Tiger Conservation: Capacity Building Training for Forest Frontline Staff, Namdapha Tiger Reserve, Arunachal Pradesh

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A five-day capacity building training for forest frontline staff of Namdapha Tiger Reserve was conducted at Forest Rest House, Depan from 5-9 December 2017. The training was inaugurated by T. Rumi, Additional Deputy Commissioner, Miao in the presence of Chuku Loma, Field Director, Sange Tsering, Assistant Field Director, forest rangers and other forest personnel. Tajum Yomcha, Research Officer welcomed the gathering and guests and resource persons were honoured in the traditional way. The guests and others applauded Zoo Outreach Organization's effort for bring this training for the first time to North-eastern part of the country and expressed their willingness to have similar training and mutual cooperation from ZOO in the future.

About 40 persons including the forest range officers, deputy forest rangers, foresters, guards, special tiger protection force (STPF), mahout, ex-serviceman,

Chuku Loma, Field Director, NTR gives his inaugural address. T. Rumi, ADC, Miao, Sange Tsering, AFD, NTR and resource persons on the dias

Participants recording carnivore and mega herbivore sign sampling

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Carnivore scat and mega herbivore dung collection demonstration

camera technicians and photographers attended this five-day training with great enthusiasm. The programme started with self-introduction of the participants. Followed by the introduction, Tajum Yomcha, Research Officer gave a presentation on the overview of Namdapha Tiger Reserve (NTR). In his presentation he covered the history of NTR, which is one of the biodiversity rich areas, located in Eastern Himalaya Biodiversity Hotspot, the third largest protected area in terms of area, geography, vegetation, fauna, flora, the tribal, zonation, the day to day forest management activities and major threats for the species and habitats.

Kamal Azad, Biologist, National Tiger Conservation Authority, Assam gave a talk on tiger conservation in India and he covered tiger biology, National Tiger Conservation Authority and its role, country level monitoring of tigers, co-predators, prey and their habitat, all India tiger estimation and tiger census methods involving different phases from I to IV to study about carnivore sign encounters, tiger prey encounters, indices of human disturbances, indices of habitat status, dung counts on plots, habitat characteristics, prey availability, anthropogenic pressure, data collection

and annual monitoring in the tiger reserves. He explained about the data sheets that are used in the tiger census in detail. Then the participants were taught about usage of basic field equipment starting with map reading. The proposed beats of Namdapha Tiger Reserve were explained and map-reading methods were shown.

Murali Krishna, Assistant Professor, Amity Institute of Wildlife Science, who worked in this landscape for several years, shared with the participants about forest types of Arunachal Pradesh. The vegetation of Arunachal Pradesh falls under four broad climatic categories and can be classified in five broad forest types viz., tropical forest, sub-tropical broad-leaved forest, pine forest, temperate and alpine forests. Kamal Azad gave another presentation on tiger census and monitoring techniques which covered the population estimation of tigers, population estimation of prey animals, habitat and threat assessments. Further he added that population estimation of tigers is done by pug mark method, mark and recapture method by camera traps and DNA analysis. He further explained about each method and how each method is important in tiger census, how to set up to get pug impression of tigers, other carnivores and

Tiger population estimation through pug mark method

The trainees setting up the camera trap

herbivores, field kits needed to take pug impression pads, tracing the pug mark and make a plaster cast of pugs, analysis of pug marks to know the species using the size, male or female and even age, challenges involving in pug mark method, camera trapping method and its advantages, history of camera traps from olden day camera to modern day digital cameras and its models, the protocols for setting up cameras on grid based approach, how the digital cameras function and also identification of individual tigers using the camera trap images. He also explained tiger census methods using DNA analysis. Ways and methods of dung and scat collection were demonstrated. This was very useful for them when they did the sample field survey during the training on the subsequent days. The pugmark method and Pug Impression Pad methods were also demonstrated.

Shaik Hussain gave a presentation on "Protocol of carnivore scat and large herbivore dung collection for genetic study". He highlighted the importance of carrying zip lock bags and paper bags whenever they are in the field. Thus the zip lock bags with silica gel are used to collect fresh and old scat samples while the paper bags are used to collect very old scat samples. Further he explained the methods to collect

sample. Some of the do's and don'ts for example 'do not touch the scat while collecting scats rather use twig or leaf when collecting them, after collecting seal tightly removing air' were taught. The participants also learned the details that should go on the zip log or paper bags such as species details, GPS location, place and date of collection and genetic code of the particular tiger reserve. They were also instructed to collect 5-10gm of tissue if they come across any carcass of dead animal, in zip lock with silica gel but later transferred to vials with ethanol. The samples should be sent genetic lab with the data sheet. He brought out the materials used in the scat collection and did a demonstration.

Tiger monitoring is a process, the end product of which is only number of tigers but an indication that there has been change in number of tigers, with an understanding of the factors that have been responsible for changes. The monitoring method involves different phases of taking surveys not only the tigers and also the prey species, co-predators and habitat quality also which is devised by National Tiger Conservation Authority/Project Tiger which conducts the country level assessment of the status of tiger, co-predators, prey and habitat once in four years, using the refined methodology, as approved by the Tiger Task

Field exercise on vegetation, human disturbance and ground cover plot sampling

Force. All forested beats in tiger landscapes will be sampled once in four years. All source populations of tigers will be sampled with this protocol twice in a year during summer and winter. So the training was further focused on the capacity building of the participants in line with NTCA's tiger monitoring methods and protocols, which follows. Participants tried all the methods with the guidance of the resource persons. Some of the exercises repeated more than once make them to understand tiger monitoring guidelines which they are going to apply in the field directly. In the tiger census process different data sheets were used to collect data in the field. And they are:

i) Tiger, Leopard other carnivore and mega herbivore sign encounter rate – used to obtain on the presence, absence and intensity of use of beat by tigers and other carnivores which quantify the relative abundance of tiger, leopard and other carnivore signs in an area.

*(ii) Ungulate abundance through line transect-*quantifying ungulate abundance in an area based on visual encounters while walking along the fixed line transects.

(iii) Vegetation, human disturbance and ground cover plot –to quantify the habitat parameters and determine levels of human interference sampling will be done along the same line transect on which ungulate encounter rates were determined. It will be done only once on a transect, in a season

(iv) Pellet counts of ungulates-Ungulate abundance will also be indexed by enumerating their faecal pellets. This exercise will be done on the same line transect that has been sampled for ungulate encounter rate.

(v) Track plot for carnivores and mega herbivores –date will be recorded from Pressure Impression Pads (PIP) in every beat.

(vi) Scat collection for genetic study-collection of scats and dung samples encountered in the field and sending them for genetic study.

Zoo Outreach Organization, the organizer procured five sets each of digital camera, GPS, Compass, searchlights and binoculars to use them at the training. The GPS was extensively used during the data collection

Kamal Azad, Biologist, NTCA giving a presentation on tiger monitoring methods

exercise. The participants were explained thoroughly about the procedures to be followed during data collection at the classroom session by the resource persons and enough mock exercises were done. Every day early morning, evening and at free times they had practical sessions on the data collection. Since all the data collection needs GPS coordinates, they were given proper training on GPS handling such as GPS basics, How to convert co-ordinates to different formats, How to save a way point, How to save track data and how to stop tracking, Area calculation, tracking a new point and these were printed in a paper and given as ready reckoner.

Before they went to the field for practical classes often and often they practiced the usage of GPS very systematically.

Since the training was held right in the middle of the forest area, the camera traps exercise was most useful to the participants. It was set up in the evenings and the images were collected. Prior to this, they were given training on how to use and set up a digital camera. As an exercise the participants were divided into five groups and each group was instructed to setting up the cameras in different locations at the evening, checking for the images in the next day morning and if there were any images sharing them with rest of the participants. The participants were lucky enough to get Wild dog and deers in their camera traps. Through this exercise they learned camera trapping method altogether and it will be useful for their routine census.

The equipment purchased for the training purpose was later donated to the Namdapha Tiger Reserve and Assistant Director received them and he acknowledged the generosity of the funding agency. During the valedictory each participant was provided with a participation certificate and individual field kits such as a back bag, raincoat, torch light, field notebooks and boot to use in the field. When they received them, all of them conveyed their happiness and thanked USFWS and the organizer for the bigheartedness. The resource persons were Murali Krishna, Amity University; Shaik Hussain, Wildlife Biologist, Telangana, Kamal Azad, Biologist, National Tiger Conservation Authority, Tajum Yomcha, Research Officer, Namdapha Tiger Reserve and Rengasamy Marimuthu, Zoo Outreach Organization.

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Participants with handover materials sponsored by USFWS