

Contents

Acronyms	3
Executive Summary	4

1st July 2019

Inaugural Session

1. Welcome Address by Shri. Rakesh Chaturvedi, PCCF	6
2. Keynote Address by Shri. M. S. Negi, ADG (WL), MoEFCC	6
3. Chief Guest Address by Dr. R. K. Singh, Retd. PCCF &HoFF, Chhattisgarh	7

Technical Session I - Presentations

1. Presentations by CWLW of East Central Elephant Range States (Chhattisgarh, Odisha, West Bengal, Jharkhand and Madhya Pradesh)	8-11
---	------

Technical Session II - Presentations

1. Insights on Elephant Ranging Patterns and HEC in Northern Chhattisgarh- Dr. Bivash Pandav and Shri. N. Lakshminarayanan	12
2. Key issues in Human-Elephant Conflict – Dr. A. J. T. Johnsingh	12
3. Corridors in East Central Landscape and its protection – Dr. Sandip Kumar Tiwari	13
4. Process involved in equipment and drug procurement – Dr. P. K. Malik	14
5. Elephant Capture- Options and obstacles – Dr. Parag Nigam	15

2nd July 2019

Technical Session III – Working Group discussions, Presentations

1. Deliberations by working groups and finalization of their recommendations	17
2. Managing dispersing elephant populations- Challenges and opportunities – Shri. Ajay Desai	17
3. Preventing crop damage by elephants through Community based Conflict Management Model (CBSM) – Dr. Prachi Mehta	17
4. Mobile-mediated technology for human-elephant conflict mitigation – M. Ananda Kumar	18
5. Human Elephant Interface- Conservation and conflict mitigation in Mahasamund and Balodabazar FD, Chhattisgarh – Wildlife SOS	18
6. Supporting the components of ‘precision wildlife management’- Aditya Gangadharan, PhD, IUCN India Country Office	19
7. Presentation of recommendations by Working Group I and discussion	20
8. Presentation of recommendations by Working Group II and discussion	21
9. Presentation of recommendations by Working Group III and discussion	22

Closing Ceremony 23

1. Welcome address by Shri. Rakesh Chaturvedi, PCCF	
2. Address by Shri. M. S. Negi, ADG	
3. Address by Shri. R. K. Shrivastava	

4. Address by Dr. P. K. Malik
5. Address by Hon. Forest Minister Shri. Mohammad Aqbar
6. Vote of thanks by Shri. Atul Shukla, PCCF WL

Workshop Findings 24

Appendices

Appendix I –	Workshop Agenda	25
Appendix II –	List of Working Group Members	27
Appendix III –	List of Workshop Participants	28

Acronyms

HEC – Human-Elephant Conflict
CPEMC – Central Project Elephant Monitoring Committee
MoEF&CC – Ministry of Environment Forests and Climate Change
ADG – Additional Director General
CWLW – Chief Wildlife Warden
PCCF – Principal Chief Conservator of Forest
WII – Wildlife Institute of India
WTI - Wildlife Trust of India
WRCS – Wildlife Research and Conservation Society
NCF – Nature Conservation Foundation
IUCN – International Union for Conservation of Nature
CZA – Central Zoo Authority

Executive Summary

Human-Elephant Conflict (HEC) is one of the major wildlife related issues of this country. Due to increased human population, forest fragmentation and degradation, conflict with wildlife seems inevitable. Chhattisgarh is one of the best example for HEC. Historically, the state was devoid of elephant population. Small elephant population originally migrated from Jharkhand and Odisha during the 1980s and 1990s (re-colonization). HEC cases have been increasing from the year 2000 as the number of migratory elephants have steadily increased. Considering all factors, co-existence seems to be the key and necessity for survival of both us humans and the wildlife. Keeping this theme at the centre, the 3rd Regional Workshop on “Right of Passage to Elephants” to mitigate Human-Elephant Conflict for East-Central Region was held at Chhattisgarh. It proved to be a wonderful opportunity to bring together all experts working in the field and as well as at policy level. The Central East Region states comprises of a landscape which elephants use frequently. The state borders are only for people and no wildlife abide to human boundaries. Hence collaboration between these states is crucial to understand the larger picture of HEC. Co-ordination between states is required now more than ever to address and deal with this sensitive issue.

The workshop was conducted on 1st and 2nd July, 2019. Workshop Agenda is annexed(Appendix I). Post 2nd Central Project Elephant Monitoring Committee (CPEMC) meeting held at Ambikapur on 29th and 30th June, the workshop was held at State Headquarters AranyaBhawan. Apart from CPEMC members, officers from MoEFCC, forest department officers from PCCF, CCF to DFOs, wildlife experts from Wildlife Institute of India (WII), members of Non Governmental Organisations participated in this workshop. A list of all participants is annexed(Appendix III).

A total of 4 Technical Sessions were organised across 2 days which included presentations from CWLW of Central East Region States viz. Odisha, West Bengal, Jharkhand, Madhya Pradesh and Chhattisgarh. Non Governmental Organisations such as Wildlife SOS, WTI, WRCS, NCF, IUCN shared their work knowledge regarding HEC, elephant ecology and behaviour in various landscapes of Central East Region and other parts of the country with elephant distribution ranges.

Central East region states presented HEC in their respective states. Most common problem among all the states was fragmentation of elephant habitat and lack of good forest. Corridor movement turned out to be crucial in understanding the movement patterns and elephant distribution dynamics at landscape level. States provided conflict data for the past 10 years and more and how it has changed over the years. At present, HEC seems to be increasing across the country.

Wildlife Institute of India and various research organisations shared their research studies conducted across India. Recent techniques like satellite collaring and use of social media proved effective in monitoring elephant movement and alerting local communities to minimise the damage. A wide variety of protective measures were suggested. Since adequate financial support was lacking, low cost technologies were suggested to be used in elephant affected areas. However, appropriate budget is crucial to conduct Project Elephant activities. Policy level change is surely needed to address this issue similarly in each of the states.

After 2 days of brainstorming sessions, the conclusion for handling HEC came out to be several factors. A Strategic Action Plan is required specially for Central East Region. Interstate Coordination Committee needs to be established to help each other in dealing with HEC effectively. Getting finance to fund Project Elephant activities is crucial. Capacity building of staff is necessary to handle HEC without causing any damage to elephants or humans. Sensitizing local communities living in elephant landscapes to learn to co-exist is another important matter to look after and leave the elephants alone.

Day 1st – Monday 1st July, 2019

Inaugural Session

The workshop was inaugurated by Chief Guest Shri. M. S. Negi, ADG (WL), MoEF&CC in the presence of Shri. Rakesh Chaturvedi, PCCF Chhattisgarh, Shri. R. K. Singh, Retd. PCCF and HoFF, Chhattisgarh, Shri. Atul Shukla, PCCF WL, Chhattisgarh. Ceremonious praying of deity Saraswati was done by the guests and workshop proceeded forward.

Shri. Vishwesh Kumar, DFO Balodabazar coordinated the announcements of technical sessions and introduced speakers who gave presentations in each technical session.

Welcome Address - Shri. Rakesh Chaturvedi, PCCF, Chhattisgarh Forest Department

Shri. Chaturvedi gave a brief account of history of elephant presence in the Chhattisgarh state. There is a note in Bilaspur District Gazette which testifies that during 1700 AD period of Mughal Empire, elephants were used to be bought for the kingdom. However, there were no natural population existing in that period. During 16th to 18th century, a natural population did exist in the state and then later disappeared. After that, in 1982-83, elephants started migrating from Palamau, Jharkhand to the Chhattisgarh state. At present, post 2017-18, there are about 280 elephants in the state. A herd of 18 individuals was recorded at Mandir Hasod, of which 2 elephants travelled to Gadchiroli, Maharashtra and again came back. In future, we might see movement of elephants from Tadoba to Odisha after seeing their current movement pattern.

Regarding HEC, number of conflict cases are decreasing from Ambikapur district and increasing in other districts of the state. HEC is one of the burning issues during every Vidhan Sabha Session. Shri. Chaturvedi gave details of proposed Lemru Elephant Reserve. He mentioned that there are 3 villages present in the area and the Cabinet has given approval in principle for the said reserve. First discussion regarding the same has taken place and the next meeting will be conducted on 3rd August, 2019.

Keynote Address - Shri. M. S. Negi, ADG (WL), MoEFCC

Shri. Negi thanked Chhattisgarh Forest Department for conducting a successful field visit of **CPEMC members** at Ambikapur. He appreciated the work of the **Chhattisgarh Forest Department in handling conflict situations**. The major objective to solve HEC is to sensitize the public and convince them to allow **wild animals** to move in their natural habitats as conservation is important for both elephants and people. Shri. Negi stated that findings of the CPEMC meeting and this regional workshop will yield better results **to mitigate HEC in** all Central East Region states. Communication between states is important and it needs to be improved further for better results.

Addressing conflict along linear infrastructure projects is **very important**. The guidelines formed by Ministry with the association of WII, NHAI and NTCA are to be followed religiously for conservation of wildlife. **Efforts should be targeted at not constructing roads** through wildlife sanctuaries. Proper construction of crossing structures is essential for passing/crossing of wildlife **to avoid conflict situations**. Field officers should be **advised to** strictly follow the guidelines **issued by the Ministry**.

Electrocution of **elephants** is high **in the states of Odisha, West Bengal and Chhattisgarh**. 33KV lines are most dangerous for elephants and **utmost care should be taken to avoid electrocution of elephants through these lines**. Ministry is taking necessary steps with the Ministry of Agriculture to modify the Crop Damage Insurance Scheme for better compensation **to villagers**. **To prevent entry of elephants in the crop fields**, lemon grass can be cultivated around villages and some villages can be developed as model villages.

Chief Guest Address – Dr. R. K. Singh, Retd. PCCF and HoFF, Chhattisgarh

Dr. R. K. Singh gave a brief history of elephant movement in Chhattisgarh state. In 1920, elephants were recorded in northern part of the state. Later elephants re appeared during 1988. During that time the state was part of Madhya Pradesh and the policy at that time regarding elephant movement was to put barrier and drive elephants away. In 1993, the state invited people from Karnataka to capture these elephants and a documentary “Last Migration” was also made during that time period. After that for 7 years, there was no migration recorded in the state. In the year 2000, elephants moved back into the state.

At present, there is need of landscape level plan for conservation of elephants and tackle HEC. The proposed Guru Ghasidas Tiger Reserve and Sanjay Tiger Reserve, MP comprises a landscape of about 4000 sq.km. There are many villages dotted across the elephant landscape and hence village relocation is a huge task. There is need to make necessary changes to current relocation policy. For elephants, CPEMC states should identify specific conservation zones and ask for funds from government to do the same. There is no capacity to manage HEC in the state.

Similarly, drug procurement is another issue and state faces difficulty in getting the drugs in time. Dr. Singh suggested that WII can have a satellite centre for training in Karnataka for ease of access. Use of latest technology like drones, artificial intelligence (AI), proper safety gears for staff is essential for managing HEC effectively. There should be uniform level of compensation provided to the conflict victims. Currently, compensation provided by Odisha is higher and lower by Jharkhand with respect to Chhattisgarh state. Adequate rescue centre for elephants and hospitals for people is important to minimize casualty cases on both ends. Inclusive governance is required for conservation of both elephants and people.

Technical Session I – Presentations

Chair – Shri. M. S. Negi, ADG (WL), MoEFCC

Co-Chair – Shri. N. K. Vasu, PCCF and HoFF (Retd.), Assam

Presentations by Central East Region states

Presentation 1 – Shri. P. K. Verma, PCCF, Jharkhand

Shri.P. K. Verma delivered a brief presentation on HEC in Jharkhand state. He mentioned that the entire geographical area of the state was influenced by elephant movement. Following facts were presented in the presentation.

A total of 678 numbers of elephants were recorded in Jharkhand according to 2017 census by MoEF&CC. Jharkhand State has two resident elephant population zones, viz. Palamau and Singhbhum. Palamau population occupies Palamau Tiger Reserve and adjoining forest areas. Singhbhum Region, comprising mainly Saranda, Chaibasa, Kolhan, Porahat, Saraikela-Kharsawan and Jamshedpur is declared as Singhbhum Elephant Reserve.

In recent years, elephants have started moving into new areas of Hazaribagh, Ranchi, Khunti, Gumla, Ramgarh, Bokaro, Dhanbad, Giridih, Deoghar, Jamtara, Dumka, Pakur, Godda and Sahibganj districts passing through fragmented forest patches, agricultural land and human settlements. Inter-

State movement of elephants also take place within Odisha, West Bengal, Chhattisgarh, Bihar. Due to fragmentation of habitats for various reasons, elephants are changing their established migratory routes. A study conducted by WTI also showed that the corridors are disturbed which also might be the reason behind extensive elephant movement in the entire state. Around 300 individuals were believed to be roaming ones outside the resident population of the state.

Regarding HEC, a total of 302 cases of human casualties were recorded. Shri. Verma explained that the deaths occurred last month from the date of this workshop, an adolescent elephant moved away from its herd and inflicted 9 human deaths in 3 districts. He also mentioned that out of these, 7 cases were avoidable as people killed were the main cause behind this. Curious people due to ignorance or lack of common sense ventured very close to this animal and got killed in the process.

Discussion –

- Shri. M. S. Negi pointed out in the presentation to add the human and elephant mortality in the same table to better represent the data and have a clear understanding about patterns to be seen across the years. He suggested to build a short term tranquilization and rescue centre to deal with problematic animals. A proposal regarding the same can be submitted to CZA, he added.
- Shri. Sanjay Mohan, PCCF (WL) Karnataka added that expenses up to 2 lac occur per elephant at a rescue centre and hence temporary elephant camps proved to be a better option in the Karnataka State.
- Shri. P. K. Verma upon question of elephant mortality causes answered that the reason is not related to conflict. Also timely compensation to victims is paid but delay often do occur in the process of verification for each case of conflict.
- Dr. P. K. Malik, WII suggested all attendees to not to use drugs like ketamine and xylazine especially for animals that are in musth.

Presentation 2 – Shri. R. K. Sinha, PCCF, West Bengal

Shri. R. K. Sinha explained that West Bengal has two distinct elephant populations viz. North and South Bengal. Population trends for both showed an increasing trend since the year 1989 where 175 individuals were recorded from North Bengal and 4 individuals from South Bengal Population. Year 2017 data showed that the population of North Bengal is increased to 488 individuals and 194 individuals from South Bengal. North Bengal population is resident while South Bengal has both residential and migratory population. A total of 14 corridors have been identified and most of them are fragmented. Out of these, 4 corridors account for 100 elephants. Over the years, North-South migration of elephants has increased as it was shown through maps in the presentation.

Shri. Sinha stated that West Bengal accounts for 2% of all elephant population in the country yet 25% of all human deaths are recorded from this state alone. Regarding elephant deaths, he mentioned about an old railway line about 120 years' old which was earlier narrow gauge and converted to broad gauge in 2004. Since then 69 elephant deaths have been occurred. No elephant death has occurred in forest area in the past 4 years. To deal with conflict issue, 3 tranquilizer guns are available with the state forest department and staff is qualified to use these guns in the field, he mentioned.

Presentation 3 – Shri. P.K. Sahu Dy. C.F., O/o PCCF (WL) and CWLW, Odisha State Forest Department

In the introduction, it was mentioned that out of 30 districts of the state, 28 have elephant distribution suggesting that entire state was under elephant movement area. 14 corridors have been identified in the state. Census data of year 2017 showed that there were a total of 1976 elephants recorded in the state. Threats to elephant population were similar as addressed by earlier speakers which were shrinkage and defragmentation of habitat, HEC and increased threat from poachers.

A total of 402 elephant deaths were recorded since the year 2015. Majority of the cases were related to disease followed by accidents and electrocution. 13 cases of poaching were recorded through the

time span. For 62 cases, cause of death was unknown. 434 human deaths occurred during similar time frame for which due compensation was paid along with compensation for injuries and property damage with respect to house, cattle and crop damage.

To deal with HEC, following steps were taken by Odisha Government:

- A “Standard Operating Procedure (SOP) to deal with emergency arising due to straying of wild animals in human dominated landscapes” was approved. SOP provides for a Permanent Anti Depredation Committee in all divisions to deal with animal-human conflict or straying of the same into human habitations in an area and to impart technical guidance, monitoring of the situation on day to day basis. DFO is the chairman of the Committee. In case, the forest division falls in more than one district, the representatives of collectors & superintendents of police of all such districts are nominated. Normally the committee meets on six monthly bases to take stock of the situation.
- “Wildlife Protection against Electrocutation-Cell” has been constituted in each district which includes representatives from Electricity Dept., Forest, NGO, Police, etc. under the chairmanship of the collector.
- Solar fencing around the crop field has been taken up effectively in some of the divisions.
- Gajah Vehicle has been procured for mitigation of man-elephant conflict.
- Drone has been utilized to know the presence of elephant herds.
- Improved coordination & operationalisation of WhatsApp group.
- VSS / EDC are engaged for creating awareness among villagers in elephant prone areas.
- Effective issue of caution order by Forest Dept. to railway authorities - Continuous hooting in the sensitive zones identified by the State Forest Department is carried out. Locomotives are provided with powerful beams in the sections. Clearing of vegetative growth in 30 m width on both sides of the track has been done. The VHF sets of State Forest Department and Railways have been synchronized for proper communication system so that drivers can be informed of the presence of elephant herds to enable trains to slow down or stop.
- The Forest Department staff along with anti-depredation squad and local villagers of the concerned area patrol day and night and try to drive away wild elephants from the agriculture field, human settlement into the nearest forest. The Police and local people jointly participate with the Forest Department to track and monitor the migratory elephants.
- Meeting of the Inter-State Coordination Committees on elephants on Human-Elephant conflict are being organized regularly to mitigate the problems arising out of trans-boundary migration of elephants to Odisha from Andhra Pradesh. Expert Committee has been constituted in the State under the chairmanship of Principal CCF (Wildlife) & Chief Wildlife Warden, Odisha to mitigate Man-Elephant conflict in the State.

Presentation 4 – Shri. J. S. Chauhan, APCCF (WL), Madhya Pradesh

Shri. Chauhan gave brief history of presence of elephants in Madhya Pradesh. He mentioned that old working plans indicated presence of elephants in Sidhi District. After partition of Madhya Pradesh and Chhattisgarh, wild elephants came to Sidhi, Singrauli and Shahdol districts of Madhya Pradesh from 2002 to 2007, 2009, 2013 and from 2017-2019. There is no resident breeding population of wild elephants in Madhya Pradesh at present. Currently 38 elephants are present since last 6-7 months in forest areas of Shahdol and Bandhavgarh. Another herd of 7 elephants is moving in Sanjay Tiger Reserve, Sidhi since March 2019. There is no identified corridor as such in the state but Singrauli district area is probably used as a corridor.

With regards to HEC, no conflict cases have been reported till the year 2017. Death of two straying wild elephants in Sidhi district occurred due to electrocution in 2015. Destruction of property, crops

and 2 human casualties in 2018 were recorded in Sidhi and Shahdol. Destruction of solar water pumps/pipes, patrolling camps, crops and 1 human casualty were reported in 2019 in Sidhi district.

For HEC mitigation, following measures were taken by the forest department.

- Solar flashing lights were put around village boundary to prevent wild elephants from entering the villages.
- 24-hour vigil was kept by tracking party on the movement of wild elephants and the information was shared with the adjoining staff and the local communities.
- A team of staff lead by Assistant Director, Sidhi was sent to Sarguja to study the mitigation measures and response to such conflict situations.
- Elephant repelling fencing was prepared and put in and around affected villages.
- Fires with chili powder and grease was put along the village boundary.
- Grain bags were put in forest area to lead them back to their original habitat.
- An expert from North Bengal was called for driving wild elephants back to their original habitat.
- Publicity through posters/flex banners on how to avoid conflict with wild animals was taken up in the affected areas.
- The villagers were made aware of the elephant presence by way of announcements through village Kotwars and other means.
- Drones were deployed to trace the location of elephants in the forests areas.
- The effected villagers were given adequate compensation, food grains and plastic sheets.
- The headquarters were apprised daily of the situation and guidance was obtained from HQ continuously.

At the end, Shri. Chauhan made suggestions for better HEC mitigation. He explained that the conflict cannot be completely reduced to zero but surely can be minimised as much as possible. The solutions he suggested were constant maintenance of physical barriers, awareness campaign for local communities and special training for department staff to better deal with HEC.

Presentation 5 – Shri. J.A.C.S. Rao, APCCF (WL), Chhattisgarh

Shri. Rao gave a brief presentation regarding HEC in Chhattisgarh and mitigation measures done by the state to minimise the conflict. In a brief history of elephant movement in the state, he mentioned that a small elephant population originally migrated from Jharkhand and Odisha during the 1980s and 1990s (re-colonization). Since year 2000, elephant moved back into the state after a 7 years gap in the 1990s. At present, Chhattisgarh has a total of 247 elephants (2017 census report by Project Elephant Division, MoEF&CC). Distribution of elephants is mostly seen in northern parts of the state occupying almost 60% of the total geographic area of the state. Recent movement of elephants has been recorded in parts of UdantiSitanadi Tiger Reserve.

Regarding HEC, Shri. Rao explained mortality of elephants in the state for the past 10 years. A total of 119 elephant deaths occurred during this time span. About half of the deaths accounted for occurred due to natural causes. Electrocutation was found out to be the major cause after natural causes. Electrocutation cases mostly occurred as accidents. Other causes included disease and poisoning. Cases of poisoning were indirect causes and not directly related to conflict as these elephants became victims to poison which were put by villager to deal with other animals.

For human death and injuries along with property damage, the government has increased the rate of compensation. Compensation provided for human death was increased from Rs. 4 lac to Rs. 6 lac. In the year 2018-19 a total sum of Rs. 1751.57 lac was paid in compensation to conflict victims against 59 cases of human death, 41 human injuries, 22141 crop damage cases and 1743 cases of house damage. Trend in human deaths seems to be increasing for the past 5 years and showed a small decline in the past year. However, it is still long way to go to reduce human casualties.

Mitigation measures applied by the forest department were as follows:

- Collaboration with WII and Wildlife SOS to conduct scientific research and gather large number of data regarding elephant ranging patterns.
- Awareness campaign for villagers which included a daily radio broadcast “HamarHathiHamar Goth” to make people aware about daily elephant movement.
- Capacity building of department staff – training programmes for better dealing with HEC
- Distribution of equipment to field staff like high beam torches
- Use of physical barriers to restrict elephant movement near villages to minimize damage
- Use of Gajraj Van for alerting villagers about elephant movement in the vicinity
- Elephant Rescue and Rehabilitation Centre established at TamorPingla Wildlife Sanctuary to house captured elephants along with 5 kumki elephants that were brought in from Karnataka State
- Habitat development works which included developing water bodies which were proven effective by observing elephant movement using these water bodies.

Discussion Session

Dr. Prajna Panda asked a question regarding option of immunization instead of resorting to culling of elephants. Shri. Sinha responded that 90% of the killings happen to tusker elephants. Regarding culling of elephants, he stated that there should be a policy to select which individual to be culled.

Dr. A.J.T. Johnsingh gave recommendations for rescue centre at Pingla, Chhattisgarh which was visited by CPEMC team during field visit. He suggested to take care of water intake as its crucial for elephants. Neem trees can be planted in the centre, he added. If anyone is building a centre, he mentioned that one should consider a site where river crosses through a habitat which is an ideal place to put up the centre. He also explained that cement should not be used in the construction of dams inside protected areas. Instead earthen material **should** to be used.

Shri.Sanjai Mohan shared details regarding elephant camps in Karnataka state. He explained that there is no rescue centre in the state but elephant camps which act as temporary holding structure for captured elephants. About 7-8 such camps are present in the state which houses around 80 elephants. He explained that to establish a proper rescue centre is a huge challenging task requiring large budget of around Rs. 105 crores. Shri. Ajay Desai added that training elephants housed in camps and rescue centre is a difficult task. He also mentioned importance of revival of old techniques handed from generation to generation.

Technical Session II – Presentation by expert institutes and organisations

Chair- Dr. R.K.Singh, Retd. PCCF &HoFF

Co- Chair- Shri. Rajiv Shrivastava

Presentation 1 - Insights on elephant ranging patterns and HEC in Northern Chhattisgarh – Dr. BivashPandavWII

Dr. Bivash gave brief introduction on historic account of elephants in Chhattisgarh state. He explained that HEC emerged as an economic, social and political problem in the state. He mentioned that 40% of the state area fall under forests. However, good forest is rare as most of the forest area is patchy and fragmented. Presence of railway corridors, mining activities, linear infrastructures poses much threat to wildlife as not much consideration is taken into account during planning of construction of the said activities. Apart from these, local communities residing in and around forest areas, they are highly dependent on forest produce for their livelihoods. Seasonal burning of forest during Mahua

season, occur regularly. It results into clearing of the understory which destroys ground cover and most food species of herbivore wildlife in the area.

Later, Dr. Bivash explained activities conducted by his team. They have come up with a manual which shows photographic details of identified elephants in northern Chhattisgarh. Based on these identified elephants, ranging pattern were observed which yielded into good data. In an example, he showed movement of one individual which moved through northern districts of Chhattisgarh and entered into Sanjay Tiger Reserve of Madhya Pradesh state.

Satellite collaring studies were conducted by the team and 6 elephants were fitted with satellite collars. Of which 3 collars dropped off due to natural reasons. The collar provided insightful data regarding ranging patterns. Range pattern of one bull makhna named Behradev for the period of May 2018 to June 2019 showed to be 1450 sq. km. It also showed a distinct pattern in the places the male visited during musth and non-musth period. Ranging area included Surajpur, Balrampur and Surguja Forest Divisions. Another collared female named Gautami showed movement from Chhattisgarh to Odisha state. Also the path followed by her and the herd was exactly similar concluding that these animals follow the same path. Also most of the path included open terrain non-forest area and human settlements. The herd ranged in Surguja, Dharamjaigarh and Jashpur FDs in Chhattisgarh. During November 2018, the herd moved into Sundargarh FD in Odisha. In February 2019, the herd moved back into Chhattisgarh and then on to Mainpat. There were four human deaths during the period. The herd remained in large patch of forests below Mainpat for a longer duration.

Corridor movement observed in elephants was found out to be very fluid. Dr. Bivash mentioned that this fluid movement was due to diffuse boundaries in the region. Similar fluid nature was seen in individuals and also in a herd which had their own behaviour resulting into conflict situations. This makes driving elephants away from any area a tedious and unsuccessful task as elephants often follow their movement paths as they are highly intelligent animals.

Dr. Bivash explained human casualties' data which showed that most of the deaths happen in elderly people and males. Also deaths occurred majorly during night time when elephant movement is at its peak. About 40% deaths occurred near human settlements. Dispersing male elephants were mostly the main cause behind human deaths.

Presentation 2 –Key issues in Human-Elephant Conflict – Dr. A.J.T. Johnsingh

Dr. Johnsingh delivered a brief presentation encompassing the HEC throughout the country. For Chhattisgarh state, he mentioned to quantify Mahua trees as its essential for both people and elephants. He said that the elephants who raid crops are much healthier than their forest fed counterparts. He also explained the degradation of water sources due to pollution done by domestic cattle. Fresh water is crucial for elephant. Wherever there is scarcity of water, this issue can pose a serious threat for elephants residing in such water shortage areas.

Dr. Johnsingh provided statistical data regarding HEC with respect to human deaths, elephant mortality and crop damage. He explained behavioural ecology of elephants. Adult elephants weigh between 3000 and 5000kg. They need 250-300kg food and about 100 litres of water every day. They spend 16-20 hours feeding in the wild. Agricultural produce provides readily available high energy food. Crop raiding may become obligatory if there is scarcity of fodder in the forest as it is in most of our wild elephant habitats may be except in certain protected areas in northeast. Also if they have lost part of their home range to agriculture and development. Conflict is serious in Assam as large part of elephant habitat has been lost to encroachment. He gave two examples of a tusker, one named Big boss, one of the bulls radio-collared in Rajaji NP, never raided the crops as he had not lost his habitat either to agriculture or to development. On the contrary, Tippu, another collared bull, raided the crops often as he had lost considerable amount of his habitat to development.

Elephants are expanding their range, so Human Elephant Conflict in India has expanded from 132 districts in 17 states/Union Territories in 2000 to 248 districts in 23 states/Union Territories in 2018. One can easily kill a man-eating tiger or leopard and destroy the carcass totally. But this can't be done with elephants and so the problem is likely to grow in the years to come. Poor of the land will continue to suffer more.

Corridors are most important for safe movement of elephants. Dr. Johnsingh gave an example of Chilla-Motichur corridor in Rajaji Tiger Reserve, Uttarakhand. This corridor across Ganges connects two halves of Rajaji Tiger Reserve. Nearly 40 years have gone, the corridor has not been established yet. It is one of the simplest corridors in the country. Flyover for vehicles is needed. The army ammunition dump should be taken out from the area. Islands on the Ganges need to be given vegetation cover which can be done by growing native castor plants. Apart from conserving elephants, helping tribal communities living in elephant habitats is also important. He gave example of the Malasar community in Anamalai Tiger Reserve and the Kuruba community in Mudumalai-Bandipur-Nagarahole landscape.

He stated some suggestions from a report prepared by Karnataka Elephant Task Force. It stated following major points:

- Zones only for elephants and patrolling staff.
- Co-existence zone, where people and elephants try and manage to live amicably.
- Elephant removal zone where conflict is serious. Capture and train them for captivity and control the population by immuno-contraception practiced in Africa.
- Since the carrying capacity of our elephant habitats are exceedingly poor, control of the population should be a priority. Regarding elephant population estimation, Dr. Johnsingh mentioned that we need a reliable method for estimation. Present method of total count using blocks lacks common sense. With any amount of training, no one will have the courage to walk through the bushes, locate, count and classify elephants into various age and sex categories. Tuskers can be identified easily and their population can be estimated. Focusing on tuskers the needed good can be and should be done for the elephants in the country.

Presentation 3 – Corridors of East-Central landscape and its protection – Dr. Sandeep Tiwari, WTI

Dr. Sandeep Kumar Tiwari gave brief introduction regarding details of increased HEC. Around 400-450 human death occur every year due to elephants. About 100 elephant deaths are reported due to man-made reasons. About 310 elephant mortality accounted by train hit (1987- June 2019); 55 in Central India. Central India has 10% elephant population but has 45% of HEC cases reported. In Odisha, 71 elephant deaths occurred in 2018 of which 90 per cent deaths were human-caused.

India has a minimum of 101 elephant corridors today compared to 88 in 2005. Use of corridors by elephants paints a different picture. Almost half of the corridors are not used by elephants. Corridors have become narrower today. 76% corridors are of width 500 mts or less today compared to 30 % in 2005. 65% were 1-3 kms wide. 35% corridors are of length 15 kms or more compared to 15% in 2005. About 88% of corridors have forest, agriculture and settlements. Only 8% of the corridors free of human settlements.

Dr. Tiwari presented examples of 11 corridors in Jharkhand-South West Bengal. Major threats to these corridors were various kinds of encroachments. Similar problems were seen in 12 corridors between Jharkhand and Odisha. Corridors in Chhattisgarh however showed a different picture. He explained that there are no specific corridors and the elephant movement is spread over much larger area.

Major threats to corridors were explained to be lack of legal protection, lack of sound land use policies in elephant habitats, lack of awareness among local communities and other stakeholders and

fund allocation by Govt. to secure the corridor by either land purchase/ voluntary relocation of people or through community intervention.

For conservation and management of corridors, Dr. Tiwari suggested following points:

- All identified corridors to be notified as state Corridors
- Provide legal protection to all identified corridors. This could be under various laws appropriate for the state and corridor
- Declaring as Ecologically Sensitive Area/ Eco-fragile area
- Community or Conservation Reserve
- Increase boundary of existing PA and add corridor
- Declaring corridor land as RF or PF
- Other relevant state laws (Village Reserve Forest)
- Working plan of Forest Division/ Management plan of Protected Areas should include corridors in their area with clear conservation plan.
- Elephant corridors facilitating multiple species (especially tigers) should be given high priority and should be jointly secured along with NTCA and included in conservation plans of Tiger Reserves.

At the end, Dr. Tiwari provided an example of community lead organisation named “Green Corridor Champions” which includes group of individuals charged with the responsibility of sensitizing, motivating and mobilizing the local communities for securing corridors. Their role includes noting and finding solutions for potential threats and land-use changes in the corridor landscape; analysis of wildlife movement patterns through the corridor and in the connecting habitats; undertaking awareness activities under GajYatra by involving the local community in the corridor area and working with local authorities and sensitize local politicians/ legislators on importance of the corridor and its legal protection.

Presentation 4 - Procedures for Procurement - Wildlife Restraint and Wild Animal Immobilization Anesthetic Drugs - Dr. P. K. Malik, WII

Dr. P. K. Malik gave introduction on different types of drugs which are used for restraining an immobilizing wild animals. There are 4 types of such drugs viz. Narcotics, Cyclohexamines, Sedatives and Tranquilizers. Narcotics are needed for animals like elephants, wild buffalo, rhino and gaur. Tranquilizers used only helps calming the animal by reducing stress during capture, transportation process. For carnivores, sedatives are used. Right dosage of drug is very important otherwise it can prove fatal to animal.

Dr. Malik provided examples of immobilizing drugs which are as follows:

- Traquilizers (Diazepam, Haloperidol, Acetylpromazine, Azaperone, perphenazine)
- Sedatives (XylazineHCl, Medetomidine)
- Dissociatives (Ketamine HCl, Tiletamine)
- Narcotics (Etorphine, Carfentanil, Thiafentanyl)
- Details of the relevant acts were given along with responsible authority implementing the act. Drugs and Cosmetic Act India, 1940 and Narcotic drugs and Pyschotropic Substances Act, 1985 were to be considered.

Procedure to procure drugs contains following 3 steps:

1. “No Objection” from DADF, Ministry of Agriculture
2. Drug Import License/Permit from Drugs Controller General India - After obtaining “NO OBJECTION” from DADF, Ministry of Agriculture, apply for drug Import Permit from Central Drugs Standard Control Organisation.
3. Import License/Permit from Narcotics Commissioner, Govt. of India - In case of Narcotic Drugs and Psychotropic Drugs such as Ketamine Hcl, an additional import permit from Narcotics Commissioner, Govt. of India is also required.

- a. Possession Certificate/License and Transport Permit from Excise Commissioner of the state where the drugs are being imported
- b. Fill Form IMP -1 available in the website of the Narcotic Commissioner, Govt. of India (<http://www.cbn.nic.in/>)

For safe immobilization and transport of wild animals, following requirements are necessary:

- Formation of a team
- Wildlife Manager, Veterinary Medical Officer, Range Forest Officer and Frontline Staff
- Training of veterinary medical staff in wildlife management and wildlife science
- Training of veterinary medical staff in restraint and immobilization of wildlife
- Education and training of frontline staff in biological attributes of species
- Field training in animal handling
- Skill enhancement in use of forestry implements

Dr. Malik then mentioned special training programs which can help in capacity building of department staff.

Training in wildlife restraint courses

- Attendance at the Wildlife Capture Course, Zimbabwe with one-week attachment at Veterinary Unit of Kruger National Park in South Africa and Hoedspruit Endangered Species Center located near Kruger National Park(03 Week3).Dr Chap Masterson, Director, Zimbabwe Wildlife Veterinary Trust, 58Arcturus Rd, Highlands, Harare, Zimbabwe. Cell:+263 77 486 1238 <http://wildlifecaptureafrica.com>
- Zoo, Exotic and Wild Animal Aesthesia(ZEWAC) Course organized by Wildlife Pharmaceuticals/Tsavran Pharmaceuticals South Africa, 38 Wilken Street, Rocky Drift, White River, 1240, South Africa P.O. Box 2673, White River, 1240, South Africa. Email:admin@wildpharm.co.za Ph: +27 13 751 2328 135 JU Tipperary, Ngongoni Game Farm, TipperaryConservancy, Karino, Nelspruit,1204.+27(13)0071217sourcemtreecourses@wildlifevets.net, <https://www.wildlifevets.net/zewac.html>

WII also conducts a course entitled “Interventions in wild animal health – Field Course”. It will be conducted at Sariska Tiger Reserve in February 2020. Dr. Malik provided a state level organisational structure for wildlife veterinary services for better handling this task at field level.

Presentation 5 – Elephant Capture – Options and Obstacles – Dr. Parag Nigam, WII

Dr. Nigam gave different examples regarding elephant capture and the experiences learned in the process. An elephant was captured who came from Rajaji Tiger Reserve, upon releasing it into the tiger reserve, the animal again went back to the place of capture which was a human settlement outside the protected area. This showed that only capturing and releasing elephant isn't enough as elephants remember the routes they travel on and can return back. In North India, Kumki elephants are not used to drive these problematic elephants.

A detail on restraining devices used to capture elephants were given. The devices must take into account of basic elephant biology. The position into which an elephant is kept while capturing and transportation process is very crucial. Putting all the pressure near its breast region is not good for the animal as the restraining device can cause harm to the animal or even death in some cases. The vets should be properly trained in handling this task and be ready for any emergency situation. There should be a checklist of procedures and equipment to be used.

A well trained staff and adequate equipment along with transportation vehicles are necessary to have a successful elephant capture.

Discussion

Dr. Prachi Mehta put a question regarding way forward to deal with HEC in Chhattisgarh with special reference to mining activities in the state. Dr. R. K. Singh replied saying that development is necessary for the society. Also it is a political issue and interest driven activity. For conservation of wildlife and elephants, a well educated society is important to understand the complex issues of HEC and science alone is not enough to solve this issue.

Day 2 – Tuesday 2nd July

Working groups discussion

Three groups were formed to discuss following topics:

Working Group I – HEC – Analysis and way forward

Working Group II – Management (Interstate coordination)

Working Group III– Crisis situation: Handling elephants/drugs/capacity building of local vets

The discussion was held and a presentation was prepared for each group. The groups delivered their findings after the presentations by expert organisations

Technical Session III – Presentations by expert organisations

Presentation 1 – Dispersing elephants: Opportunities and challenges – Shri. Ajay Desai, WWF

Shri. Ajay explained details on how elephants disperse in a landscape and challenges people face in the process. Major reason behind dispersal is no forest for them to disperse to. Mostly younger males which are not mentored by adults tend to disperse more. Bulk of the males are below the age of 20. They are forced to move through human use areas (overcome fear of such areas) and forced to live off crops (become habitual and obligatory raiders) and overcome fear of normal driving/scaring tactics. Therefore, for next generation this situation is natural and normal – they do not know what life is in a forest. Hence crop raiding is their normal behaviour. It needs to be considered that such dispersal of elephants will never stop as though forest is there, but suitable habitat for elephant is scarce. Elephants have scattered throughout the country comprising of different regional populations. Central Indian population is the fragile and population viability is crucial for survival of the species.

Shri. Ajay later explained use of physical barriers to stop the elephant movement. He stressed on proper construction of barriers keeping in mind elephant's behaviour. In Karnataka, they are using old rail fencing which is highly expensive costing up to Rs. 140 lakhs/km. Instead he suggested to use hanging fencing which cost around Rs. 2.5 lakhs/km and is a better option. The barriers should be placed at appropriate places especially at weak spots like water ways in a habitat. A report published by Karnataka Elephant Task Force described three zones as a mitigation strategy viz. Elephant only zones (inviolable space for elephants), co-existence zone (both people and elephants) and no elephant zone (areas where long-term elephant conservation is not possible and conflict is high). Such zonation can help the decision making process in long term conservation.

Habitat security and metapopulation management for preservation of genetic diversity is essential. Collaring of elephants should be done at the right time and not during musth period which can result into collar dropping incidences.

Presentation 2 –Community based management of elephant conflict in North Kanara District: An overview – Dr. Prachi Mehta, WRCS

Kali Tiger Reserve falls under North Kanara District where northern most elephant population in Western Ghats occur. It’s a satellite population having around 70-80 individuals. The habitat is mostly forest area interspersed with farm lands near the fringes of the forest area. So there is a clear boundary between these two different habitats. The elephants here mostly stay inside the forest from February to August and venture outside to feed on crops during August to January. Paddy, banana and coconut are the major crops cultivated in this area.

Dr. Mehta and her team is working in this area and practicing Community-based Elephant Conflict Management (CBCM) which was initiated in the year 2010 and going on ever since. Basic principles of CBCM are as follows.

- Participatory model of conflict management
- Empowering farmers in crop protection
- Promotion of low cost tech and innovative crop protection measures
- Self sustaining with easily transferrable technology

Different types of deterrents are used to drive away the elephants which are as follows:

- Farm based deterrents – Night guarding
- Chilly based deterrents – use of chilly smoke
- Bee hive fencing – pot and log hives – also beneficial for honey production
- Device based deterrents – Trip alarm, flicker lights – low cost and effective

Such low cost measures are tested on try and work basis. Number of farmers using these innovative crop protection measures have increased over the years. Also success rate of all these measures is above 70% and hence proven effective in this region.

WRCS conducts workshop on hands on training n crop protection in different states for forest department staff, farmers, researchers and corporate companies. Local communities are also involved in providing incentives which also helps conservation. Production of handicrafts on theme of elephants, preparation of paper by using dung are some of the initiatives undertaken.

Presentation 3 – Mobile-mediated technology for human-elephant conflict mitigation – Shri. M. Ananda Kumar, NCF

Shri. Ananda Kumar explained HEC in Valparai and adjoining region in Tamil Nadu state. He focused on three contrasting landscapes viz. Valparai, Hasan-Kodlipet and Coimbatore Forest Division. Valparai has an area of 220 sq. km. and around 100-120 elephants use this habitat. There are 220 villages in Hassan. More number of human casualties were recorded from Coimbatore Forest Division followed by Valparai and Hassan-Kodlipet region. More than 50% of the deaths occurred on roads.

Creation of help lines and Rapid Response Team were some of the steps taken by Tamil Nadu and Karnataka Forest Department. Around 2000 alerts were issued everyday in around 148 villages in the region. People’s response to alert calls increased and more people subscribed to these calls to get updates. 23 lives were saved from year 2003 to 2018 with the help of this alert system. To conclude the presentation, the simple and adaptable techniques will ensure better participation by people.

Presentation 4 - Human Elephant Interface- Conservation and conflict mitigation in Mahasamund and Balodabazar FD, Chhattisgarh - Wildlife SOS team

A brief history was given regarding elephant movement to the study area from Odisha. A baseline survey was conducted in this area with following objectives:

- To understand elephant movements & identify specific causative factors leading to Human-Elephant conflict

- Testing/using GPS collars as early warning alert system
- Capacity Building & Training for FD frontline staff
- Generate awareness among local communities
- Train people in conflict avoidance behaviour

In the study area where the team monitored HEC, it was found that crop damage was more than any other type of damage due to HEC. The team conducted radio collaring studies to monitor elephant movement. It was found that elephants move out of the forest during cropping season and move back to forest during non - cropping season which was evident that they preferred the crops for their dietary needs. MFP collections and forest fires caused negative effect on elephant movement. Forest fires made elephants to move out of the forest.

To reduce conflict, early warning system was devised. Alert messages were sent using WhatsApp applications along with Rapid Response Force of Chhattisgarh Forest Dept. Along with making people aware about elephant presence, capacity building and training programmes were organised for frontline staff and security forces. Similar programmes were also conducted for local communities.

Presentation 5 - Supporting the components of ‘precision wildlife management - Shri. Aditya Gangadharan, IUCN

Following points were highlighted to conduct management practices efficiently:

- Identify potential conflict situation in space and real-time
- Characteristics of that situation (e.g., demography, behaviour of an elephant)
- Informing the right people
- Rapid response for that specific incident
- Ability to change all the above when circumstances change (nimbleness)

Shri.Gangadharan gave examples which were put forward by previous speakers and suggested how to deal with conflict situations. A software based programme can be used effectively. He showed a dashboard of such a software where all the data of HEC was plotted on a map and it was interactive giving all the details regarding each conflict case. The interface was easy to interpret and could also be used in the field over a mobile phone. Live elephant location update can also be shown in the software to make staff aware about elephant movement in their respective area.

Artificial intelligence (AI) software that can identify elephant from photos/videos will be helpful in the field. Free and open source platforms are good to be used by anyone. Applications can be used for early warning for conflict situations and avoiding train or road collisions.

The system works in a systematic way. Once the user upload a picture on the software, the AI identifies the data in real time. Based on the result, automatic alert is send to respective responsible authority. It alerts Forest Dept Rapid Response Team and also local communities. Such software are available and can be used anywhere where conflict is prevalent. Such system will surely help in minimising the HEC if not totally stop it.

Working group presentations

WG I - HEC – Analysis and way forward

Chair - Shri. B. K. Singh

Co-Chair - Dr. R. K. Singh

Causes -

1. Habitat loss (encroachment, diversion for development)
2. Fragmentation (corridors, linear infrastructure and decrease in habitat)
3. Degradation (Anthropogenic pressures and weeds)
4. Disturbance (mining, naxal activities)
5. Water availability
6. Barrier for free passage
7. Local culture and lifestyles

Nature of conflict -

- Regular or normal conflict at the interface of elephant habitat and human use area
- Dispersing elephants which have moved out of their natural habitat and are in search of new habitat (have different behavior where they have got habituated to crop raiding)
- Human errors (lack of capacity/awareness; local cultural practices) which exacerbates conflict

Suggested Solutions -

- Drivers/causes
 - Integrated land use planning and development
 - Cross sectoral cooperation in managing HEC (all line departments participate in this)
 - Improve livelihoods to reduce dependency on forests
 - Habitat improvement interventions (restoration)
 - Securing and restoring corridors
 - Central government policy and financial support for HWC
- Sustainable funding for Human Wildlife Conflict (HEC included) through HWC Fund. All those activities which cause elephants/other wildlife to disperse or cause conflict in their existing or new habitats

Preventive methods -

- Resettlements of vulnerable settlements
- Barriers
- Capacity building and awareness within local communities and amongst departmental staff
- Awareness building in line departments
- Population management (immuno-contraception)
- Early warning systems
- Rapid response unit (departmental and community)
- Increase PAs or consolidate PAs into larger unit
- Improve agricultural practices (value addition, alternate crops)
- Interstate crisis and mitigation management committee for cross border issues
- Proper safety tools for frontline staff
- More research on behavior of conflict animals
- Conflict database to help understand the larger conflict situations

Compensation -

- Improve in terms of delivery and value ex-gratia
- In case of death, handholding of affected families to ensure family stabilizes
- Improved insurance for staff involved in dangerous tasks (particularly daily wage workers)

WG II - Management (Interstate coordination)

Chair - Shri. M. S. Negi

Co-Chair - Shri. Rajiv Shrivastava

Issues -

- Frequent cross border movement of elephants
- Clear understanding of home State
- Stay pattern varies according to season, terrain
- Identify passages across borders
- First tendency is to prevent entry of herds in respective State
- GoI has already given Guidelines for Interstate Coordination
- But still remains at personal level

Good practices in each state -

- Each State knows the entry / exit points
- WhatsApp Group within Divisions
- SMS Alerts
- Radio Broadcast
- Elephant Dossiers, linking to clan behaviour

Recommendations -

- Map the Home Range and movement in time / season.
- Allow migration but prevent dispersal.
- Exchange Phone numbers of adjoining Divisions, make a WhatsApp Group across borders
- Do not stop movement of herds across borders. Try to facilitate smooth passage with appropriate warnings
- Sharing information of exit from one State to the neighbour at Division / Range level.
- At least monthly meeting at Division / Range during migration / dispersal.
- Bi-annual meeting of Interstate Committee, with submission of summary records to MOEF& CC.
- To handle the HEC in area where high HEC, presence of Mahout's and Veterinarians are required, therefore, it is required to fill the vacancy of mahout and vet in these areas.
- Also opening of the training centre for these mahout is essential, the state like Assam, WB, Karnataka and Kerala may imitate the training centre for mahouts, so that, the vacancy can be filled with trained mahouts.

Responsibility -

- **GoI**
 - Make SOP with all element given under “Recommendations”
 - List of Border Divisions / Ranges
 - Home Range of the elephant population, Loners
 - Capacity building for HEC management
- **States**
 - Give all above data in specified timeframe
 - Share expertise across borders

Data needed -

- Nodal Office for each State
- Entry / Exit Points with neighbour
- Periodicity in time and season
- List of Division / Range for above, maybe villages also
- Contact phones, emails
- List of expertise available, facilities that can be loaned on request

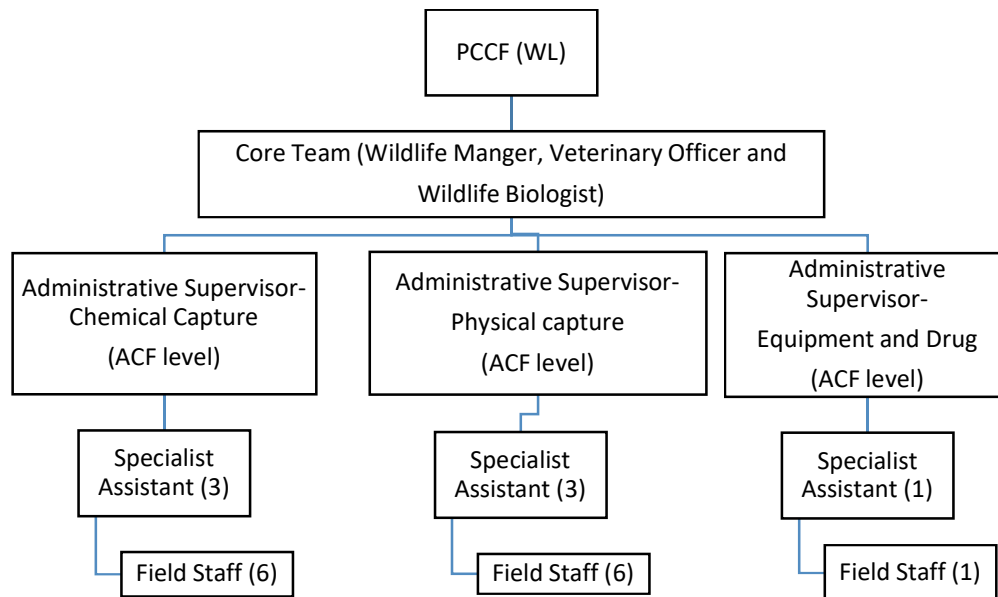
- It was suggested to give these details to GoI within 10 days from the date of the workshop
- WG III – Crisis Situation: Handling elephants/drugs/capacity building of local vets**
Chair - Shri. Hari Kumar
Co-Chair - Dr. P. K. Malik

Interventions are required for management of an elephant/herd in distress or where there is possibility of human damage and property and interalia risk involved with safety of elephants. There are 2 major components of crisis management which are human resources and infrastructure.

Human Resources (HRD)

Specialized force comprising of manager, biologist, veterinarian for resolving crisis situations is important. Specialized trainings must be ensured to all team members.

The team presented an organisational structure which is as follows.



- Have a separate cadre of vets.
- Vehicle for transportation of team as well as animal translocation should be ready.
- Tool kit should be readily available.
- Equipment for physical and chemical capture should be readily available and maintained.
- Procurement of etorphine is difficult. The process of needs to be streamlined.
- Interstate cooperation for sharing resources (human as well as equipment) has to be institutionalized.

Physical infrastructure

- Well designed space for equipment and similar resources at a vantage station
- Well designed vehicles for transportation of animals
- Field vehicles for transportation of team and equipment
- Other equipment and implements should be kept ready

Training

Who requires training:

- Administrative Supervisors/Specialist Assistants/Field Staff
- Wildlife managers and Veterinary officers
- Forest Guards will require specialized training for their type of expertise.

- Training of trainers

Who imparts training:

- Various specialized organizations/agencies such as WII, Wildlife Trust of India (WTI), Wildlife SOS (Agra) and any other agency.

Courses existing - In Country

- Diploma course in WII- WL Managers and Veterinarians
- Locally designed training modules should be prepared as per the requirement in the area.

Courses in Physical and Chemical Capture/ Rescue and Rehabilitation International

- Wildlife capture course in Zimbabwe
- Wildlife pharmaceutical course in South Africa
- Collaborative association training, the best place is Kruger NP/ South African Parks/Kenya for 6 months.
- Courses in Captive Management – Large North American/S. African zoos (Min 6 months)

Other recommendations

- Mock drill should be done.
- Knowledge and skill enhancement in occupational hazards
- Orientation of local communities.
- Orientation on crowd management is important
- Orientation of media in forest areas. Media sensitization workshops.
- Training and awareness for Police, Panchayats, local people, revenue dept. etc.
- Immediate payment of ex-gratia on field should be focused.
- Development of basic guidelines on handling crisis situations
- Education and communication with local communities

Concluding Ceremony

Chief Guest - Shri. Mohamad Akbar, Hon'ble Minister of Forest, Chhattisgarh Govt.

Shri. Rakesh Chaturvedi, PCCF, CGFD welcomed and introduced Hon'ble Minister of Forest Shri. Mohamad Akbar to all workshop participants. Shri. M. S. Negi provided brief details of the workshop and CPEMC meeting held at Ambikapur. The field visit was successful and the team members visited elephant affected villages and interacted with villagers. He mentioned that inter-state communication is essential to get updates on elephant movement. Requirement of mahaut is needed for Kumki elephants housed at rescue centre in Pingla.

Shri. R. K. Shrivastava explained that around 400-500 people are killed every year in the country. There are a total of 4 elephant populations viz. North, South, North East and Central East. About 10% elephant population is found in Central East region which is responsible for 45% of human casualties. To deal with HEC, a Strategic Action Plan is needed specifically for this region. So far 213 meetings have been conducted in this regard and findings of this workshop can be added to the action plan.

Dr. P. K. Malik stated that a discussion is necessary to come up with inter-state solution. He asked for support from Shri. Akbar so that Chhattisgarh state can become an example in taking forward HEC mitigation in the country. Capacity development is of utmost importance as HEC procedures are very time consuming and everyone should be well trained to handle HEC.

Shri. Mohamad Akbar explained the financial resources of the Chhattisgarh state. He mentioned that the state has low financial resources. He promised to work hard to get the finance to support HEC issue. He gave information regarding notification of Lemru Elephant Reserve. For 15 years, Lemru was not declared due to some issues regarding coal mining in the said area. But in order to save elephants, it is important that elephants are made the first priority. In the end, he once again assured to provide support and financial requirement to better deal with HEC in Chhattisgarh state.

Shri. Atul Shukla, PCCF (WL) provided vote of thanks. He thanked all Chief Guests, experts from institutions and organisations, forest department officers and staff.

The workshop was concluded with a group photo session.

Workshop Findings

- The Standard Operating Procedure (SOP) for Human-Elephant Conflict should be prepared for ensuring smooth, prompt and effective exchange of information between the officers of the bordering States to track the movement of elephants. The major objective of the Standard Operating Procedure will be to ensure delivery of information in advance from the officers of the State from where the elephants are moving to the officers and the public of the States where these elephants are entering. The SOP should have the provision for regular periodical meetings between officers of the two States at different levels from the Chief Wild Life Warden to the Divisional Forest Officers and Range Officers of the bordering divisions/ranges of the two States. **(Action: PE Division, State FDs)**
- The State Government of Madhya Pradesh and Chhattisgarh in consultation with Ministry of Environment Forest & Climate Change shall strive for creating a larger elephant landscape involving the Protected Areas like Guru Ghasidas Wildlife Sanctuary in Chhattisgarh and Sanjay Tiger Reserves in Madhya Pradesh and adjoining forest areas so as to contain the dispersal of elephants in human dominated areas. **(Action: Chhattisgarh and Madhya Pradesh FDs)**
- Identification of Elephant Corridor and animal crossing points across the linear infrastructures passing through the PAs and these corridors to better understand

movement patterns and apply mitigation measures to reduce HEC. Declaration of identified corridor **as well as animal crossing points across the linear infrastructures passing through these PAs and corridors is crucial.** (Action:PE Division,State FDs)

- Interstate committee is of utmost importance to deal effectively with HEC issues, prevailing in the region. The Ministry should urgently issue a notification creating Inter State Committee for the region (State level) comprising of ADG (WL), IGF (PE) and CWLWs of the region. The notification should describe mode of operation of the Committee including periodicity, quorum of the meeting, intersectoral linkages etc. Decisions taken during the meetings should be communicated to the Project elephant Division, which should keep track of its implementation. (Action: PE Division)
- Inter State Committees (District level) should be established at interstate boundaries through which elephants cross into other state. DFOs and PA managers should be primary members of the committee. It may also include representatives of the elephant depredation and local NGOs. The Committee will monitor day to day movement of elephants during elephant migration and standardize system of alerts and tackling of conflict situations. PE Division should seek inputs from CWLWs of the region like location of animal crossing points (interstate), proposed members of the committee, linkages with CWLWs/PE Division etc. and issue necessary notification. CWLWs should provide requisite information in time bound manner. For purpose of convenience, a Nodal officer may be appointed for this purpose in the office of each CWLW. (Action: PE Division and CWLWs)
- District level committee needs to be established having members of related stakeholders like district administration, railways, roads and linear infrastructure dept., animal husbandry dept., etc. to deal with HEC effectively. (Action:State FDs)
- The State Governments of Chhattisgarh, Madhya Pradesh, Odisha, Jharkhand and West Bengal should establish the divisional human-elephant conflict management teams in the divisions having problem with higher instances of HEC. Such teams should necessarily include sufficient number of trained kunki elephants to control wild elephants, the trained mahavats and veterinary officers/compounders/assistants. (Action:State FDs)
- Posts of permanent veterinarians and mahavat should be created in elephant affected areas for better dealing with emergency situations. Provision of adequate equipment and regular training of vets at District level should be imparted for capture and tranquilization of elephants. (Action:State FDs)
- The mahavat training schools should be established in states like Tamil Nadu, West Bengal, Assam etc. So that the traditional expertise of the mahavats available in these states can be used to create a force of trained mahavats to handle kunki elephants and the wild elephants involved in the conflict.
- The State FDs should explore the feasibility for establishing elephant rescue and rehabilitation areas/centres involving larger landscape where the rescued elephants can be kept in their near natural environment and submit proposals to the Ministry/CZA.
- Timely procurement of tranquilizing drugs and their antidote is extremely important for effective handling of HEC incidents. There is a need to establish a system of procurement of tranquilising drugs through Wildlife Institute of India. PE Division will take suitable steps in consultation with CWLWs and WII. (Action: PE Division, WII and CWLWs)
- A common compensation policy may be established throughout East Central Region states.(Action:State FDs)

- State Governments should expedite the relocation of villages which are residing inside or near elephant corridor and common observed movement paths. **(Action:State FDs)**
- Alternate cropping should be encouraged among villagers such as plantation of lemon grass cultivation around villages as it is effective in driving elephants away. State Governments should handhold the communities in adopting the alternate cropping. **(Action:State FDs)**
- Use of low cost methods using local materials should be promoted to reduce crop depredation by elephants. WCRS, Pune based institution, has done extensive work in this area. Its services may be required to train frontline field staff and villagers in these techniques. Villagers may be persuaded to take cultivation of crops, which are not relished by elephants and other wildlife. **(Action: PE Division, CWLWs and WRCS)**
- New and proven technologies and innovative methods for control of HEC e.g. use of drones, satellite tracking of radio collared elephants, mobile and hanging fences, alternate cropping methods, rapid Response Teams, Advance Alerts etc. should be encouraged. **(Action: PE Division and CWLWs)**
- Capacity building of departmental staff on Hands on training to staff to learn new techniques and methods. **(Action:PE Division,State FDs)**

APPENDIX I - Workshop Agenda**1st JULY 2019 (Monday)**

Inuagural Session	
9:00 -9:30	Registration of Participants
9:30 - 9:40	Welcome address by Shri Noyalthomas, IGF (PE), MoEF&CC
9:40 - 9:50	Address by Shri RC, PCCF (HoFF), Chhattisgarh
9:40 - 10:05	Keynote address by Shri M.S.Negi, ADG (WL), MoEF&CC
10:05 - 10:20	
10:20 - 10:25	Launch of Identification Manual of Wild Elephants of Northern Chhattiagarh
10:25 - 10:30	Vote of Thanks by Shri. R.K. Shrivastava
10:30-11:00	Tea Break
Technical Session I	Conflict
11:00 - 11:15	Presentation on Human Elephant Conflict in Chhattisgarh by Shri J.AC.S.Rao, APCCF (WL), CG
11:15- 12:30	Presentation by CWLWs of East Central Elephant Range States (Odisha, West Bengal, Jharkhand, Bihar & Madhya Pradesh)
12:30- 1:30	Discussion on mitigation of HEC issues of East Central Region
1:30 - 2:30	Lunch
Technical Session II	Monitoring
2:30- 3:00	Presentation by BivashPandav/Laxminarayan (WII)
3:00-3:20	Presentation by S.S.Bist
3:20 - 3:30	Discussions
3:30 - 3:45	Presentation by IGF(PE),MoEF&CC on HEC issues in the country - An Overview
3:45- 4:00	Tea Break
4:00 - 4:20	Presentation by Dr. P.K.Malik - Process involved in equipment and drug procurement
4:20 - 4:30	Discussions
4:30 -5:30	Presentation by Dr. Parag Nigam: Elephant capture- Options and Obstacles
5:30 - 5:45	Formation of two working groups:
	Working Group I: Analysis of the causes of HEC in the region and nature of the conflicts - Ways and means of addressing HEC in East Central Region
	Working Group II: Management issues relating to Budget, staff shortage and logistics etc.
2nd JULY 2019 (Tuesday)	
Technical Session III	Role of Civil Societies
9:30 - 11:00	Deliberations by working groups and finalization of their Recommendations
11:00- 11:15	Tea Break

11:15 - 11:35	Presentation on "Managing Dispersing elephant populations - Challenges and opportunities" by Ajay A Desai
11:35- 11:45	Discussion
11:45 - 12:05	Presentation on "Preventing Crop Damage by Elephants through Community-based Conflict Management Model (CBSM)" by Prachi Mehta, WRCS
12:05 - 12:15	Discussion
12:15 - 12:35	Presentation on "Use of Mobile Technology in Conflict Management" by Anand Kumar, NCF
12:35 - 12:45	Discussion
12:45 - 1:00	Corridors in East Central Landscape and its Protection by WTI
1:00 - 2:00	Lunch
Technical Session IV	
2:00 - 3:00	Presentation on Best Practices by States
3:00 - 3:15	Presentation of recommendations by Working Group I and discussions
3:15 - 3:30	Presentation of recommendations by Working Group II and discussions
3:30 - 3:45	Tea Break
Concluding Session	
3:45 - 4:30	Finalization and adoption of recommendation of Working Group I & II
4:30 - 5:00	Address by the Chief Guest (Hon'ble Minister of Forest/Additional Chief Secretary (Forest))
5:00 - 5:15	Vote of Thanks by Chhattisgarh Forest Department

APPENDIX II - List of Working Group members

WG-I	WG-II	WG-III
HEC - Analysis and Wayforward Venue : SCH, Second Floor Time : 9.00 am	Management (Interstate Coordination) Venue : TCH, Third Floor Time : 9.00 am	Crisis Situation: handling of elephants/drugs/capacity building of local vets Venue : FR-19 Conference Hall, First Floor Time : 9.00 am
Shri. B. K. Singh (C)	Shri.M.S.Negi (C)	Shri.Harikumar (C)
Dr. R. K Singh (CC)	Shri. Rajeev Shrivastava (CC)	Dr. P. K. Malik (CC)
Shri. Ajay Desai	Shri. JACS Rao	Dr. Parag Nigam
Dr. AJT Johnsingh	Shri. R. K. Shrivastava	Shri.Arun A. Sha
Dr. Bivashpandav (WII)	Shri.Venkatachelam Sir	Mrs. Prajna Panda
Shri.Anand Kumar	Shri. K. K. Bisen	Shri. B. AnandBabu
Shri. N. K. Vasu	Shri. P. K. Varma	Dr. Pranay Mishra
Shri.SehKazmi	Shri. J. S. Chauhan	Shri.KartickSatyanarayan
Shri. Jayant Kulkarni WRCS	Shri.Sanjai Mohan	
Dr. Prachi Mehta	Dr. MutamizhSelvan	
Shri.Swaminathan	Dr. S. K. Singh	
Dr. Sandeep Tiwari	Shri. R. K. Sinha	
Shri.Kaushlendra Kumar		
Shri.SurendraVerma		

APPENDIX III - List of Workshop Participants

S.No.	Name	Designation/Office	E-mail	Mobile
1	Neha Samuel, Durg	Wildlife		9425544223
2	Shri Pranay Mishra	DFO Dharamjaigarh		7692079151
3	Shri S.S Kanwar	CF, Elephant Reserve, Sarguja		9479032508
4	Shri V. Ramarao	APCCF, Raipur		9425558546
5	Smt. Sanjeeta Gupta	CCF, Raipur		7999524300
6	Shri Vishwesh Kumar Jha	DFO Balodabazar		9425268895
7	Shri Rajendra Mishra	WTI		9424241900
8	Ms. Meetu Gupta	Conservation Core Society		9424140207
9	Shri V.S Rao	CEO- Campa		
10	Shri P.V Narsinga Rao	APCCF , HQ		9425252180
11	Shri Upendra Kumar Dubey	WWF - India		9907476613
12	Shri H.L Ratre	CCF, Bilaspur		9425507222
13	Shri Yunus Ali	APCCF (HRDIT)		9893200462
14	Shri AnupShrivastava	APCCF (Bamboo Mission)		9993030804
15	Shri AishwaryChandrakar	SDOP SitapurSarguja		9479193504
16	Shri VivekanandJha	DFO Balrapampur		7587301686
17	Shri Narendra Pandey	CF, Protection		9425261135
18	Shri S. Venkatachalam	DFO Korba		9425268680
19	Shri Abhay Kumar Shrivastava	CF, O/o PCCF, CG Raipur		7587070694
20	Shri R.K Rayast	DD, USTR		7693093324
21	Shri P.C. Pandey	APCCF (Protection)		9926153203
22	Shri Debashish Banerjee	CCF (W.P)		9425565143
23	Shri D.S Diwan	D.S.P Korba		9425522215
24	Shri P.K. Keshar	FD, ATR		7587012900
25	Shri Ankit Kumar	WII, Dehradun		9458509061
26	Shri Jayjit Das	WII, Dehradun		8100033696
27	Shri N. Lakshminarayan	WII, Dehradun		9445779042
28	Shri Anurag Srivastava	CF (CAMPA), AranyaBhawan		9424258701
29	Shri Vincent Rahim	CCF & FD Sanjay Tiger Reserve, Sidhi, MP		9424793668
30	Shri Prabhat Dubey	Forest Ambikapur		9826443763
31	Shri Pradeep Malik	Snr. Prof. WII		9412998113
32	Shri Parag Nigam	Scientist - WII		9412374486
33	Shri BivashPandav	Scientist - WII		9412057152

34	Shri KartickSatyanarayan	CEO- Wildlife SOS		9810114563
35	Shri R.B.P. Sinha	APCCF (W.P)		9425234749
36	Dr. A. ShaArun	Wildlife Veterinarian, Wildlife SOS		9980145785
37	Shri S.P Yadav	CCF, West Bengal		9903237100
38	Dr. Basavaraj SH	West Bengal		7407261851
39	Shri P.K. Sahoo	Odisha		9777083085
40	Shri Ajay A. Desai	Consultant, WWF		8880807325
41	Shri SubhashPuranik	ACF, Sawantwadi,MH		9422055146
42	Shri Sandeep Kr. Tiwari	WTI		9888274180
43	Shri M. Ananda Kumar	NCF		9443683514
44	Shri Aditya Gangadharan	IUCN		7400453023
45	Shri Bhakta PadarbindaRath	Odisha FD		9040207519
46	Shri I. Sengupta	S.T.S (MP)		8972845552
47	Shri VivekSaxena	Country Representative, IUCN		9999295320
48	Shri B.P. Singh	DFO Surajpur		9644565780
49	Shri Sudhir Agrawal	APCCF (A/G)		
50	Shri Hemant Kashyap	Jagdapur		9407616707
51	Shri SundeepBalaga	DFO Bilaspur	dfo-bsp@rediffmail.com	8919706470
52	Shri ShriKrishnaJadhav	DFO Jashpur	shri.ifs2014@gmail.com	7587015800
53	Shri M.K Pandey	DFO Raigarh		9868301946
54	Smt. Priyanka Pandey	DFO Surguja		7587015300
55	Shri A.K Biswas	CCF (Production)		9425833066
56	Shri U.K. Gupta	DFO Raipur		9424232091
57	Shri A.K Maheshwari	ADEN/11/R		9752877209
58	Shri A.B Minz	CCF Sarguja		9425254875
59	Shri F. Toppo	DFO Mungeli		8839771721
60	Shri Kumar Nishant	SDO Rajnandgaon		7906967368
61	Shri Pankaj K. Kamal	SDO W. Kapsi		7827815730
62	Shri J.S Chauhan	APCCF (WL) M.P.		9425303604
63	Shri R.P Singh	EX- APCCF & Wildlife Expert, M.P.		7354425776
64	Shri N.K. Vasu	PCCF & HOFF (Retd.), Assam		9588865429
65	Shri R.K Srivastava	Consultant, MOEFCC		9711419959
66	Shri Amalendu K. Mishra	Ambikapur	amalendu.mishra@gmail.com	9425266591
67	Shri Aminuddin	USTR	ccfwlpr@gmail.com	9993893863
68	Shri Surendra Varma	ANCF	surendrav@alumni.cisc.ac.in	8065324304
69	Ms. Antara	Wildlife SOS	antara@wildlifesos.org	8334828885

	Chakrabarty			
70	Shri S. Swaminathan	Wildlife SOS	swaminathan@wildlifesos.org	7259039953
71	SmtUmadevi B.V	APCCF/CGVYAPAM		
72	Dr. R.K. Singh	Ex-PCCF, CG.	ravi.ksingh.ifs@gmail.com	9818888083
73	Shri Kaushlendra Singh	Ex-PCCF(WL), CG	kaushlendrasinghccf1@yahoo.co.in	9425220158
74	Dr. S.K. Singh	APCCF (Production)	skhisk@yahoo.com	9425203495
75	Dr. Rajeev K. Srivastava	Ex-PCCF Tamilnadu	srivastavaraj3@yahoo.com	7338853888
76	Shri M.S. Negi	ADG Wildlife, MOEFCC	adgwl-mef@nic.in	8860505024
77	Shri S.I. ManojNavrange	Asst. Balrampur	kumarmanoj310584@gmail.com	9424280218
78	Dr. K.M. Selvan			8610032757
79	Miss SailajaNayak	SRF,AranyaBhavan	nayak.sailaja@gmail.com	7727988298
80	Mr. Naveen M	SRF,AranyaBhavan	naveenwildlife@gmail.com	9009879523
81	Mr. Ashish Kambale	SRF,AranyaBhavan	akhornbill@gmail.com	9575062133