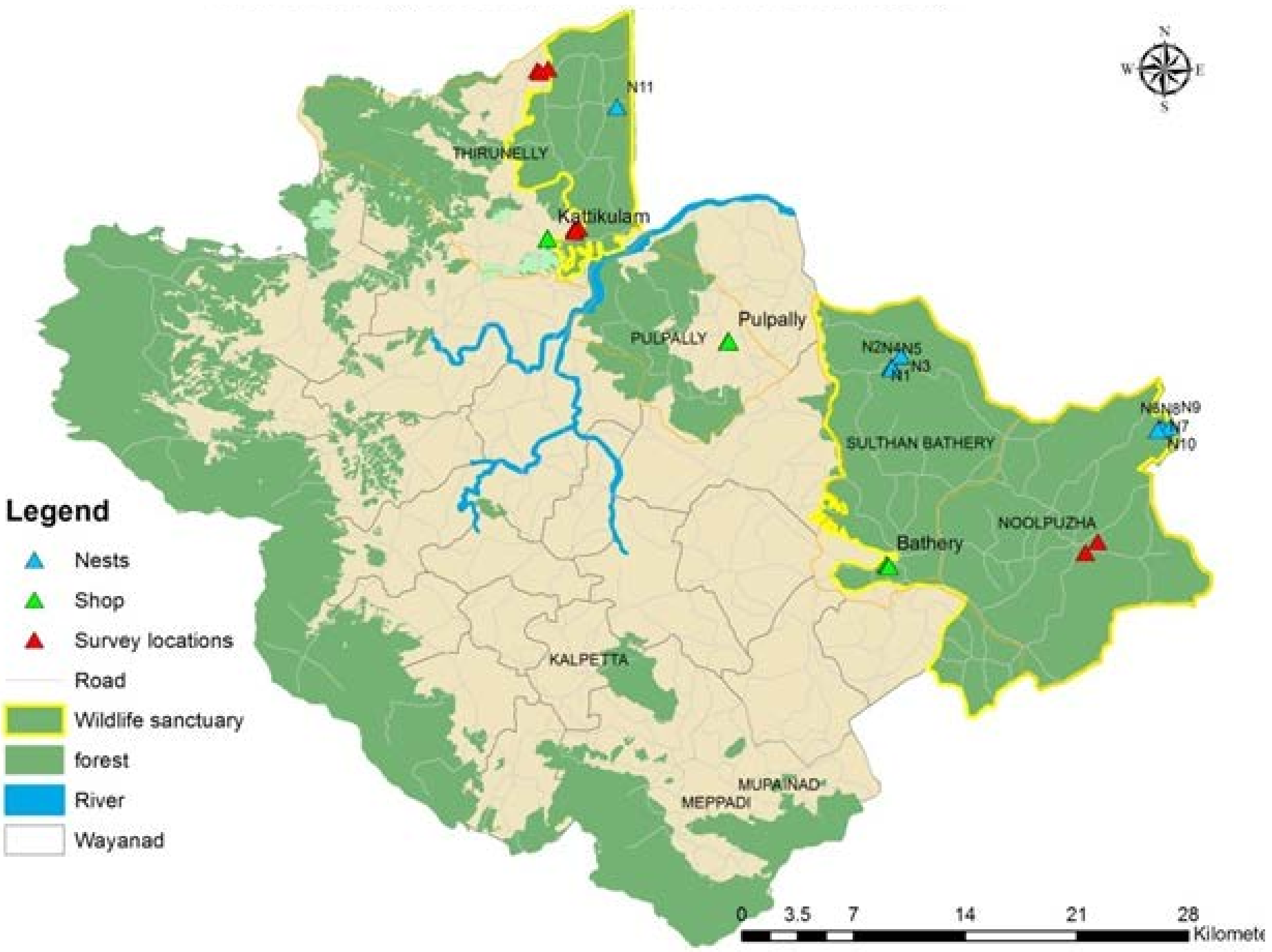


Table 2. Vulture Nest location data –GPS Cordinates

1	Range	Location	Nest code.	Latitude	Longitude	altitude
2	Kurichyat	Kurichyat	N-1	N 11°46.891'	E 076°15.837'	872m
3	Kurichyat	Kurichyat	N-2	N 11°46.495'	E 076°15.507'	860m
4	Kurichyat	Kurichyat	N-3	N 11°46.455'	E 076°15.520'	857m
5	Bathery	Kaithallam	N-4	N 11°44.416'	E 076°24.682'	824m
6	Bathery	Kaithallam	N-5	N 11°44.404'	E 076°24.692'	829m
7	Bathery	Kaithallam	N-6	N 11°44.443'	E 076°24.555'	823m
8	Bathery	Kaithallam	N-7	N 11°44.366'	E 076°24.523'	821m
9	Bathery	Kaithallam	N-8	N 11°44.374'	E 076°24.584'	823m
10	Bathery	Kaithallam	N-9	N 11°44.474'	E 076°24.956	832m
11	Tholpetty	Doddadi	N-10	N 11 55.540'	E 76 06.365’	840m
12	Tholpetty	Doddadi	N-11	N 11 55.540'	E 76 06.365’	840m

Location of the medical shops surveyed and the vulture nesting sites in Wayanad WLS



Breeding Cycle

Nest guarding by adult bird, Kaithallam, Batheri range.

Nestling just out of the nest, Kaithallam, Batheri range.

Nestling begging for food, Kaithallam, Batheri range.

The first flight, Kaithallam, Batheri range.

Cattle Population

A large population of free roaming cattle graze within the Sanctuary. These cattle are owned by the people who live in the settlements inside and around the Sanctuary.

Carcass Monitoring

During the project period we assessed the food availability for vultures in the study area. We recorded the carcasses seen in the sanctuary during our field surveys. The data collected were mostly along the forest roads or those informed by watchers. The vultures here are typical forest birds: extremely alert, flying away at the slightest disturbance. So, when the vultures fed at the carcass we never approached them. Wherever vultures or the predators were absent we usually did close verification, attempting to identify predators as well as vulture presence by looking at the telltale signs around the carcass.

The majority of the carcasses recorded were that of Spotted Deer, Gaur and Indian Elephant calves; most of these were killed by Tigers (*Panther tigris*) and Wild Dogs (Cuon alpinus). This was observed by site verification for pug marks. Our surveys along the roads in side sanctuary recorded 15 carcasses out of which 13 were of Spotted Deer (*Axis axis*), one Gaur (*Bos gaurus*) and one Elephant (*Elephas maximus*) calf. A fresh carcass of a spotted deer was found completely consumed by vultures within an hour in the Tholpetty range of the sanctuary in March 2014. We also received information from the forest staff on the occurrence of carcasses in the sanctuary.

Left: Carcass of elephant calf at Punchvayal, Tholpetty Range,12-03-2014
Right: Carcass of Guar calf killed by leopard at Doddadi, Tholpetti Range, 16-01-2014

The skull and skin of a spotted deer carcass completely consumed by vultures within an hour at Tholpetty , WLS

A carcass of Spotted Deer, killed by Tiger consumed by Vultures.

Table 3. List of Carcasses Recorded

Date	Location	Range	Carcass animal	Predator*	No. of Vultures present
11-10-2013	Dasanghatta	Tholpetty	Spotted deer	Tiger	8
06-11-2013	Thirulkunnu	Tholpetty	Sambar	Unknown	13
04-12-2013	Ammavayal	Kurichyat	Spotted deer	Wild dogs	Nil
08-12-2013	Kolur	Kurichyat	Spotted deer	Tiger	64
16-12-2013	Nallathanni	Bathery	Sambar	Tiger	Nil
16-01-2014	Tholpetty	Tholpetty	Spotted Deer	Wild dogs	12
16-01-2014	Dodday	Tholpetty	Guar calf	Leopard	Nil
05-02-2014	Doddakulassi	Bathery	Spotted deer	Tiger	Nil
08-02-2014	Kaimaram	Tholpetti	Spotted deer	Wild dogs	5
12-03-2014	Punchavayal	Tholpetty	Elephant calf	Tiger?	34
24-03-2014	Ottippara	Bathery	Spotted Deer	Tiger	5
28-03-2014	Kakkapadam	Muthanga	Spotted deer	unknown	Nil
03-06-2014	Kurichyat	Kurichyat	Spotted Deer	Tigress, cubs	6
09-06-2014	Cheeradankolly	Muthanga	Spotted deer	Unknown	feathers
07-11-2014	Kakkapadam	Muthanga	Spotted deer	Unknown	18

*identified by pugmarks, hair, wound pattern, direct sighting

Poster Campaign

Poster campaign was an important activity of the Project. We designed 5 different types of posters in the local language (Malayalam) as well as in English highlighting the importance of vulture conservation. These posters were fixed in public places and in the anti-poaching camps inside the sanctuary. Hundreds of people including local communities, tourists and students observed these posters.

Poster displayed at the entrance gate of Wayanad Wildlife Sanctuary

These poster attracted many people and we were able to communicate the importance of conserving vultures to the general public.

Meeting with Veterinary Officers

One of the project activities was to conduct a meeting of Government Veterinary officers of the region to inform the details of the the Vulture conservation Programme, and also to stress the importance of implementing the ban of diclofenac for veterinary use. Due to the busy schedule of the vets, we were not able to conduct the joint meeting; instead we decided to conduct one to one meet with the veterinary officers of the region. During the study period, we met five veterinary officers from the region including the Joint Director, Animal husbandry,Dr. E.Bahuleyan, the head of department at district level.

During the discussion we told them about the Vulture conservation Programme and enquired if they were aware about the diclofenac ban in veterinary sector. All of them said they are aware that the drug is banned and were of the opinion that diclofenac is not a major issue as “the drug will not be available as nobody was prescribing or using this drug for animals”. We persuaded one of the doctors to give a prescription of diclofenac (30 ml). We used this prescription to check whether the drug was available in the local medical shops. But to our surprise we got 30 ml vial from one of the Medical shops in Bathery , a town close to the Wayanad Wildlife Sanctuary.

We met the district veterinary officer and shared the information that the drug is still available in Bathery. He advised us to take up this matter and suggested that we should write to the State Drug Controller pointing out the availability of 30 ml vial of diclofenac in the market which is liable to be used for livestock. We did accordingly.

Second issue we highlighted was the illegal transport of cattle from Karnataka to Kerala surpassing the check posts. This was shared with the veterinary department as they had a check post at the state border. We found that monitoring at the check post was totally ineffective. This was a cause of concern as the origin or state of these cattle was unknown. But recently due to increased incidence of Foot and Mouth Disease, the Forest Department is also very keen in checking of illegal transport of cattle to Kerala.

Awareness Programme: Tholpetti Range

Tholpetty range of Wayanad wildlife sanctuary is an important vulture habitat. There were two active nests in the range at Ayyappanpara. With an abudnace of wild aninmals this range is a good location to observe vultures ; carcasses are often found in many places as a result of predation by carnivores. We conducted awareness classes to the forest staff and watchers of Tholpetty range using visual aids and posters. All the staff of the range and forest watchers participated. Range officer Mr. Rajan took lead to organise the event.

Awareness Programme, Kalpetta Division Office

A one day orientation was also held at the Forest office Kalpetta in which many staff of the department participated.

Awareness Programme: Muthanga Range

Programme in Muthanga range was organised under the lead of the Range Officer Mr. Valsan. All the staff and watchers participated actively in the programme. Kakkapadam is an important place to observe the vultures in Muthanga range, which is close to the Muthanga dormitory. Focus was given to identify different species of vultures and to record the numbers.

Forest Staff Capacity Building in The Field

C. Sashikumar explaining the features of White-rumped vulture at nesting location, Tholpetty range.

Wildlife Warden observing Vulture Nest at Doddady, Tholpetty range.

Nest monitoring at field, Kurichyat Range.

Range officer, Tholpetty Range, observing Vulture nest at Tholpetty.

Medical Shop Owner's Meeting

CK Vishnudas talking about vulture conservation and dichlofenac ban in the Annual Conference of Chemists and Druggists Association at Manantavady on 19-10-2014

The participants

Motorcycle Rally

We participated in the motor cycle rally organised by Arulagam. A meeting of participants was held at the Muthanga, Wayanad Wlildlife Sanctuary along with forest officials.

Field Visit by CEPF ATREE Team

Attitude and Awareness Surveys

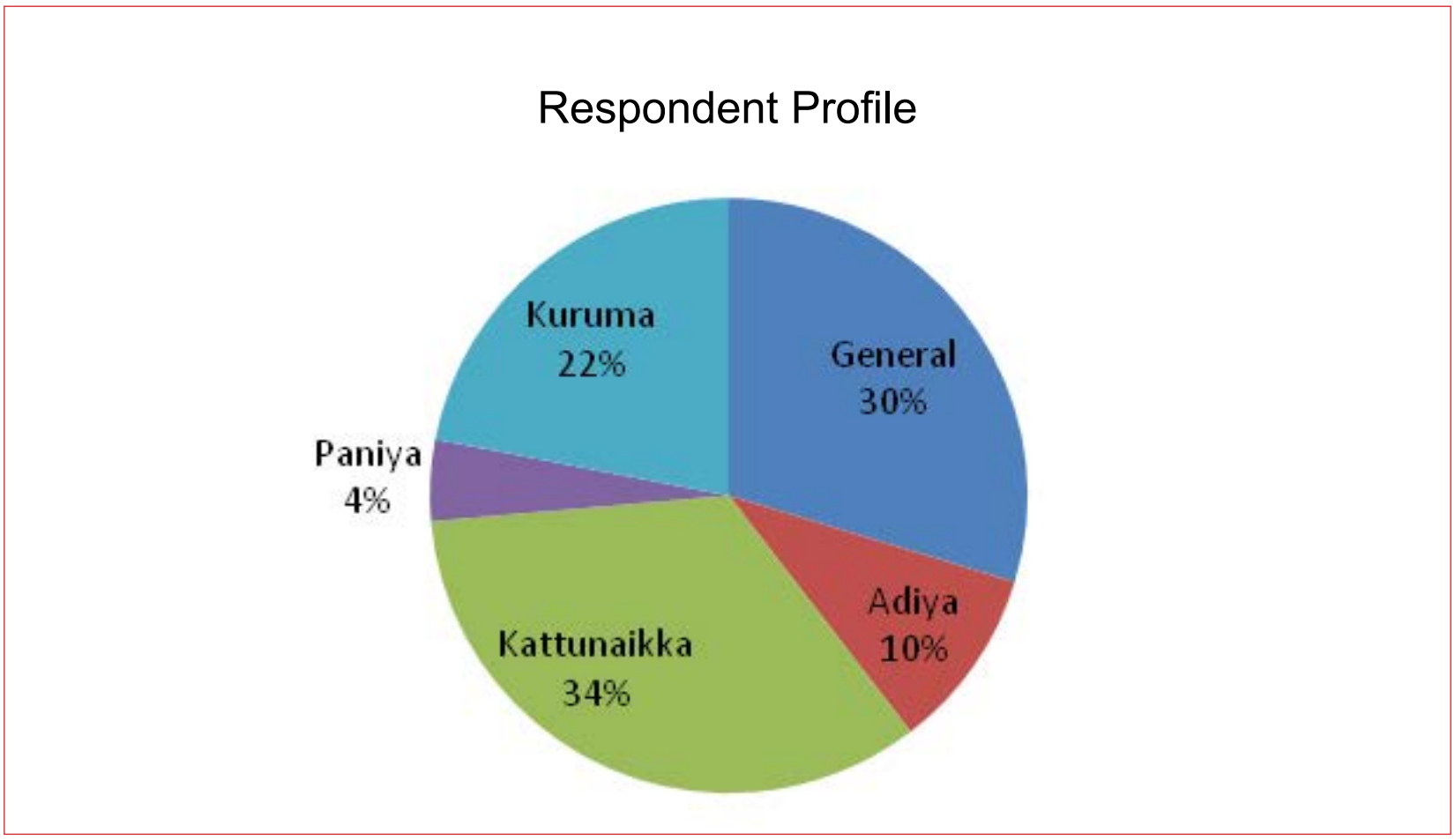
We conducted attitude and awareness surveys among the local people, especially the cattle owners in five villages in the vicinity of Wayanad WLS using a questionnaire. The questions asked were related to their cattle rearing practices, the treatment of cattle diseases, disposal of cattle carcasses and also on their knowledge on vultures in general. In all, 89 individuals and 91 cattle owners were sampled in the survey. The respondents belonged to tribal as well as non-tribal communities. Among the cattle owners, Kattunaikka constituted 34 %, Kuruma 22%, Adiya 10%, Paniya 4% and other non-tribal community constituted 30%.

Table.4 Attitude and awareness survey: Sample

Category	Thirunelly	Kattikulam	Chetalayam	Muthanga	Tholpetti	Total
General households	20	13	10	28	18	89
Cattle owners	19	15	14	27	16	91

Table 5. Attitude, awareness survey and drug purchase among medical shop owners

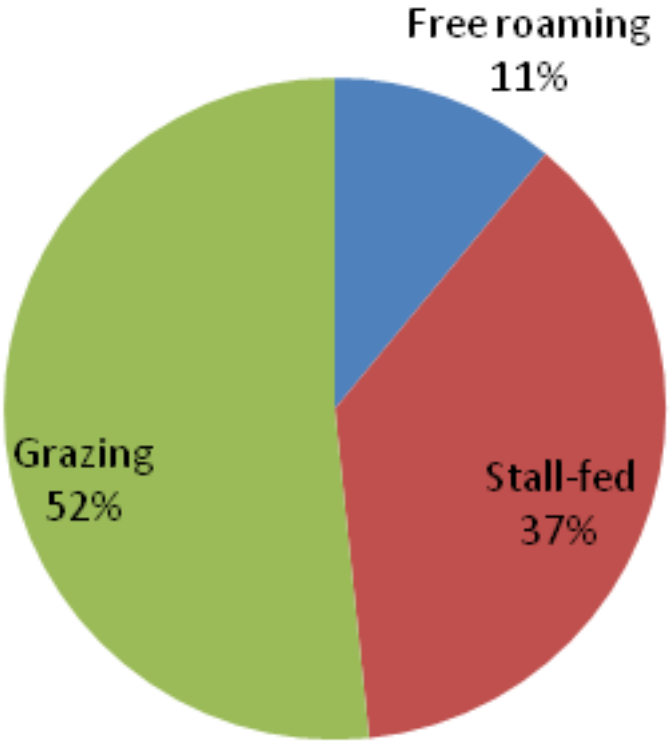
Category	Locations		
	Bathery	Pulpally	Kattikulam
Attitude Survey	5	4	3
Drug Purchase	3	3	1

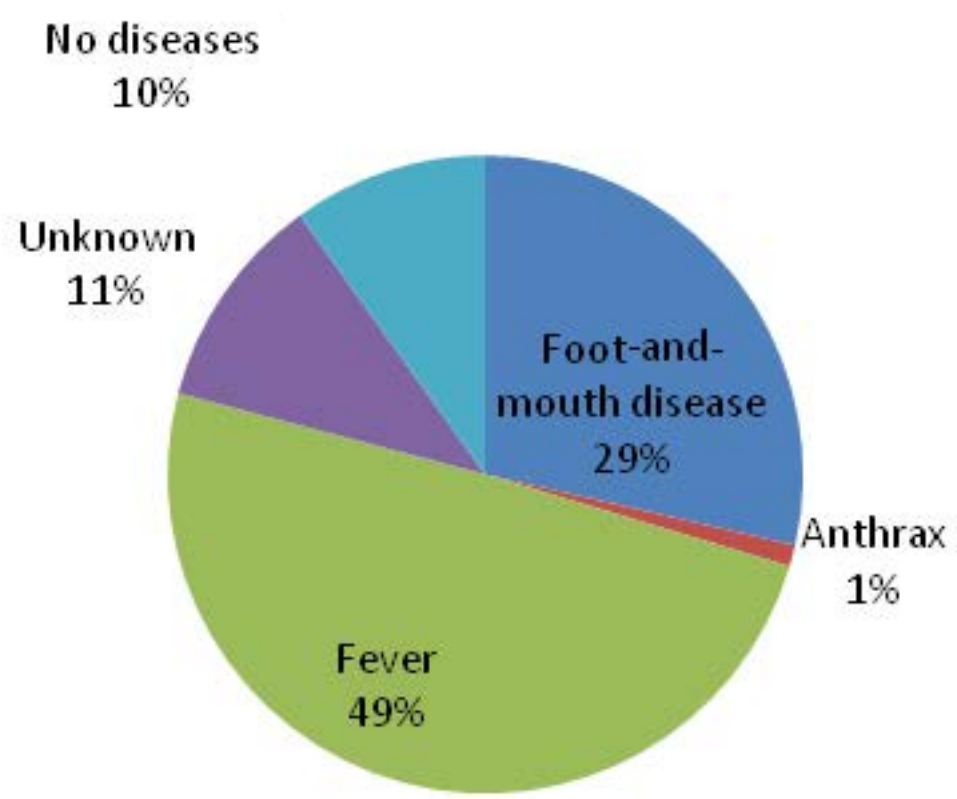


Results

Types of cattle

52% of the farmers grazed their cattle in and around the sanctuary and usually one or two persons accompanied the herd. 11% owned free roaming cattle; the farmers let out the cattle in the forest in the morning where they grazed on their own and returned to the village in the evening. 37% of the farmers owned stall-fed cattle. The stall-fed cattle were high milk yielding hybrids whereas the free roaming ones were the hardy indigenous breeds.

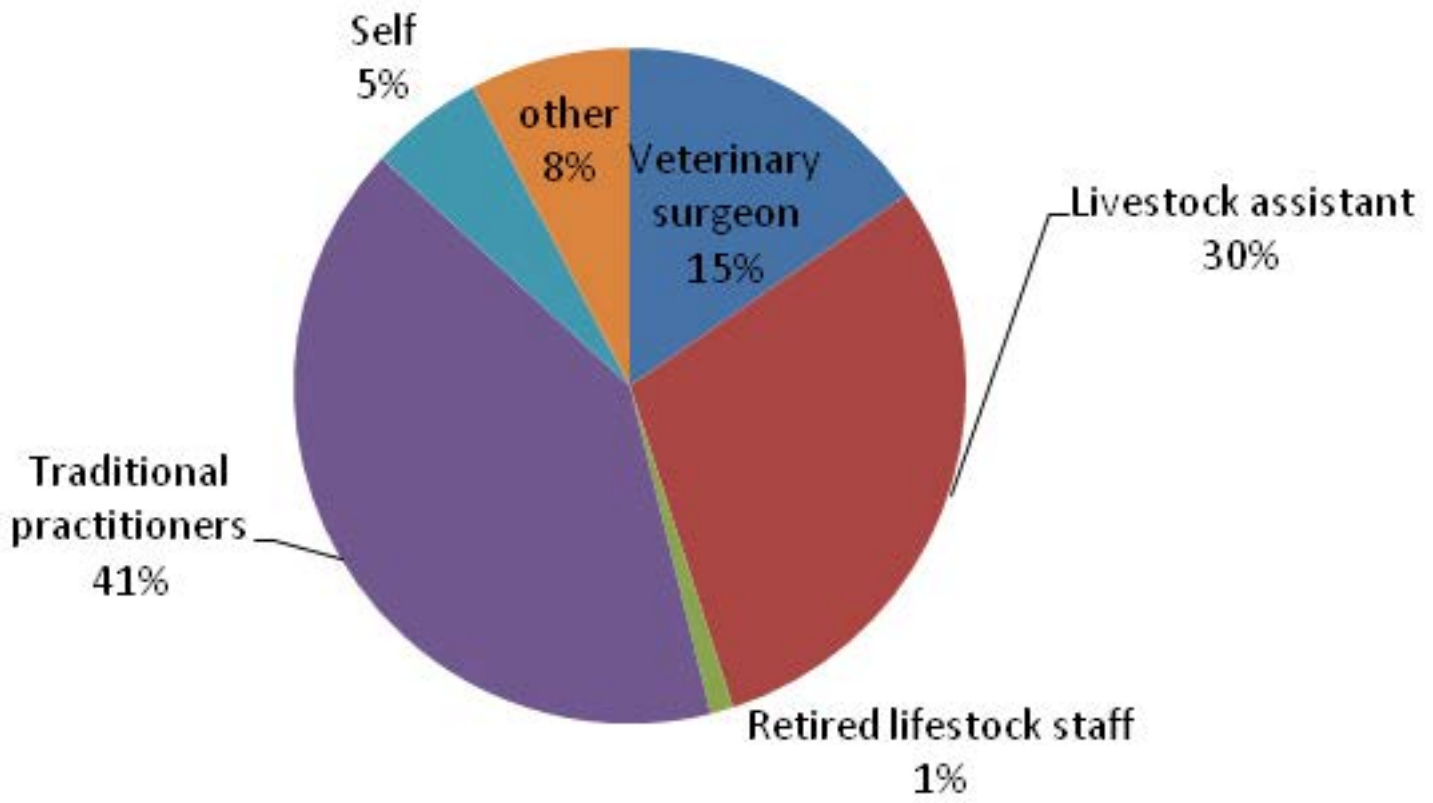




Cattle diseases

According to 29% of the farmers foot-and-mouth disease occurred in the region; 49% were of the opinion that fever was a major cause of concern while one case of Anthrax was reported. 10 % of the farmers said that their cattle had no diseases; these were the farmers who owned indigenous breeds.

Treatment for the cattle diseases



About 41% of farmers treated their cattle with the advice of traditional practitioners. 30% treated the cattle with the help of livestock assistants, whereas only 15% used the service of a veterinary surgeon. 5% of the farmers treated the cattle on their own and 1% used approached retired livestock staff.

Medicines used

82% of farmers did not know which medicines were used for cattle treatment. 16% said the drugs used were not diclofenac and ketoprofen; but they too did not know the name of medicines used.

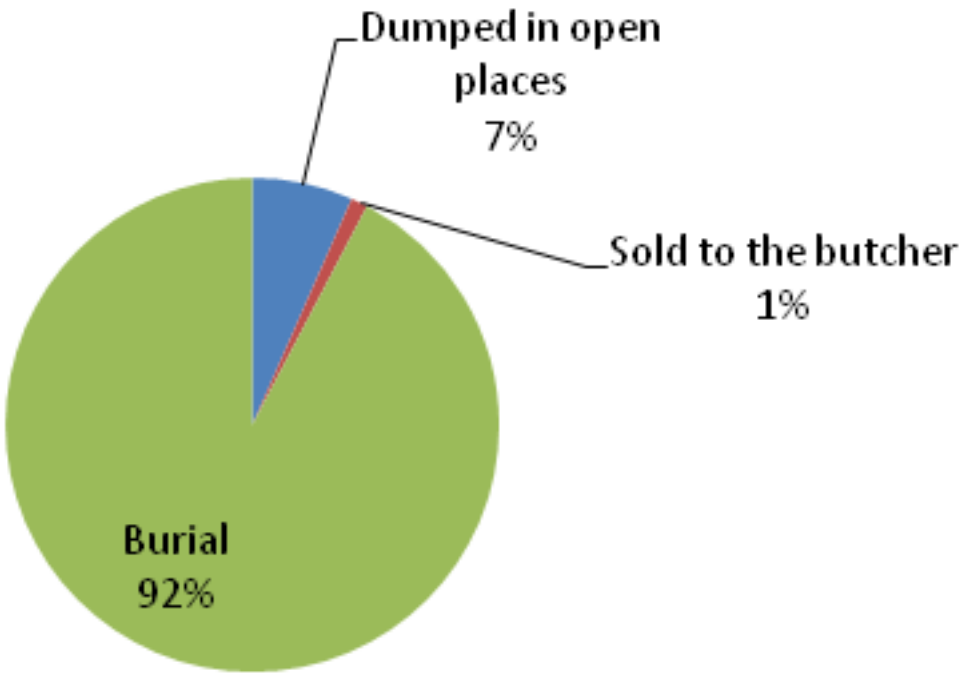
Table 6.

Medicines	**No. of respondents**
Diclofenac	0
Keteprofen	0
Unknown	75

Disposal of dead cattle

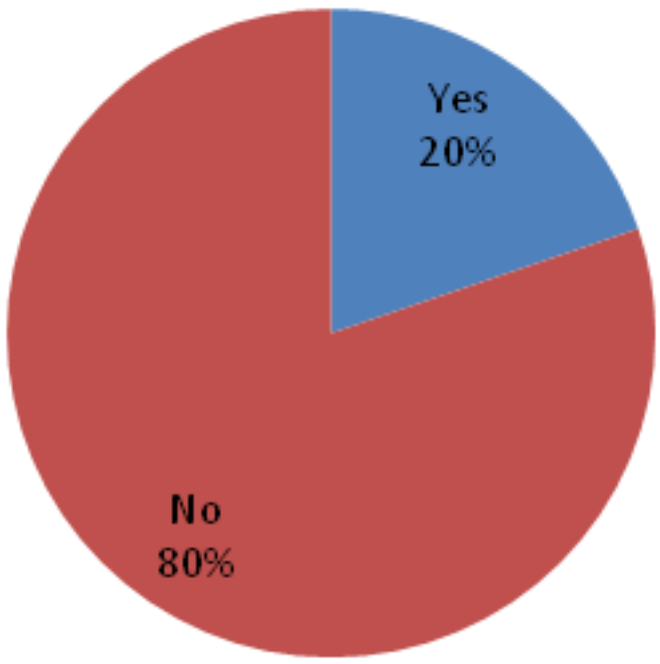
It was found that 92% of the farmers buried the dead cattle. 1% sold the near-dead cattle to the butcher and 7% of the farmers dumped the carcass in open areas.

Disposal methods of cattle carcasses



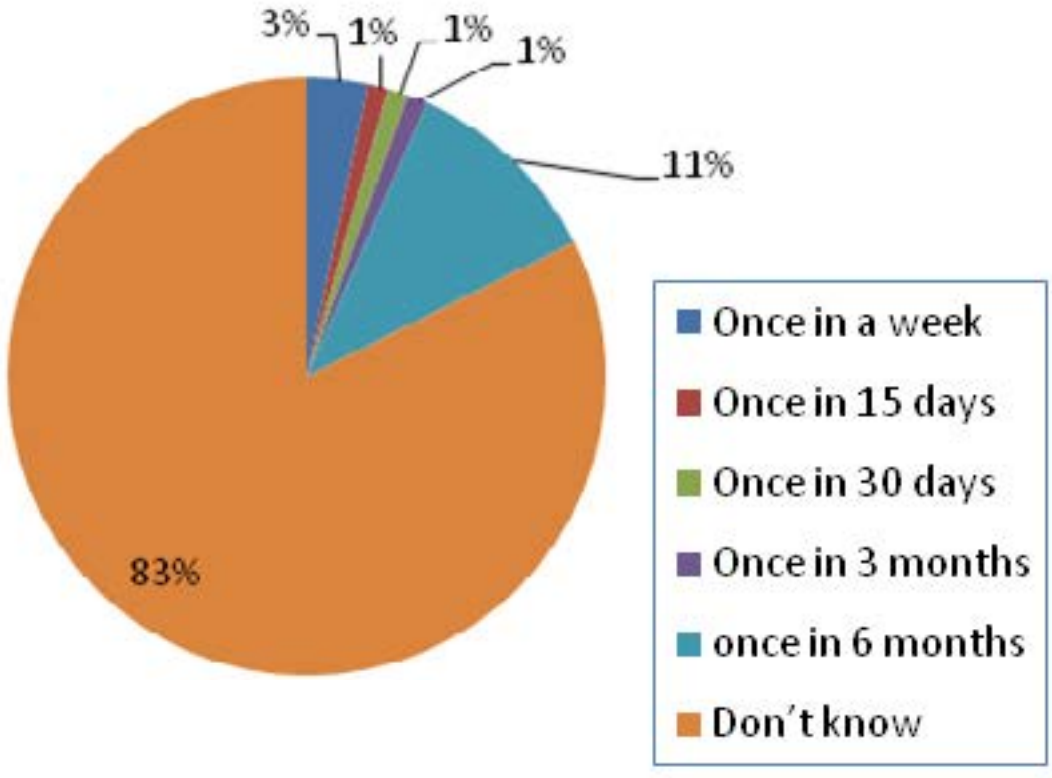
Cattle predation by carnivores

20% farmers said that predation by big carnivores such as tigers and leopards occurred in the case of their livestock, but 80% had not any experience of predation.



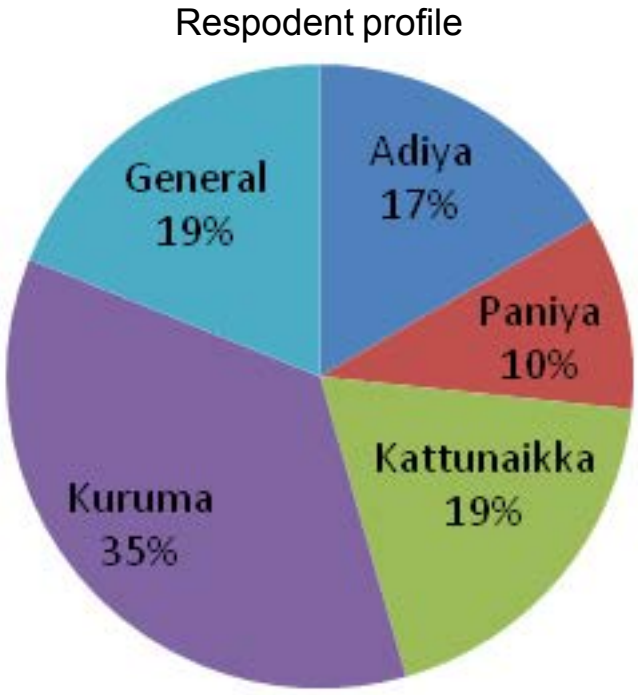
Frequency of cattle predation

According to 10% of the farmers, cattle predation happened once in six months and 3 % experienced it once in a week. These responses were of the 20% of the farmers who reported the occurrence of cattle predation.

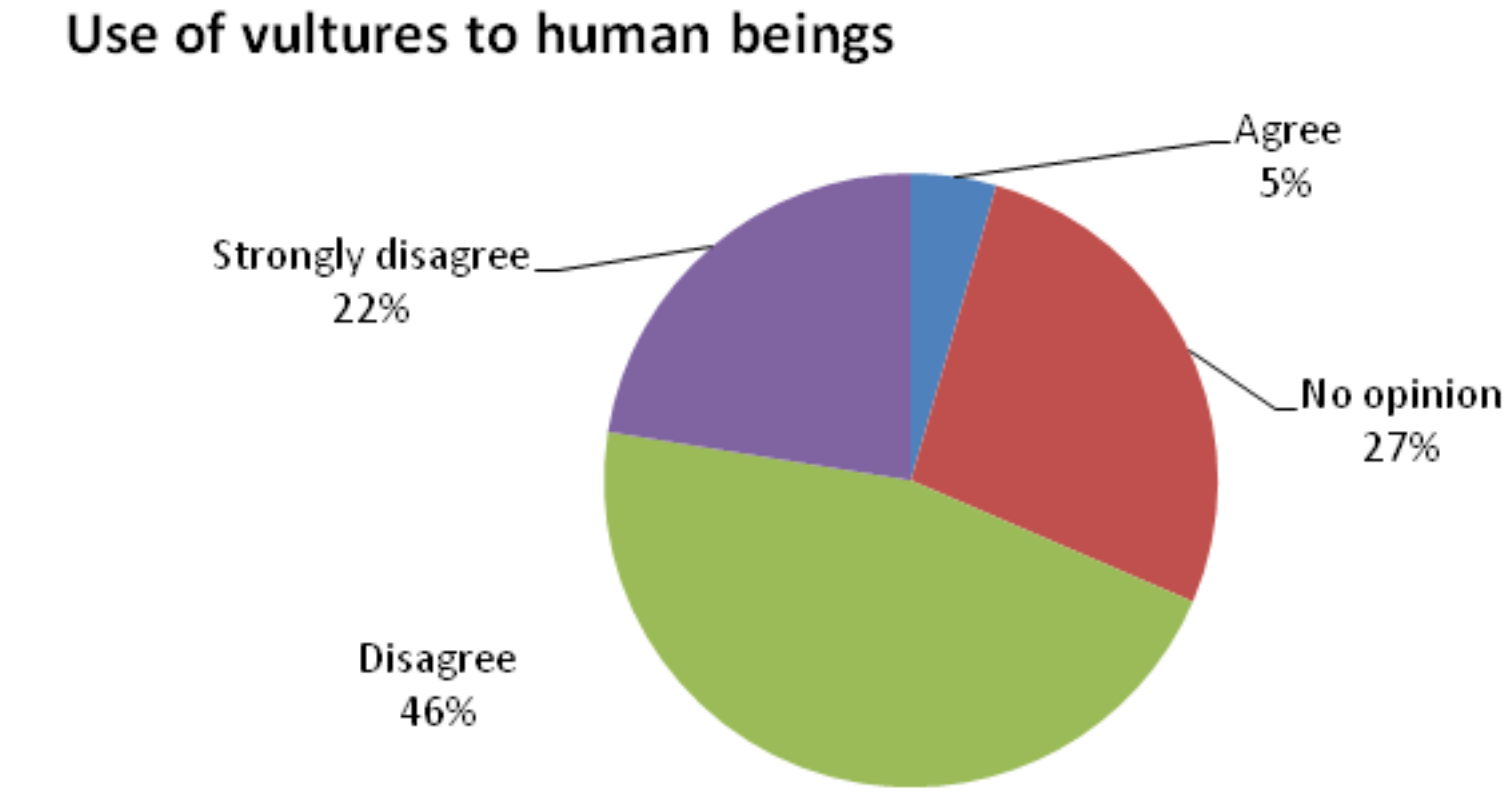


Vultures in Wayanad- perception of the local people

Another survey was conducted among the inhabitants in and around the Wayanad Wildlife Sanctuary. This survey was intended to understand the knowledge level of people on vultures, their present status and conservation issues. This was conducted among 90 households belonging to indigenous tribal community and others.

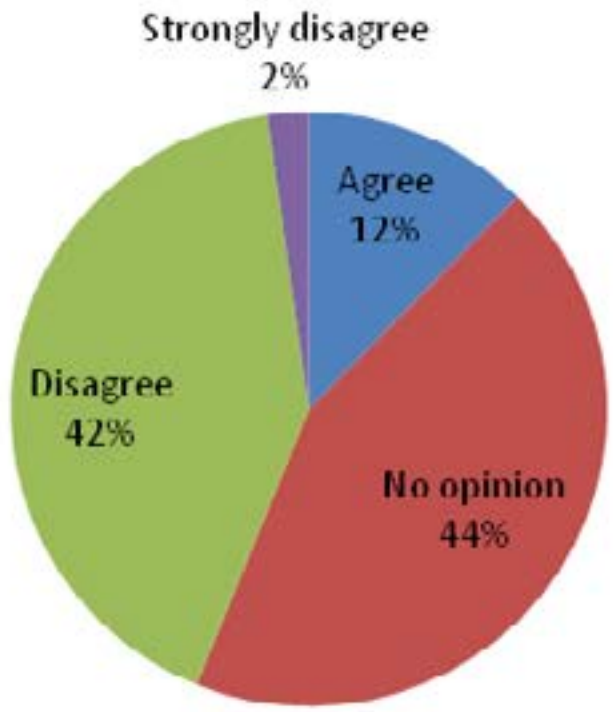


Our survey showed that 91% of the respondents have seen vultures in the area and 58% saw them within the last one year. People were aware of the presence of vultures, they were watching them and were able to recognise them. It is noteworthy that 58% of the respondents observed vultures close to their habitations while 42% saw vultures while walking in the forest. 85% sightings were of vultures in flight and 11% were seen feeding on carcasses. 83% people knew that vultures were scavengers but 6% believed they were predators.. 99% of the respondents did not see any dead or sick vultures; only one person recollected seeing a dead vulture. Interestingly, 62% of the people believed that vultures were not directly useful to human beings but only useful to the forests.



Vulture as part of the culture

75% of the respondents could not find any link between vultures and their culture viz. traditions, mythology or rituals. Since the majority of the respondents belonged to the indigenous Adivasi communities who live close to nature than other modernised societies, and who knew well about the habit and habitat of vultures, this response was a bit surprising. Cultural association of vultures in India are mainly found among Parsee communities and there is reference of vultures in epics like Ramayana where Jatayu, the vulture king is mentioned. On the other hand, most of the people did not think that vultures were scary, only 13% considered them as scary.



Vulture in education

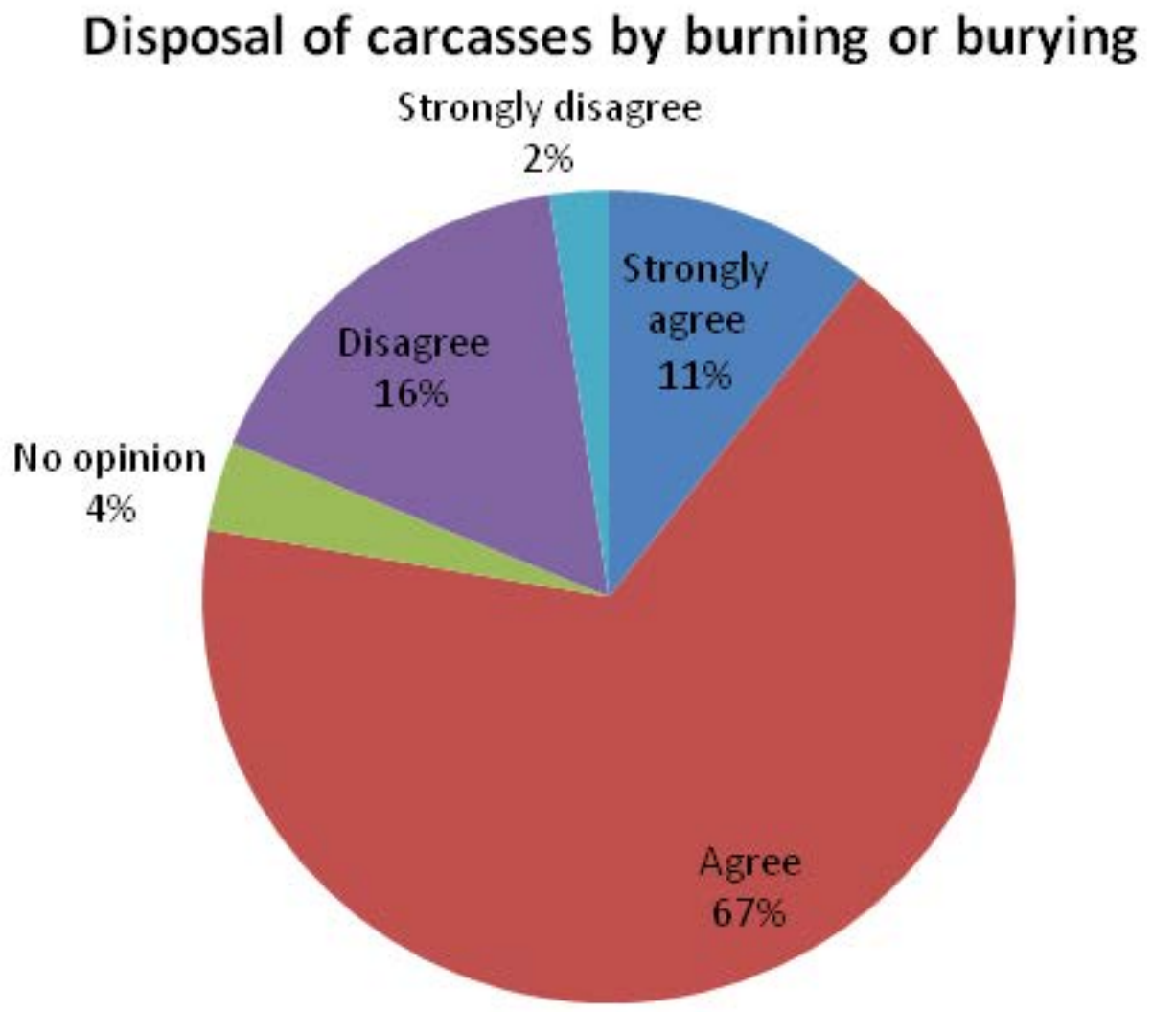
It was surprising that the children did not learn anything about vultures from schools. 63% of the respondents said they did not learn anything about vultures in schools. 32% expressed no opinion on this question.

Carcass disposals

The perception of the respondents about dead animals in their vicinity was interesting. 49% were of the opinion that poisoning of carcasses was a good practice (Fig xx). The reason for this is perhaps that they wanted to keep at bay the large carnivores from predating their livestock. The practice of local villagers poisoning livestock carcasses killed by large carnivores had been a rampant elsewhere in the past as the information from Nilgiris and south Kerala show (Davidar & Davidar, 2002, Sashikumar et al., 2011). Though the intention was to kill the big cats, the poison killed a lot of vultures as well. There is no evidence that the local people follow this practice now, as the Wildlife Protection act is strictly implemented in the vicinity of Wayanad Wildlife Sanctuary and people are well aware of the consequences of violating this law.

Burning or burying?

Generally, the villagers agreed (78%) that burning or burying carcasses are good methods; only 16% disagreed. This is good considering the possible threat of diclofenac contaminated carcasses being available for vultures. On the other hand, it also go with the popular notion that whatever animal die even within the forest should be burned or buried. Burying or burning of carcasses of the wild animals used to be done away with like this by the Forest Department till recently and this definitely would have affected the food availability of vultures. Now this practice has been more or less abandoned by the department.

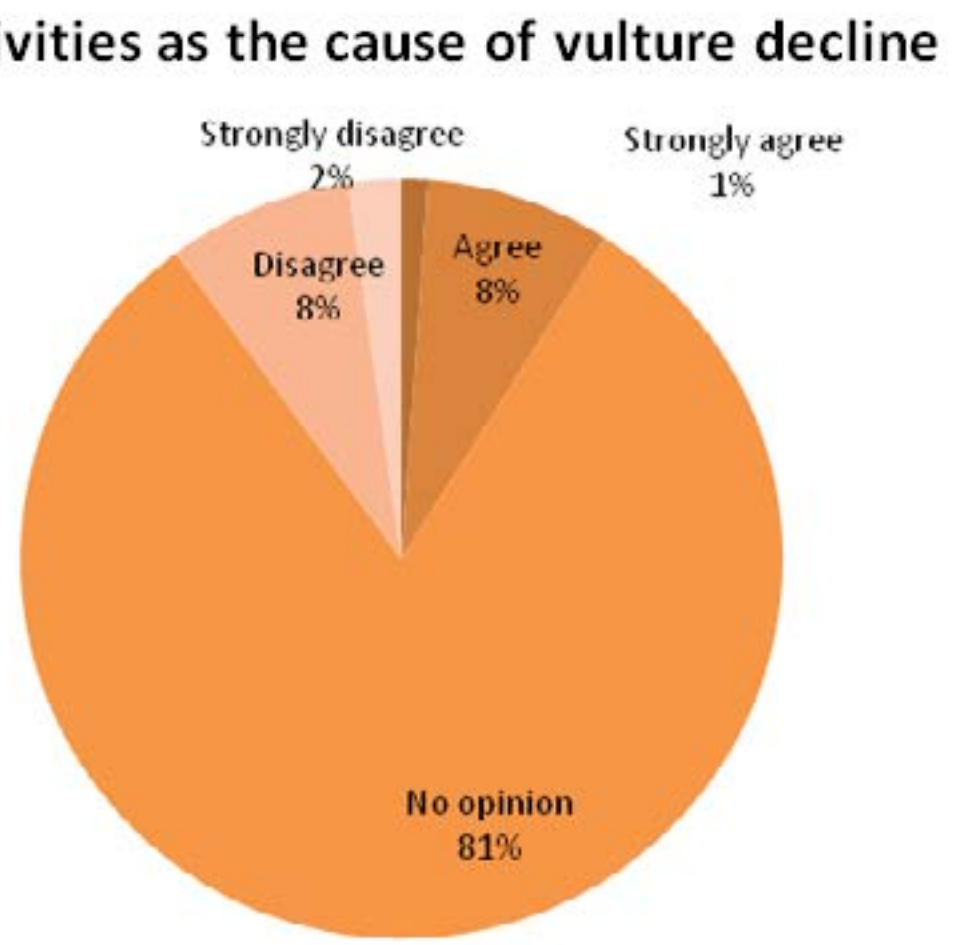


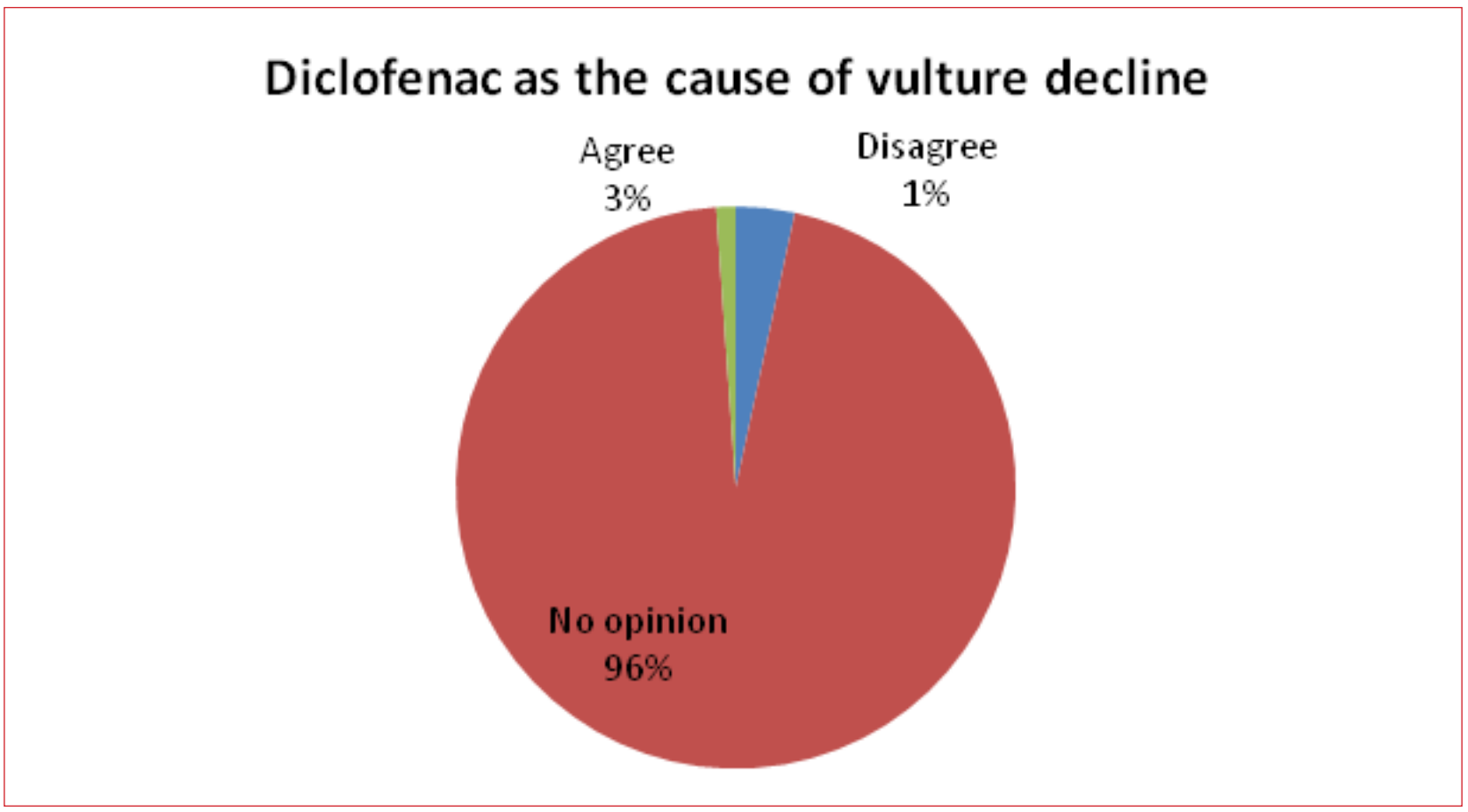
Vultures keep the forest free of diseases

It was found that 60 % of the respondents understood the role of vultures in the ecosystem. They agreed that vultures keep the forest free of diseases by eating the dead animals and play a major role in keeping the forest clean. 25% had no opinion on this and only 5% disagreed.

Vulture population decline and the cause of the decline

69% of the respondents knew that vultures are endangered and their population is declining. However, 27% did not know about the status of vultures. 71% of the respondents did not know that humans were responsible for the vulture declines; only 9% agreed that humans were responsible for the decline. 96% did not know that diclofenac was the major cause of the population crash of vultures.





Treatment of cattle

According to 98 % of the respondents, veterinary services were easily available in the locality. Regarding treatment, 17% think that self treatment was the best option. But 71% believed that expert service was required to treat cattle.

Discussion

Population decline

The study among cattle owners and residents living in the vicinity of the vulture habitat in Wayanad reveals many important factors. The most important understanding we gained after the study is that people are aware about the habits and habitat of vultures, their presence in the locality and see them as part of their daily life. This is reflected in the general perception that vultures are not directly useful to humans but are useful only to forests and they are generally scavengers. This is true in the forest habitat where these indigenous communities live. Only very few believe that vultures are predators and this is no surprise at all, when we take into account the ignorance of the so-called educated general public of Kerala regarding anything wild. It is noteworthy that they know the vulture population has declined in Wayanad. This is interesting because none of them are aware of the population crash of vultures elsewhere in India and the havoc caused by diclofenac. We have to assume that people are referring to their own observation of less frequent sightings of vultures in the recent years.

Interviews with some of the village elders reveal that during 1950s and 1960s, vultures were present in many localities 10 to 15 km away from its current habitat. The suitable habitat for vultures declined drastically during the past 40 years in Wayanad, caused mainly by habitat alteration for agriculture and homesteads. Human population of Wayanad in 1911 was just 86,000 (Nair, 1901) and currently it is about 8 lakhs!. With the influx of migration after the Second World War by people from south Kerala, more land came under the plough and the native communities were marginalised as their land were grabbed by settlers(Suma, 2014).

Another important factor is that livestock management has changed from free roaming grazing cattle to stall-fed hybrid cows in most of the areas. One reason for this was non-availability of grazing land, with the increase in human population and stricter implementation of forest protection. Free roaming cattle were prone to big carnivore attacks and the remains of their carcasses would have comprised of a significant part of the available food for vultures. The reduction in number of free roaming cattle obviously reduced the food availability of vultures and the remaining vulture population is solely dependent on wildlife carcasses within the limits of the protected area. The native communities such as Kuruma, Kurichya and early settlers such as Wayanadan Chetti had a large number of cattle; cow dung was primarily used as fertilizer for rice based agriculture. Some of the elders still recollect sighting of 20-30 vultures feeding on dead cattle near Kenichira in 1959, this location currently is a small town. When food availability decreased, vultures would have reduced their foraging areas gradually and confined to the forested areas where they feed on wild ungulates predated by carnivores. Though there is no sources we can refer to for estimating the earlier population, we may well assume that the current population is only a fraction of what existed 50 years back. Our study estimate 12 breeding pairs of Oriental White-rumped Vultures and 5-8 individuals of Red-headed vultures in the sanctuary and a maximum of around 120 Oriental White-rumped Vultures in the Bandipur-Mudumalai-Nilgiri landscape. So conserving this population is critical if we have to see vultures in this landscape for years to come.

Threat from diclofenac and other drugs

Though diclofenac is proven as the single major reason for drastic population decline of Gyps vultures in India since 2000(Green et.al, 2004, Cuthbert et.al, 2006), the general public in this landscape has never heard about it. The results show how ill-informed are the local cattle owners in this regard. While they use the service of veterinary professionals for treating animals, they do not know what drugs are being used for treating animals. As fever and foot-and-mouth disease are common, people mostly consult the veterinarians. Some farmers having large number of cattle, still dispose the dead cattle in open areas. This is an extremely dangerous practice as far as vultures are concerned in the present scenario where no one knows which animal was treated with the fatal drugs like diclofenac, aceclofenac or ketoprofen. Though government has banned the sale of veterinary diclofenac, we were able to purchase 30 ml vials of it from the shops in nearby towns. While the veterinary practitioners assert that they do not prescribe the diclofenac, who uses it is a big question and need to be further investigated. Adding to this is the arrival of new cattle especially buffalos from outside Kerala to these localities.

A meat processing factory has been recently commissioned in the Wayanad which has xx tons of meat processing capacity per day. The factory management has decided to distribute buffalo calves to the local people for rearing with a buy-back arrangement. We conducted an additional study of cattle ownership in the second half of the project covering an additional 92 households in the forest fringe areas. This study showed that on an average, one family owns five heads of cattle and they rear more buffalos than native cows. Most of these buffalos are brought from Karnataka and delivered to farmers on the way without any proper checking of diseases. This also increases the threat to the existing vulture population in the sanctuary.

References

Davidar, E.C.R., and Priya Davidar. (2002). Possible causes for the decline of Oriental White-rumped Vultures Gyps bengalensis in the Sigur region (Nilgiris, Tamil Nadu), India. Vulture News 47, September 2002.

Sashikumar C, Vishnudas C K, Raju S and Vinayan P A., (2011). Along the trail of Salim Ali- Travancore-Cochin Ornithological Survey 2009. Kerala Forests & Wildlife Department, Thiruvananthapuram.

Suma, T.R. (2014) “Customary vs state laws of land governance: Adivasi joint family farmers seek policy support. The case of Kurichya joint families in Wayanad, southern India”. Case study research report by MS Swaminathan Research Centre for ILC. Rome: International Land Coalition

Green, R. E., Newton, I., Shultz, S.,Cunningham, A. A., Gilbert, M., Pain, D. J.and Prakash, V. (2004) Diclofenac poisoning as a cause of vulture population declines across the Indian subcontinent. J. Appl. Ecol.41: 793800.

Cuthbert, R., Green, R. E., Ranade, S.,Saravanan, S., Pain, D. J., Prakash, V. And Cunningham, A. A. (2006) Rapid population declines of Egyptian vulture (Neophron percnopterus) and Red-headed vulture (Sarcogypscalvus) in India. Anim. Conserv. 9:349–354.

Nair, C Gopalan(1901) Wayanad : Its people and traditions” Asian Educational Services, Madras

Prevalence survey of non-steroidal antiinflammatory drug (NSAID) in the drug stores in Wayanad District, Kerala

Methodology

1. NSAID prevalence survey

Pharmacies which were known to dispense veterinary drugs were surveyed in Wayanad district in December 2013. Volunteers visited the pharmacies and asked to buy NSAIDs for treating livestock. A sample of each NSAID was purchased at each pharmacy. No attempt was made to pretend that surveyors were farmers or livestock owners or to steer pharmacists into offering any particular type of NSAID for sale. Standard forms were completed for all pharmacies visited, recording the date of the visit, pharmacy name and location. By this survey, information on the type of NSAIDs and brands of NSAIDs available for purchase was obtained. The availability of diclofenac was checked out at the drug stores again in October 2014.

2. Attitude and awareness survey of pharmacy owners/ employees

As part of the separate attitude/ awareness survey in the pharmacies, the shop owners or pharmacists were questioned (after NSAID purchase had been attempted) on whether they were aware of the ban on diclofenac and the role of diclofenac in the decline of vultures, whether diclofenac for human use was available for veterinary use etc.. The responseswere recorded in a prescribed datasheet.

Results

1. NSAID prevalence

Samples of NSAIDs were purchased from seven medical shops of Wayanad district, located at Sulthan Bathery, Pulpally, Kattikulam (Fig. 1) close to the Wayanad Wildlife Sanctuary. Availability of seven types of NSAIDs is shown in Table 1.

We found that diclofenac formulations, banned for veterinary use, were sold by four pharmacies, both in injectible and bolus formats. One medical shop sold a 30 ml vial of diclofenac. Two others sold 2 ml and 3 ml vials and advised the purchaser to use more than one vial at a time as the dosage demanded. All the formulations of diclofenac we could purchase were manufactured for human usage. This showed that diclofenac was freely available for veterinary use, posing a great threat to the vulture population.

Two more veterinary NSAIDs, proven to be fatal to vultures – ketoprofen and aceclofenac – (Naidoo et al. 2009, Sharma, 2012) were available in the medical shops. As these drugs are yet to be banned for veterinary use, the threat from these is persisting as of now.

Location of the medical shops surveyed and the vulture nesting sites in Wayanad WLS

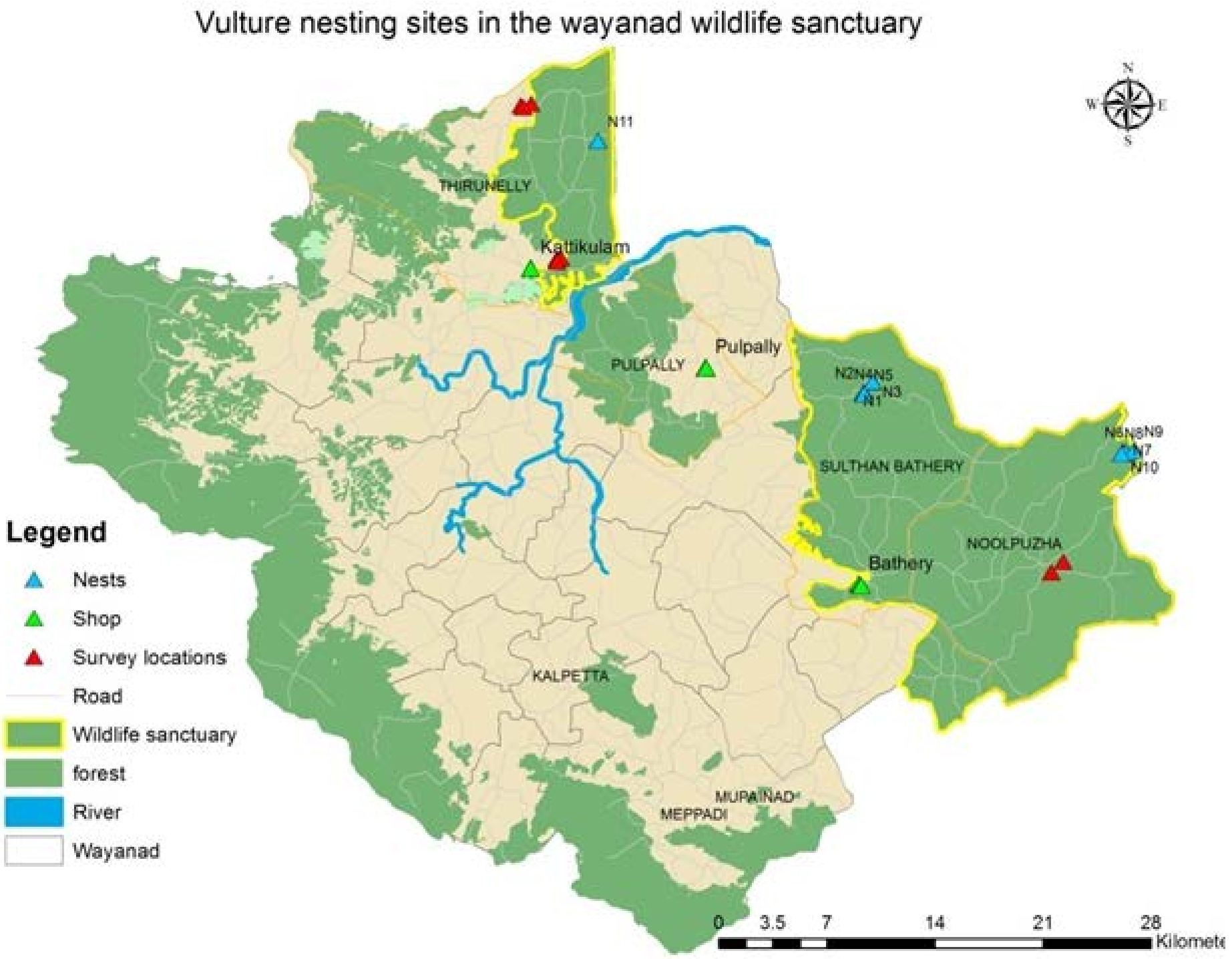


Table 7.

Type of NSAID available (Brand name and volume)	NSAID compound	Number of pharmacies		Price (Rs./ vial/strip)
		Injectible	Bolus	
Where available	Price			
(Rs./ vial/strip)				
			Bolus	
Melonex (100mg)	Meloxicam		3	44
Melonex (10 - 15 ml)	Meloxicam	3		40 - 50
Ketoprofen (15 ml)	Ketoprofen	1		52
Ketop (15 ml)	Ketoprofen	2		52
Vetalgin (3 ml)	Analgin	1		16
Neoprofen (15 ml)	Ketoprofen	1		50.50
Voligesic (3 ml)	Diclofenac	3		16
Voli (30 ml)	Diclofenac	1		25
Bludec (2 ml)	Diclofenac	1		11.50
Aceclan (100 mg)	Aceclofenac		2	23.95
Aceclo (100 mg)	Aceclofnac		1	26.93
Acenext (100 mg)	Dclofenac		1	20.27
Ibugesic (200 mg)	Ibuprofen		1	4.02

Meloxicam, acknowledged as the safe alternative for diclofenac (Swarup et al. 2007) was available at four pharmacies.

Repeat survey

The survey was repeated by the end of the project period, in the last week of October 2014. This time, 30 ml vial of diclofenac was not available in any of the pharmacies.

2. Attitude and awareness survey

The survey was conducted in 18 medical shops in Sulthan Bathery (N=6), Pulpally (N=9) and Kattikulam (N=3) in February – March 2014. All the respondents were qualified pharmacists, many of them owners of the shop while some were employees. The survey revealed that out of the 18, twelve medical shops dispensed diclofenac in 2 ml and 3 ml vials.

Majority of the respondents (N=12) were aware of the ban of diclofenac for veterinary use. The rest (N=6) were not aware of the ban. Most of the respondents (N=12) were not aware of the effect of diclofenac on vultures.

The results of the survey revealed that most of the pharmacists were not yet aware of the seriousness of the threat posed by diclofenac to the vulture population of Wayanad. This concern was addressed by contacting the Drug and Pharmacy Association and the entire issue was presented and discussed in their meeting held at Mananthavady on 1 October 2014.

References

Naidoo, Vinny, Kerri Wolter, Duncan Cromarty, Maria Diekmann, Neil Duncan, Andrew A. Meharg , Mark A. Taggart, Leon Venter and Richard Cuthbert. 2009. Toxicity of non-steroidal anti-infl ammatory drug s to Gyps vultures: a new threat from ketoprofen. Biol. Lett. doi:10.1098 / rsbl.2009.0818 Published online.

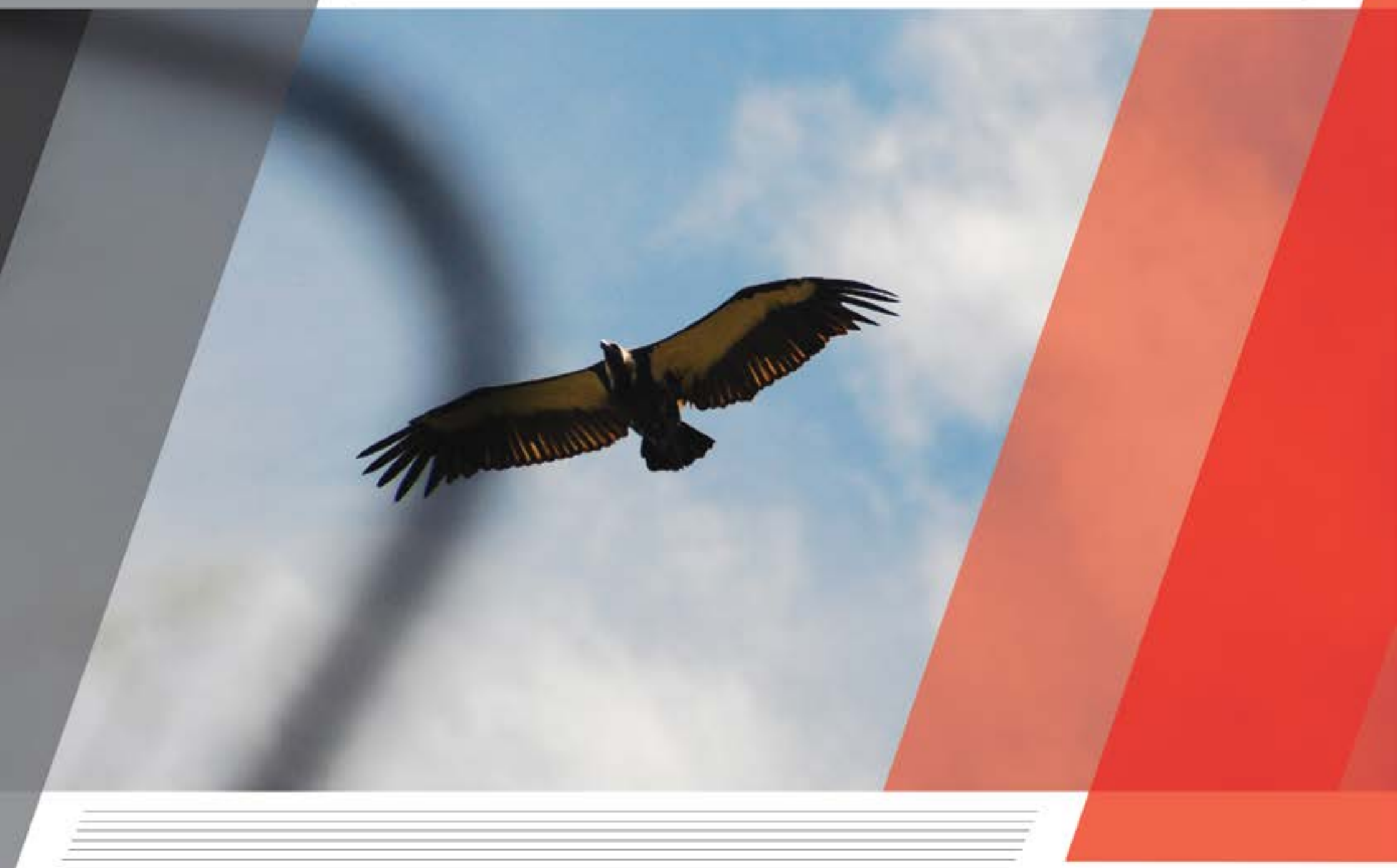
Sharma, Pradeep. 2012. Aceclofenac as a potential threat to critically endangered vultures in india: a review. Journal of Raptor Research 46(3):314–318

Swarup, D., R. C. Patra, V. Prakash, R. Cuthbert, D. Das, P. Avari, D. J. Pain, R. E. Green, A. K. Sharma, M. Saini, D. Das & M. Taggart. 2007. Safety of meloxicam to critically endangered Gyps vultures and other scavenging birds in India. Animal Conservation 10 (2007) 192–198.

Conclusion

Conservation of vultures in a protected area involves-multi-stakeholder participation of Forest Department, Animal Husbandry Department, cattle owners and the general public living close to the vulture habitat. Survival of vulture population in the study area is very much linked to the status of carnivore population such as Tiger and Wild Dogs. So conservation of vultures is possible through conserving a healthy habitat of herbivores and carnivores. There is a growing unrest happening in the region after the Gadgil and Kasthuri Rangan reports on the conservation of the Western Ghats. The landscape is a hotspot of human-animal conflicts. We also found that there is critical communication gap from top to bottom communication systems about Indian forest conservation laws. Authorities seem to have failed to convince people on the importance of conservation of the Western Ghats and its wildlife. Delay in providing compensation to victims of man-animal conflict was one of the major reasons behind the movement against forest conservation in Kerala. Life loss, crop damage etc should be compensated adequately and the compensation amount should be increased from time to time based on the value of economic loss to the stake holder like a farmer or cattle owner. Conservation will be possible only with the cooperation of local people.

SAVE VULTURES



CONTACT DETAILS

Sasikumar C
Email: csashikemar@gmail.com, Ph: +91 94 46 26 55 16

Vishnudas C.K
Email: ckvishnudas@yahoo.co.uk, Ph: +91 94 47 54 46 03

Rural Agency for Social and Technological Advancement, Kambalakkad Wayanad