A RAPID FIELD SURVEY OF TIGERS & PREY

DIBANG VALLEY DISTRICT
ARUNACHAL PRADESH

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SUMMARY

A combination of methods including over 103 km of trek, 24 interviews with local people and officials and over 320 km of vehicle survey were used to assess the status of tigers, their prey and habitat in Dibang Valley Dsitrict, Arunachal Pradesh in North east India. This rapid assessment survey was conducted in an expedition mode from 23.12.2013 to 22.01.2014 for a period of 30 days.

The Dibang Valley district is the largest district of Arunachal Pradesh with an area of 9129 km^2 and is also the least populated district of the country with approximately 1 person/ km^2. The District shares international borders in the North, North West and Eastern sides with Tibet (China), the south western region is bound by Upper Siang district and the southern side is bound by Lower Dibang valley district. This district was chosen to survey for tigers and their prey due to the recent rescue of tiger cubs from the district in Angrim Valley during December 2012. Our survey confirms the occurrence of tigers in the District. We camera trapped the first ever image of an adult tiger from the Dibang Valley Wildlife Sanctuary (DWLS). We also observed 10 pugmarks and collected 11 scats in and around the WLS. All the 24 local people whom we informally interviewed confirmed the presence of tigers in the WLS and reported either having had a direct sighting, observed indirect evidences or heard about livestock depredation incidents by the tigers. Preliminary assessment of prey suggest that the WLS holds a good diversity and abundance of prey like Takin *Budorcas taxicolor taxicolor*, Wild pig *Sus scrofa*, Goral *Naemorhedus goral*, Musk deer *Moschus fuscus*, Barking deer *Muntiacus muntjak*, Himalayan Serow *Capricornis thar* and Mithun *Bos frontalis* which can sustain a good population of Tigers in the DWLS. The DWLS has the potential of becoming a tiger reserve in future as it may harbour a very important source population of tigers in this region. However, the next immediate priority must be to ensure that this vital tiger population is protected and continuously monitored. This can be achieved by a collaborative effort between NTCA, WII, GoAP and most importantly the local people by conducting long term research to establish robust ecological and genetic baselines that can aid in long term conservation and monitoring of tigers, co-predators, prey and their habitats in this unique landscape that is part of a global biodiversity hotspot.

ACKNOWLEDGEMENTS

DURING THIS SURVEY, WE HAD THE PLEASURE OF INTERACTING WITH MANY INTERESTING, FASCINATING, ADMIRABLE AND INSPIRATIONAL PEOPLE AND FOR THIS AND THE RESULTANT INCREDIBLE TIMES WE'VE HAD ALONG THE WAY, WE ARE EXTREMELY GRATEFUL.

First and foremost, we would like to express our sincere gratitude to the Dibang Valley District Administration, especially to Mr.Tamune Miso, Deputy Commissioner and Mr. Bopai Puroik, E.A.C. for providing us with all the necessary support that we requested them.

Mr. Ipra Mekola, Member of State Wildlife Advisory Board at Roing is sincerely thanked for his valuable guidance for planning this survey.

For support in Anini, we are extremely grateful to Mr. Junti Miko, who worked really hard for us in coordinating our field surveys and arranging field assistants. Many a times we were struck in Anini without fuel for our vehicles and it was Junti who kept us on the move by somehow managing to get fuel from his circle of friends/relatives (There are no ATMs, telephone landlines and fuel stations in Anini; fuel has to be brought from Roing which is about 10 hr drive distance). We are equally thankful to his wonderful family for their kindness; generosity and more importantly making us feel at home in this remote corner of our country. Thanks Junti for everything!

Mr. Adhuk Paron, DFO (Anini), Mr. Kenjum Rina, DFO (WL, Roing) and Mr. Mori Riba (Roing) and Mr. Babul Chaitom, RFO (Anini) made this survey possible by extending the much needed support in many ways from giving us the accommodation, food, reading materials and vehicles. Mr. Babul accompanied us wherever possible and brought new enthusiasm during our survey.

Our research assistants, Mr. Tamanage Milli, Mr. Ajit Milli, Mr. Tohi Milli, Mr. Ripsan, Mr. Chahcha were all highly enthusiastic and endlessly worked hard. We were thrilled many a times during our fascinating conversations regarding their forest experiences. Without these guys, this survey would not have been possible.

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Our greatest of thanks goes to many people in the Dibang Valley District, especially Mrs. Chipi Melo, Mr. Geeta Melo, Mr. Sipa Melo, Mr. Ene Melo, Mr. Chupare Milli, Mr. Ahumu Mihu, Mr. Jimani Melo, Mr. Enju Linggi, Mr. Kutundu Linggi for sharing their valuable knowledge, experience and interesting information about the survey areas and target species.

We are extremely grateful to the Indo Tibetean Border Police Battallion deployed in Dambeunm, Mippi and Malinye for their generous support during our surveys. Special thanks to Mr. Chaman Singh Rana, SI at the

Dambeun post for providing us wonderful tea, great food, more importantly letting us get some heat and keep ourselves warm from the camp's "Bukharis" during the freezing, chilly survey days.

Dr. Bivash Pandav at the Wildlife Institute of India provided some camera traps for this survey. If he hadn't given the camera's we would not have got the first ever image of tiger from Dibang Wildlife Sanctuary. We are grateful to him.

Dr.S.P. Goyal, Ms. Shikha Bisht, Dr. Rashid Raza, Mr. Vipin and Ms. Parobita Basu at the Wildlife Institute of India are sincerely thanked for their kind support in many ways.

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PAYE IBA!

PREFACE

The tiger, *Panthera tigris* is culturally considered as their brother by the local Idu Mishmi community who live in the Dibang Valley District in Arunachal Pradesh. Though the local community have long been claiming about the presence of tigers in the region, unfortunately no efforts were made by the line departments, academicians or conservationists to assess and monitor the tigers, their prey and habitat in this region. It was only recently in December 2012, three tiger cubs were rescued from a dry well in Angrim Valley by the Arunachal Pradesh Forest Department and the Wildlife Trust of India. Out of three cubs, one cub died during the rescue operation and the two cubs (named Ipra and Chipi) were initially shifted to the Roing mini zoo and later to the Itanagar zoo. This rescue coupled with the virtually unknown status of tigers and their prey in the Dibang Valley District led the National Tiger Conservation Authority (NTCA) to commission a rapid assessment survey by the Wildlife Institute of India vide their letter F.No. 1-6/93-PT(Vol-I) dated 23rd May 2013. In continuation to this a proposal was submitted by the WII to the NTCA vide letter No. WII/DDBR/2013 dated 14th June 2013. The proposal was approved by the NTCA in a technical committee meeting held on 1st July 2013 and a Memorandum of Understanding between the WII and NTCA was signed on 14th September 2013. The final administrative approval and sanctioning order to WII for conducting the survey was issued by the NTCA on 23rd September 2013.

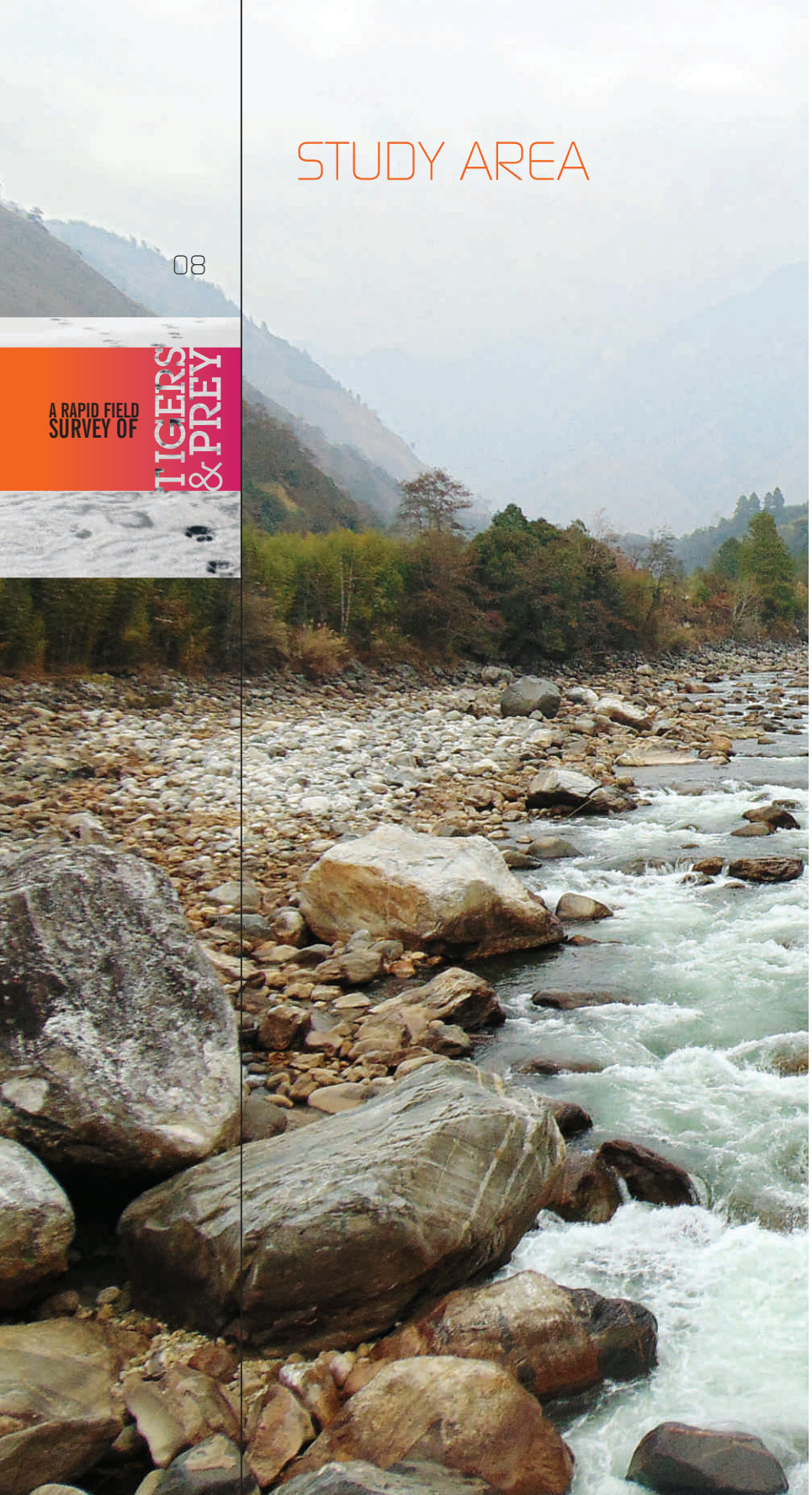
The literature suggests that the geographical range of royal Bengal tiger (*Panthera tigris tigris*) and the northern Indochinese tiger (*Panthera tigris corbetti* I) may overlap in the north east India and Myanmar (Luo *et al.,* 2004). Hence, post the rescue of tiger cubs from Angrim valley which lies close near the Chinese border where the distribution range of Bengal tiger and the northern Indochinese tiger overlaps, a genetic analysis carried out by WII to ascertain the sub species level identification of rescued tiger cubs. The WII study concluded that the tiger cubs were indeed Bengal tiger and not of northern Indochinese tiger (Pandey and Goyal 2013).

The all India tiger population estimation within the North Eastern Hills and Bhramaputra plains in 2006 revealed 84-118 tigers and in 2010 revealed 118-178 tigers. However, this seems to be an under estimate as systematic coverage of the entire landscape has not been performed (Jhala *et al.*, 2011). The state of Arunachal Pradesh has had a minimal coverage and efforts were concentrated only in Pakke and Namdhapha TRs (Jhala *et al.*, 2008 and Jhala *et al.*, 2011). There is also a need to document other source populations in the state of Arunachal Pradesh in addition to Pakke and Namdhapha as these populations represent historical entry points to the Indian subcontinent and would have high conservation and genetic value (Jhala *et al.*, 2008).

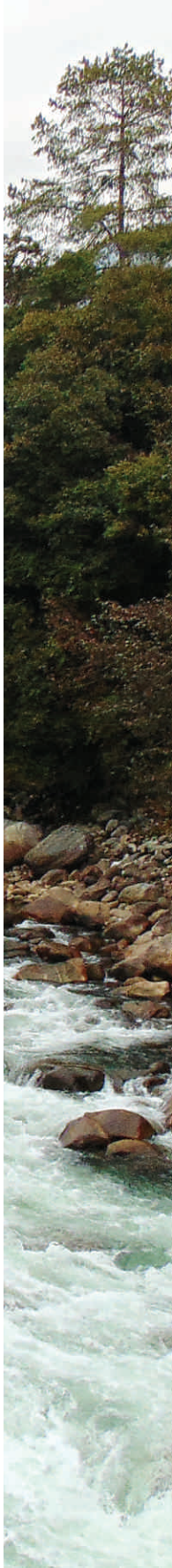
Both the 2006 and 2008 all India tiger estimation programmes have however not assessed the Dibang Valley District for tigers, co-predators and prey (Jhala *et al.*, 2011). Limited ecological information exists on tiger ecology in Arunachal Pradesh in general (Chauhan *et al.*, 2006, Jhala *et al.*, 2008, Jhala *et al.*, 2011, Gopi *et al.*, 2012, Selvan *et al.*, 2013, and Pandey & Goyal 2013) and Dibang Vally District in Particular. In order to fill this gap this rapid assessment survey with the following objectives was carried out:

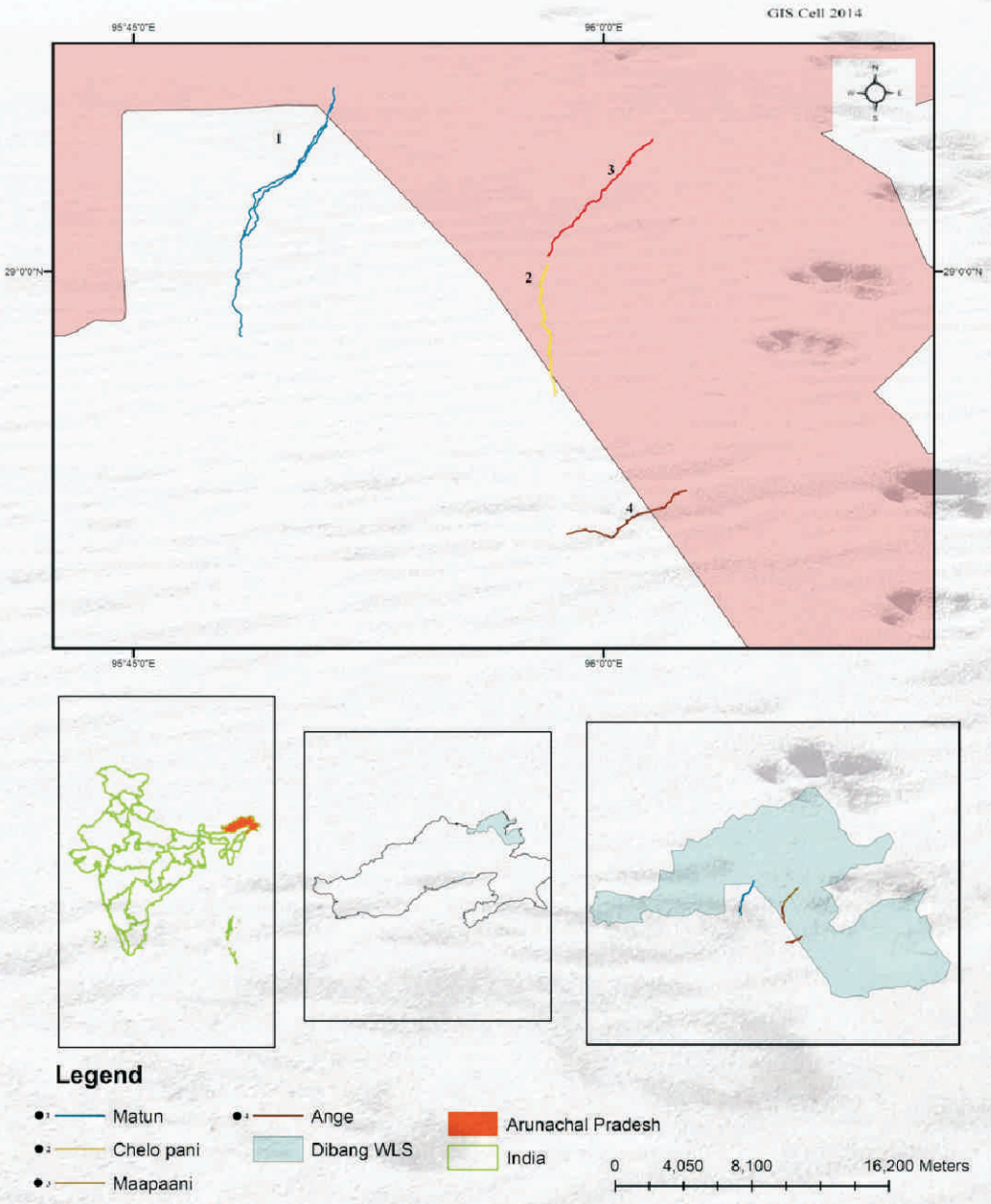
1. Generate baseline distribution data for tigers and their prey in the Dibang valley district landscape
2. Identify suitable tiger habitats for conservation in the Dibang valley district landscape

STUDY AREA



The Dibang Valley district is the largest (9129 km^2) and also the least populated district in Arunachal Pradesh. The district is located in the north eastern corner of the state between 950 15'' E longitude and 28^o 22' N & 29^o 27' N latitudes. The district encompasses the Dibang Wildlife Sanctuary which covers an area of 4149 km^2 and lies between 950 17' & 960 38' E longitudes and 28^o 38' & 29^o 27' N latitudes. The sanctuary was notified vide No. CWL/D/42/92/744-844 dated 12th March 1998. Anini is the district head quarters and is located at an elevation of 1968 m. The district is part of the Eastern Himalayan Biodiversity Hotsport and has a matrix of varied vegetation ranging from bamboo forests (dominated by *Phyllostachys bambusoides, Arundinaria spp* and *Cephalostachyum spp*), temperate broad leaved forests (dominated by *Michelia spp, Castanopsis spp, Quercus spp, Coptis teeta* and *Magnolia spp*), temperate conifer forests (dominated by *Rhododendron arboreum, Taxus baccata* and *Pinus wallichiana*) to alpine forests (*Saussurea spp, Sedum spp* and *Saxifraga spp*). These diverse habitats harbour some of rare, endemic and threatened faunal species like *Tiger Panthera* tigris, Clouded Leopard *Neofelis nebulosa*, Common leopard Panthera pardus, Snow leopard *Uncia uncia*, Asiatic Golden cat *Catopuma temmincki*, Marbled Cat *Pardofelis marmorata*, Leopard cat *Prionailurus bengalensis*, Fishing cat *Prionailurus viverrinus*, Jungle cat *Felis chaus*, Asiatic wild dog (*Cuon alpinus*), Takin *Budorcas taxicolor taxicolor*, Goral *Naemorhedus goral*, Musk deer *Moschus fuscus*, Barking deer *Muntiacus muntjak*, Himalayan Serow *Capricornis thar* and the semi domesticated free ranging Mithun *Bos frontalis*.





Map 1.
Location of the Dibang Valley District, Dibang Wildlife Sanctuary along with the survey routes

METHODS

The rapid assessment field survey was carried out for a period of 30 days during the month of December 2013 and January 2014. Initial planning for survey, obtaining field permits and consultation with subject matter specialist was carried out in WII. Later during the field visit, experts at WTI, forest officials at Roing, Anini and Wildlife enthusiasts at Roing, Anini and local villagers at Anini were consulted to gather information on the status of tigers, their prey and habitats in the Dibang Valley District. Considering the limited time available, vastness, remoteness and lack of proper logistic facilities in the landscape, the survey was planned to be conducted in an expedition mode wherever it was logistically feasible.

We targeted the Dibang Wildlife Sanctuary and some other valleys outside the sanctuary (Mathun, Ange Pani, Malinye, Ahi and Emra). Four kinds of surveys were carried out: 1. Sign surveys to detect indirect evidence for Tigers and their prey, 2. Camera trapping to detect tigers and their prey, 3. Village surveys for assessing status of Tigers and their prey and 4. Vehicle based survey to assess habitat and prey.

Sign surveys to detect indirect evidence for Tigers and prey: Based on the secondary information obtained, efforts were be made to trek to different area with local guides/ villagers in search of the direct and indirect evidences of Tiger and prey. Existing major forest trails were chosen for survey owing to the inaccessible and harsh terrain.

Camera trapping: We used 9 automatically triggered Spy Point IR cameras randomly during our treks. The cameras were deployed in the potential locations according to the carnivore signs obtained to capture images of tiger and other animals. A total of four cameras were installed on the bank of Dri river and five cameras were placed in Apeaw river and on the forest trail. The cameras were left in field for four days between 31.12.2013 and 03.01.2014.

Village surveys for assessing status of Tigers and prey: Trekking to all the localities especially to the interiors and talking to the local people were crucial for this study. On reaching a locality, village heads, local vilagers and other knowledgeable people were consulted and information on Tiger presence were collected. Pictures of Tigers and their prey were shown to them for recognition/identification. A standard set of informal questions (open ended) were used during interaction with local villagers and village headman. During the surveys, socio-economic data on family members, education levels, income levels, land ownership, occupations, religion, festivals and culture were also collected. Special emphasis were given to understand the wildlife occurrence with reference to Tigers and their prey in the area, recent sightings, livestock depredation incidents, hunting records etc. were collected.

RESULTS

1. DRI-VALLEY, DIBANG WILDLIFE SANCTUARY

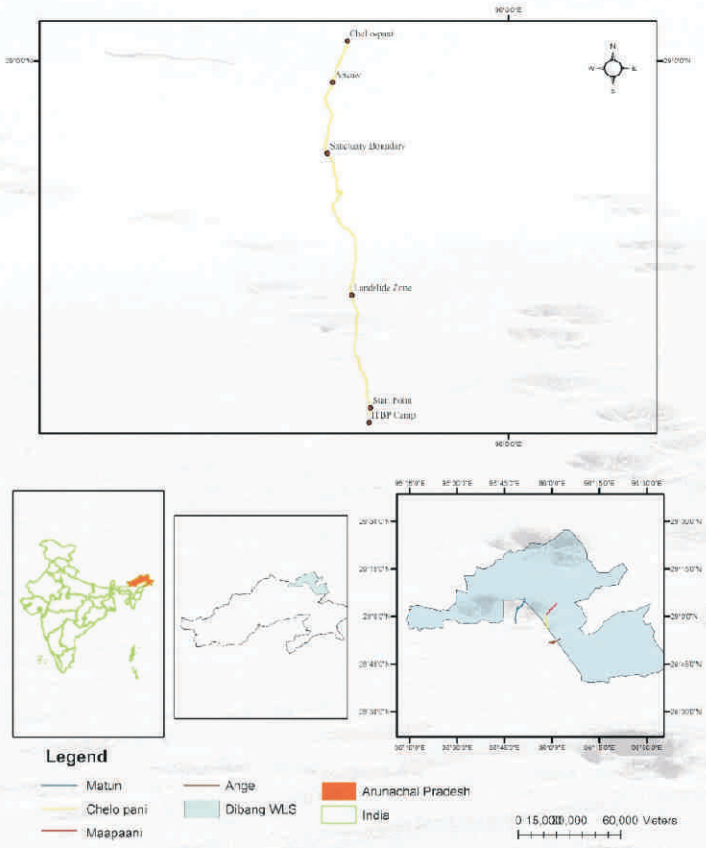
A total of 15 km of riparian forest and riverine stretch was surveyed in the Dri Valley. The Dri valley gets the name due to the Dri river flowing here that originates from the Indo-Tibetan Himalayan region and later named as the Dibang river in the down stream. The river forms a major part of the sanctuary. The Dri valley starts at a place called Dumbuen (Achecho village) 3 kms ahead of the Angrim valley. The dominat forest tpe that was recodered during the trek was temperate broad leaved forests with dominant tree species such as Pinus, Oak, Tirs, Birch, Mashi (local name) etc. The forests also composed of thick bamboo patches and grasslands as well. The altitude varied from 1700 to 2000 m with highly undulating terrain.

a. Pugmarks of tiger, small cats and Dhole footprints were found during the survey. Tiger, Dhole pugmarks were found in Apew on the river bed, tiger, jungle cat, dhole signs were also found in Chello-pani area. Scats were collected from the main forest trail near the landslide zone ahead o fthe Ekage Milli hut and also from the adjacent areas of the Chello-pani camp.

b. The vegetation was mainly grasslands (*Saccharam sponteneum, Imperata cylindrica, Cynodondectylon spp, Cyperusrotundus spp, Vetiveria zizanioides* etc), bamboo thickets (*Phyllostachys bambusoides*) and dense valley forests consisting of mainly pine, oak, mashi (local name) etc. Among shrubs there were different types of ferns, rhododendrons, *Clerodendron spp*, aimo (local name) etc were recorded.

c. A tiger was photo captured in a camera trap 50 m ahead of the Chello Camp on the bank of Dri River and one dhole captured at Apew. Alarm calls of barking deer were also heared near Apew.

d. A fresh carcas of Takin was found on 4 Jan, 2014 on a nearby ridge roughly about 900 m away from the ChelloCamp where the camera trap image of the tiger was obtained.



Map 2. Location of the trek in Dri, Valley, Dibang Wildlife Sanctuary

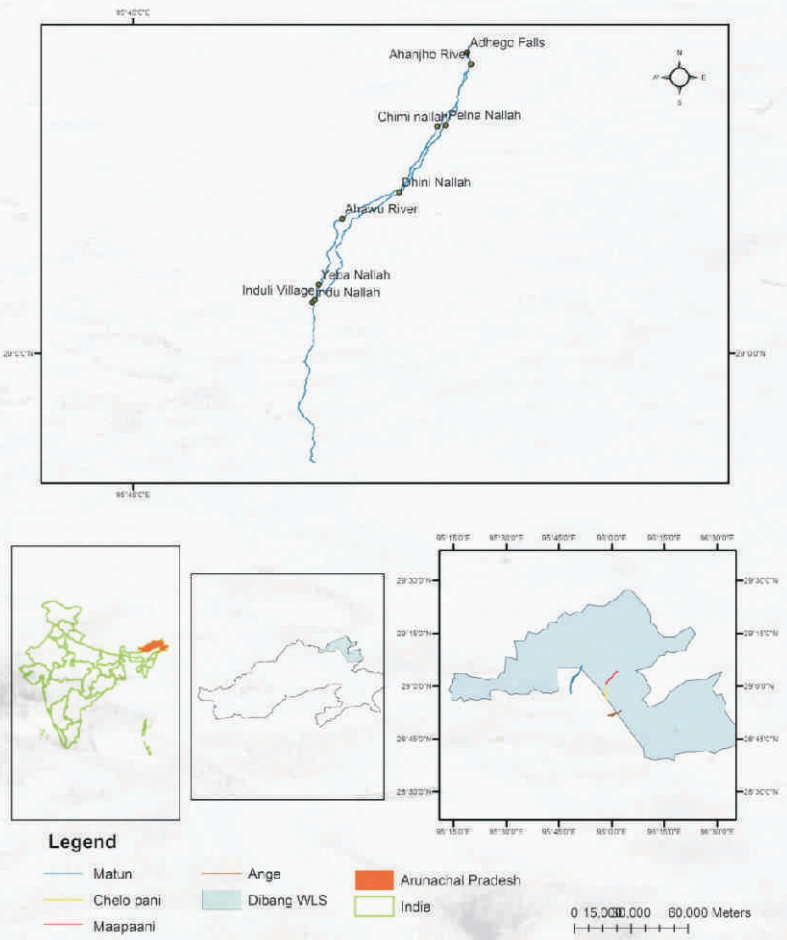
Table1: The encounter rate of carnivores and prey in Dri valley, Dibang Wildlife Sanctuary, Arunachal Pradesh.

S.No	Species	Encounter rate/Km
1	Leopard	0.08
2	Tiger	0.38
3	Wild dog	0.15
4	Takin	0.08

Photo 3: Camera trap image of an adult tiger captured for the first time from the Dibang WLS on 2nd January 2014 at an altitude of 1765 m asl.

2. Matun Valley

A total of 51 km riparian forest and riverine stretch was surveyed. A total of 17 scats of carnivores comprising of 6 tiger scats, 9 leopard scats, 1 wild dog scat and one unidentified small cat's scat and ungulates fecal pellets were observed and collected. Tiger scats were mostly found in the riverine beds. Leopard pugmarks, foot prints of wild dog, bear and otter spp were frequently found along the riverine beds where tiger pugmarks were not found. Hoof marks of goral, wild pig and barking deer were numerously found in the forested trails as well as in the bank of the river. Alarm call of barking deer were recorded twice.



Map 3. Location of the trek in Mathun, Valley

Table 2.
Details of encountered carnivore scats in Matun valley, Dibang Wildlife Sanctuary.

S.No	Species	No.of Scats Collected
1	Tiger	6
2	Leopard	9
3	Wild dog	1
4	Unidentified small cat	1

A total number of 17 carnivore scats were collected for diet analysis including *viz*., tiger, leopard, wild dog and an unidentified small cat.

Table 3.
Encounter Rate of carnivores in Matun Valley, Dibang Wildlife Sanctuary, Arunachal Predesh.

S.No	Species	Encounter rate/Km
1	Bear	0.08
2	Jungle cat	0.08
3	Leopard	0.38
4	Otter	0.02
5	Tiger	0.14
6	Wild dog	0.18

The result shows that the highest encounter rate was of leopard followed by wild dog and tiger. The otter encounter rates were the least and and bear and small cats encounter rates were moderate.

Table 4. Encounter Rate of prey species in Matun Valley, Dibang Wildlife Sanctuary, Arunachal Pradesh.

S.No	Species	Encounter rate/Km
1	Barking deer	0.08
2	Goral	0.10
3	Himalayan Serow	0.06
4	Wild pig	0.06

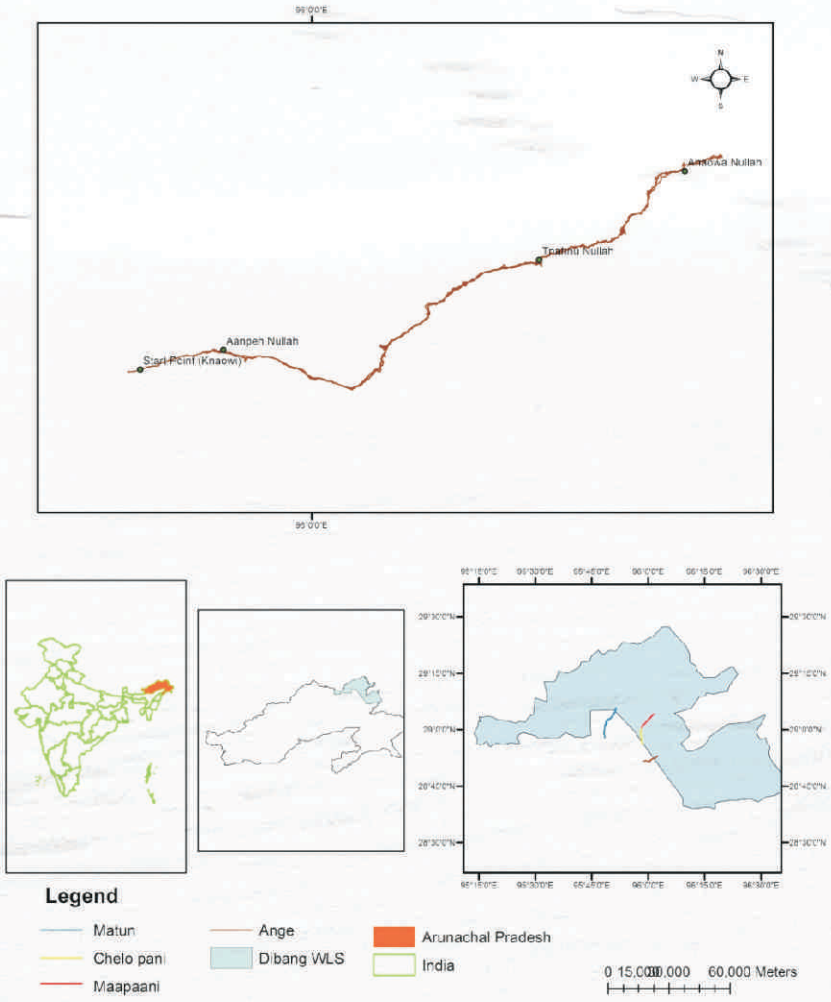
Gorals had the highest encounter rate followed by barking deer, wild pig and Himalayan Serow. The interviews conducted with the local people revealed that the whole stretch of Matun valley has potential for tigers, takin and musk deers. However, we did not get any evidence of Takins and musk deer during our trek.

3. Ange Pani Area

A total distance of 17.84 km of riparian and mountain forest was surveyed. The forest type is temperate broad leaved forest and terrain is hilly and highly undulating. Carnivore signs, dominant vegetation, human disturbance signs and important locations were recorded. No human habitations were present along the trek route. Overall encounter rates of carnivores were low during this trek. We encountered a tiger pugmark at the elevation of 2065m (28°53'1.2"N and 96°2'38"E).

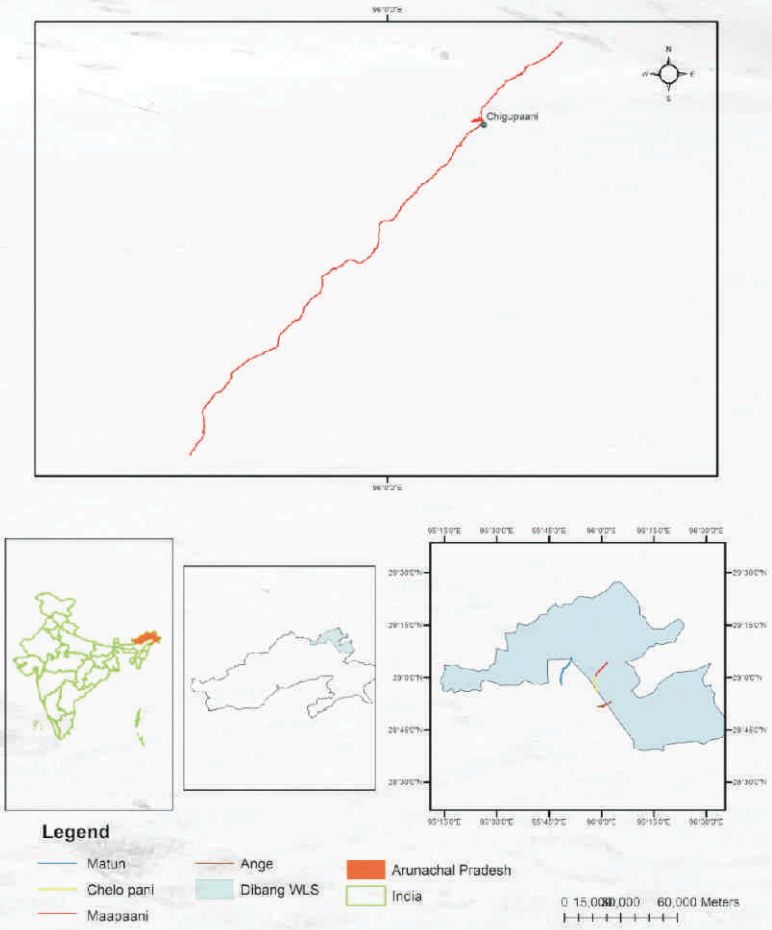
Table 5:
Carnivore Sign encounter rate in Ange Pani Gorge, Dibang valley.

S.No	Species	Encounter rate/Km
1	Unidentified small cat	0.07
2	Leopard	0.07
3	Tiger	0.07
4	Wild dog	0.07



4. Maapaani, Dri valley, Dibang Wildlife Sanctuary

A total distance of 18.5 km riparian forest and mountain forest was surveyed. Previously from Dumbuen village to Chelo pani camp was surveyed. This trek was carried out from chelo Pani Camp to further upper reaches. The signs of carnivores, ungulates, vegetation survey, human disturbance indices and important locations such as nallahs, rivers, and falls were recorded. The forest type was temperate broad leaved forest and the terrain was highly undulating.



A total of 17 scats of carnivores comprising of 4 tiger scats, 6 leopard scats, and 7 unidentified small cat scats were collected. Tiger scats were mostly found in the riverine beds and bamboo thickets. Encounter rates of tigers were highest as pug marks of tigers were found almost all along the whole riverine bed from chelo to maapani. Leopard pugmarks and scats were also found in the riverine beds and mountain forests. Bear and otter encounter rates were comparatively low. Hoof marks of goral, Barking deer were found in the mountain forest as well as in the bank of the rivers moderately. Call of barking deer was recorded twice near chelo pani and chigu pani.

Of the collected scats, 2 fresh tiger scats, 2 fresh leopard scats and 1 fresh jungle cat's scats were collected for genetic analysis. Fresh pug mark track was found near chigu pani during our return.

Table 6. Encounter Rate of carnivores in Dri Valley, Dibang Wildlife Sanctuary, Arunachal Predesh.

S.No	Species	Encounter rate/Km
1	Bear	0.12
2	Jungle cat	0.06
3	Leopard	0.12
4	Otter	0.06
5	Tiger	0.42
6	Wild dog	0.12

CONCLUSION

Results of this rapid survey have elucidated the confirmed presence of tigers in the Dibang Valley District, especially in the Dibang Wildlife Sanctuary. Despite the short duration of the survey, hampering of field work due to certain logistic reasons like non availability of fuel for the vehicles and incessant rains during the survey days, we managed to record sufficient number of tiger and their prey evidences. The survey also resulted in capturing the first ever image of a tiger from the Dibang Wildlife Sanctuary at an altitude of 1765 m at the Chelo Pani camp area and we also recorded a tiger scat at an elevation of 2065 m in the Ange Pani trek. Our preliminary results suggest that the Dibang Wildlife Sanctuary holds a good sizeable population of tigers. Preliminary assessment of prey suggest that the Dibang Wildlife Sanctuary holds a good diversity and abundance of prey like *Takin Budorcas taxicolor taxicolor*, Wild pig *Sus scrofa*, Goral *Naemorhedus goral*, Musk deer *Moschus fuscus*, Barking deer *Muntiacus muntjak*, Himalayan Serow *Capricornis thar* and Mithun *Bos frontalis* which can sustain a good population of Tigers in the WLS. Tigers may also be found in further upper reaches of the sanctuary. The highest elevation that we managed to reach during this survey was 2065 m and we did get a tiger evidence in this elevation. The survey results clearly indicate that the Dibang Wildlife Sanctuary holds the highest elevation range for the Tigers in India.

The Dibang Wildlife Sanctuary is currently managed by the Divisional Forest Officer (Social Forestry) at Anini. The sanctuary should have a sperate Wildlife division considering the vast and unique landscape with a Wildlife Range Forest Officer at Anini and beat guards at the entry points of the Dibang Wildlife Sanctuary *viz*. Malinye, Mippi and Dambeun.

Future systematic long term research and monitoring of tigers, their co-predators and their prey for the entire landscape needs to be carried out with the collaboration of the NTCA, WII and Government of Arunachal Pradesh (Department of Forests and Environment and the Dibang Valley District Administration). The Idu Mishmi community appears to have long co-existed with tigers and they regard the tiger as big brother and the tigers in Dibang do not face any threat from locals. However, the local people feel that the government needs to address the livestock depredation by Tigers on priority basis. Tigers often predate on the highly valued (both socio-culturally and economically) Mithun. It is imperative to garner the support of the local communities here, if we have to conserve tigers in this landscape. This could easily be done by providing adequate compensation packages to the Mithun depredation cases.

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ANNEXURE

ANNEXURE I: PEOPLE CONSULTED DURING THIS SURVEY

1. Sh. Ipra Mekola, Member of State Wildlife Board, Govt of Arunachal Pradesh
2. Sh. Aduk Paron, DFO, Anini
3. Sh. Mori Riba, DFO, Roing
4. Sh. Babul Chaitom, RFO, Anini
5. Sh. Ananta Meme, Anini
6. Sh. Junti Miko, Anini
7. Ms. Chipi Molo, Angrim Valley
8. Sh. Tamange Milli, Acheso
9. Sh. Gita Melo, Alinye
10. Sh. Sipa Melo, Alinye
11. Sh. Jimani Melo, Alinye
12. Sh. Ene Melo, Alinye
13. Sh. Ahumu Mihu, Mihundo
14. Sh. Chupare Milli
15. Sh. Ajit Milli, Acheso
16. Sh. Tohi Milli, Acheso
17. Sh. Rasim Rondo, Anini
18. Sh. Koromu Melo, Etawe
19. Sh. Chacha Miu, Anini
20. Sh. Kuladeep Roy, WTI
21. Sh. Soumya Das Gupta, WTI
22. Sh. Balaji Seshan, WTI
23. Sh. Alok Kumar, Former RFO, Roing
24. Sh. Chaman Singh Rana, ITPB

ANNEXURE II: DETAILS OF THE GPS LOCATIONS WHERE THE ANIMAL SIGNS WERE OBTAINED

S.No	Species	Sign type	Forest type	Terrain type	GPS N			E		
					dd	mm	ss	dd	mm	ss
1	Barking deer	Call	Riparian Forest	Riverine bed	29	1	44.9	95	48	57.1
2	Barking deer	Pellet	Mountain Forest	Undulating	29	1	45.6	95	48	58.2
3	Barking deer	Hoof Mark	Mountain Forest	Undulating	29	2	3.2	95	48	52.7
4	Barking deer	Hoof Mark	Mountain Forest	Undulating	29	2	43.5	95	49	32.9
5	Bear spp	Foot Print	Mountain Forest	Undulating	29	2	11.1	95	48	58.4
6	Bear spp	Foot Print	Riparian Forest	Riverine bed	29	2	29.3	95	49	9.6
7	Bear spp	Foot Print	Mountain Forest	Undulating	29	5	9.1	95	51	17.1
8	Bear spp	Foot Print	Riparian Forest	Riverine bed	29	3	49.5	95	50	30.6
9	Bear spp	Foot Print	Mountain Forest	Undulating	29	1	23.3	95	58	50.8
10	Bear spp	Foot Print	Riparian Forest	Undulating	29	2	10.2	95	59	31.6
11	Goral	Hoof Mark	Mountain Forest	Undulating	29	2	24.6	95	49	7.5
12	Goral	Hoof Mark	Mountain Forest	Undulating	29	2	27.2	95	49	7.7
13	Goral	Hoof Mark	Riparian Forest	Riverine bed	29	2	32.8	95	49	10.9
14	Goral	Hoof Mark	Riparian Forest	Riverine bed	29	4	48.4	95	51	11.1
15	Goral	Hoof Mark	Mountain Forest	Undulating	29	5	20.6	95	51	20.7
16	Himalayan serow	Hoof Mark	Riparian Forest	Riverine bed	29	2	34.9	95	49	17.9
17	Himalayan serow	Hoof Mark	Mountain Forest	Undulating	29	2	44.2	95	49	35.8
18	Himalayan serow	Hoof Mark	Riparian Forest	Riverine bed	29	4	50.4	95	51	10.8
19	Unidentified small cat	Scat	Mountain Forest	Undulating	28	51	45.4	95	59	27
20	Unidentified small cat	Scat	Mountain Forest	Hilly	28	59	2.8	95	48	9.8
21	Unidentified small cat	Scat	Riparian Forest	Riverine bed	29	2	42.2	95	49	28.8
22	Unidentified small cat	Pugmark	Riparian Forest	Riverine bed	29	3	47.9	95	51	23.2
23	Unidentified small cat	Scat	Mountain Forest	Hilly	29	1	2.4	95	48	27
24	Unidentified small cat	Scat	Valley Forest	Undulating	28	56	13.5	95	58	26.8
25	Unidentified small cat	Scat	Valley Forest	Undulating	28	56	32	95	58	23.5
26	Unidentified small cat	Pugmark	Riparian Forest	Undulating	29	0	42.8	96	58	20.8
27	Leopard	Scat	Valley Forest	Undulating	29	0	19.3	95	58	11
28	Leopard	Scat	Mountain Forest	Undulating	28	52	54.4	96	2	17.5

S.No	Species	Sign type	Forest type	Terrain type	GPS N dd	GPS N mm	GPS N ss	GPS E dd	GPS E mm	GPS E ss
29	Leopard	Scat	Mountain Forest	Hilly	28	58	5.8	95	48	23.8
30	Leopard	Scat	Mountain Forest	Hilly	28	58	50.1	95	48	13.9
31	Leopard	Pugmark	Mountain Forest	Hilly	28	59	25.8	95	48	17.1
32	Leopard	Pugmark	Mountain Forest	Hilly	28	59	25.8	95	48	21.3
33	Leopard	Scat	Mountain Forest	Undulating	29	0	27.1	95	48	26.1
34	Leopard	Scat	Mountain Forest	Undulating	29	0	35	95	48	25.7
35	Leopard	Scat	Riparian Forest	Riverine bed	29	1	56	95	48	52.2
36	Leopard	Pugmark	Riparian Forest	Riverine bed	29	2	29.2	95	49	9.5
37	Leopard	Pugmark	Riparian Forest	Riverine bed	29	2	32.8	95	49	10.4
38	Leopard	Pugmark	Mountain Forest	Undulating	29	3	23.5	95	50	18.2
39	Leopard	Scat	Mountain Forest	Undulating	29	4	14.3	95	50	52.8
40	Leopard	Pugmark	Riparian Forest	Riverine bed	29	4	32.7	95	51	1.9
41	Leopard	Foot Print	Riparian Forest	Riverine bed	29	4	45.3	95	51	4.8
42	Leopard	Scat	Riparian Forest	Riverine bed	29	5	5.4	95	51	15
43	Leopard	Pugmark	Mountain Forest	Undulating	29	5	46	95	51	22.3
44	Leopard	Rake Mark	Mountain Forest	Undulating	29	5	46	95	51	22.3
45	Leopard	Pugmark	Mountain Forest	Undulating	29	5	39	95	51	22.8
46	Leopard	Pugmark	Riparian Forest	Riverine bed	29	3	54	95	50	34.3
47	Leopard	Scat	Mountain Forest	Undulating	29	1	5.5	95	48	29.6
48	Leopard	Scat	Valley Forest	Undulating	28	57	7.9	95	58	18.7
49	Leopard	Scat	Riparian Forest	Undulating	29	2	3.3	95	59	25.2
50	Leopard	Scat	Riparian Forest	Undulating	29	4	21.8	96	2	12.9
51	Otter	Foot Print	Riparian Forest	Riverine bed	29	2	19.2	95	49	0.7
52	Otter	Foot Print	Mountain Forest	Undulating	29	3	55	95	50	28.8
53	Otter	Foot Print	Riparian Forest	Undulating	29	3	57.3	96	1	14.7
54	Takin	Skin	Mountain Forest	Hilly	29	0	38	95	58	31.8
55	Tiger	Scat	Mountain Forest	Hilly	28	57	29.3	95	58	15.7
56	Tiger	Pugmark	Riparian Forest	Undulating	28	59	45.6	95	58	3
57	Tiger	Pugmark	Riparian Forest	Undulating	29	0	12.9	95	58	13
58	Tiger	Scat	Riparian Forest	Undulating	28	56	5.1	95	58	26.6
59	Tiger	Scat	Riparian Forest	Undulating	28	57	26.2	95	58	15.3
60	Tiger	Pugmark	Riparian Forest	Riverine bed	28	53	1.2	96	2	38
61	Tiger	Scrape mark	Mountain Forest	Riverine bed	29	1	13.8	95	48	41.4
62	Tiger	Scat	Riparian Forest	Riverine bed	29	3	22.7	95	50	14.6

S.No	Species	Sign type	Forest type	Terrain type	GPS N dd	mm	ss	E dd	mm	ss
63	Tiger	Scat	Mountain Forest	Undulating	29	3	27.9	95	50	16.2
64	Tiger	Scat	Mountain Forest	Undulating	29	3	23	95	50	15.3
65	Tiger	Scat	Mountain Forest	Undulating	29	3	2.9	95	49	56.4
66	Tiger	Scat	Mountain Forest	Undulating	29	1	59.2	95	48	45.5
67	Tiger	Scat	Mountain Forest	Undulating	29	1	23	95	48	35.7
68	Tiger	Scat	Valley Forest	Undulating	28	58	43.7	95	58	4.9
69	Tiger	Pugmark	Riparian Forest	Undulating	28	59	47.2	95	58	2.9
70	Tiger	Pugmark	Riparian Forest	Undulating	29	1	41.7	95	59	10.4
71	Tiger	Pugmark	Riparian Forest	Undulating	29	2	10.2	95	59	31.6
72	Tiger	Pugmark	Riparian Forest	Undulating	29	2	13.8	95	59	37.3
73	Tiger	Scat	Riparian Forest	Undulating	29	2	19.3	95	59	52.5
74	Tiger	Pugmark	Riparian Forest	Undulating	29	3	29.3	96	0	45.3
75	Tiger	Pugmark	Riparian Forest	Undulating	29	3	59	96	1	13.7
76	Tiger	Pugmark	Riparian Forest	Undulating	29	0	42.8	96	58	20.8
77	Wild dog	Foot Print	Riparian Forest	Undulating	28	58	26.6	95	58	5.7
78	Wild dog	Foot Print	Riparian Forest	Undulating	29	0	12.9	95	58	13
79	Wild dog	Foot Print	Riparian Forest	Riverine bed	28	52	26.1	96	1	41.3
80	Wild dog	Foot Print	Riparian Forest	Riverine bed	29	1	13.8	95	48	41.4
81	Wild dog	Hoof Mark	Mountain Forest	Undulating	29	1	55.6	95	48	52.6
82	Wild dog	Scat	Riparian Forest	Riverine bed	29	1	56	95	48	52.2
83	Wild dog	Foot Print	Riparian Forest	Riverine bed	29	2	29.3	95	49	9.6
84	Wild dog	Foot Print	Mountain Forest	Undulating	29	3	35	95	50	28.8
85	Wild dog	Foot Print	Mountain Forest	Undulating	29	3	54.2	95	50	36.3
86	Wild dog	Foot Print	Riparian Forest	Riverine bed	29	4	38.6	95	51	9.3
87	Wild dog	Foot Print	Mountain Forest	Undulating	29	5	39	95	51	22.1
88	Wild dog	Foot Print	Mountain Forest	Undulating	29	5	39	95	51	22.8
89	Wild dog	Foot Print	Riparian Forest	Undulating	28	59	47.2	95	58	2.9
90	Wild dog	Foot Print	Riparian Forest	Undulating	29	3	57.3	96	1	14.7
91	Wild dog	Foot Print	Riparian Forest	Undulating	29	0	42.8	96	58	20.8
92	Wild pig	Hoof Mark	Mountain Forest	Undulating	29	2	0.8	95	48	52.3
93	Wild pig	Hoof Mark	Riparian Forest	Riverine bed	29	2	34.9	95	49	17.2
94	Wild pig	Digging Mark	Mountain Forest	Undulating	29	2	38.1	95	49	20.3

ANNEXURE III: OFFICIAL LETTERS OF NTCA, WII AND GOAP

F. No. 1-6/93-PT (Vol. II)
Government of India
Ministry of Environment & Forests
National Tiger Conservation Authority
*****

Annexe No. V, Bikaner House,
Shahjahan Road, New Delhi-110011
Telefax: 2338 9853
E-mail: [illegible]@gmail.com

Dated: 23rd May, 2013

To

The Director
Wildlife Institute of India (WII)
Post Box No. 18, Chandrabani
Dehradun – 248001

Sub: Rescue of 2 (two) tiger cub from Angrim Valley, Dibang Valley District and submission of detailed proposal for funding support – reg.

Sir,

It is learnt that there are quite a few tigers in Dibang Valley which survive on takin in high reaches and Mithun in lower reaches as main prey species. In the Anini village, a few months back, 3 cubs were found in a dry well out of which two cubs were rescued. Dibang Valley and Sanctuary has lowest human density in the country and very few villages are scantly located. The area of Dibang Wildlife Sanctuary is approx. 4000 sq km and there is great potential in this area for tiger conservation. During the last all India Tiger Estimation-2010, the said area was not assessed.

It is requested that the field survey may be carried out and report be submitted to this Authority for taking further necessary action.

Yours faithfully

(S.P. Yadav)
Deputy Inspector General (NTCA)

Copy to: Sh. P. Ringu, DCF, Office of the Principal Chief Conservator of Forests (Wildlife & Biodiversity), Itanagar.

OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS (WL & BD), ITANAGAR.

No. CWL/G/13(95)/2011-12/ 1566-67 **Dated** 2nd Sept **.....August, 2013.**

To,

Dr. V. B. Mathur
Dean, FWS, Wildlife Trust of India
Post Box No. 18, Chandrabani,
Dehradun-248001, India.

Sub:- Permission to carry out field survey of tigers in Dibang Valley District and Lower Dibang Valley District, Arunachal Pradesh.

Ref: Your No.WII/ESM/GG/NTCA-DVD/ dated: July 20, 2013.

Sir,

With reference to your above mentioned subject, I am directed to convey the approval of the CWLW under Sec-12 (b), 27, 28 (b), (c) of the Wildlife Protection Act, 1972 (Amended upto 2006) and in pursuance to the guideline issued by the Ministry of Env. & Forests, GoI for carryout a rapid assessment field survey to ascertain the status of tigers and their prey in Dibang Valley District and Lower Dibang Valley District in Arunachal Pradesh.

The permission is governed by the following terms & conditions as stated below:-

(1) No damage to Wildlife and its habitat including flora should be caused during the research /study.
(2) The survey will be governed by the usual rules and regulations applicable to Wildlife Sanctuary/ National Parks and other forests as per relevant section of the Wildlife (P) Act, 1972 (Amended upto 2006) and Assam Forest Regulation Act, 1891 (Amended upto date)
(3) Before taking up work, the matter should be informed to the concerned DFO & his clearance taken showing the permission order and payment of entry fee and other fees applicable in Sanctuaries & National Parks alongwith a photocopy of the D/D.
(4) The research will be conducted under the close monitoring of officers/ staff of the concerned DFO.
(5) No fire arms will be allowed inside the Wildlife Sanctuary/ National Parks and other Protected Areas of Arunachal Pradesh.
(6) On completion of the work, copies of the report alongwith soft copies should be submitted to the concerned CCF, DFO & this office for future management purpose and records.
(7) Prior permission has to be obtained from the CWLW before publication of the report in any Journal(s).
(8) The copyright of all photographs and literature shall lie vested with the Government of Arunachal Pradesh.
(9) Necessary inner line permit in respect of team members/ surveyor/ researchers/ visitors have to be obtained from the competent authority of the area/District.
(10) A refundable security of 5000/- only in the form of Demand Draft/ NSC pledged to the PCCF (WL&BD) & CWLW, Arunachal Pradesh, Itanagar is to be deposited to this office before taking up of the survey/research works. After submission of necessary report etc. and receipt of NOC from concerned DFO as mentioned above, the same shall be refunded after completion of the Survey/research works. In case of lapse with regard to any of the conditions, the refundable security deposit shall be forfeited to Government and the concerned researcher shall not be allowed to take up any further research.
(11) The order is valid for a period of .... from the date of issue of the order. Further, extension shall be given on submission of interim report and its evaluation.

This is accordance with approval of PCCF (WL & BD) & CWLW, Govt. of Arunachal Pradesh.

Yours faithfully

DCF (HR & ET)),
O/o the PCCF (WL & BD),
Itanagar

Annexure IV: Media coverage about this survey finding

The Telegraph
calcutta, india

Today's Edition | Monday , January 13 , 2014 |

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Royal Bengal in Arunachal

- Image of tiger & Pugmarks in Dibang area

G.S. MUDUR

The first image of a tiger taken by an automatic infrared camera in the Dibang wildlife sanctuary. Credit: Wildlife Institute of India

New Delhi, Jan. 12: Wildlife biologists have captured an image of a tiger and documented pugmarks and scat samples from a rugged mountain zone of Arunachal Pradesh that they say is the first evidence for tigers living in the Dibang wildlife sanctuary.

The image, based on a remotely operated automatic infrared camera mounted on a tree near a riverbed and captured around 3am on January 2 this year, shows what seems to be an adult tiger roaming in the high-altitude sanctuary.

Scientists from the Wildlife Institute of India (WII), Dehradun, with support from the National Tiger Conservation Authority and the Arunachal Pradesh government have been combing the sanctuary since December, trying to validate long-standing claims about tigers by members of the local Idu Mishmi community.

The trigger for the systematic search was the rescue of two tiger cubs found trapped in a dried well in December 2012 in a place called Angrim valley, lying outside the sanctuary. The cubs are now in the Itanagar zoo.

"The local communities have reported tigers in the area for decades," Govindan Veeraswami Gopi, a WII scientist involved in the search, said. "The discovery of the cubs was another hint."

But it wasn't clear whether these cubs were Royal Bengal tigers. The northern part of the Dibang sanctuary borders China, and Gopi said there was a possibility that any tigers there would be members of another subspecies called the northern Indo-Chinese tigers.

However, he said, genetic analysis of blood samples from the two cubs had shown that they were indeed Royal Bengal tigers and not the other subspecies.

India's tiger census in 2010 had documented 1,706 big cats scattered across 17 states with ranges. Arunachal has documented tigers in the Namdapha and Pakke reserves, but both are relatively low-altitude Himalayan forests.

The image of the tiger in Dibang was captured at a terrain altitude of 1,765 metres above sea level. "But we've also got scat samples from about 2,065 metres," Gopi said.

In Bhutan, royal Bengal tigers have been documented at 4,100 metres.

The Idu Mishmi community appears to have long co-existed with tigers. "They regard the tiger as big brother," Gopi, the WII scientist said, adding that the tigers in Dibang did not face any threat from locals.

The WII team had placed nine automatic infrared cameras at strategic locations in the sanctuary. The wildlife biologists, along with members of the local community, walked nearly 120km, collecting 11 samples of tiger scat and documenting nine tiger pugmarks. The scat samples have been sent to WII for studies that will help clarify the diet of the tigers in the sanctuary.

PLATES

PLATE 1: GLIMPSES OF DIBANG VALLEY DISTRICT

The picturesque Anini town, the head quarters of the district. The only district in the country that doesn't have a fuel filling station, ATMs and telephone landline connection

Slash and burn agriculture is practiced in the district in a limited scale

PLATE2: ENROUTE TO ANINI FROM ROING

Myodia pass, the highest pass of the Lower Dibang Valley under heavy snow, where the survey team got stuck on 7th January 2014 for almost a night since the vehicle used for the survey was a 2X4 and not a 4X4 vehicle.

One of the many Mithun gates, one has to cross over on the road between Roing and Anini

PLATE 3A: VEGETATION TYPES

The Dri Valley consist of myriads of vegetation types and one among them is the Bamboo forests dominated by Phyllostachys bambusoides

Coptis teeta an endemic medicinal herb is commonly called as Mishmi teeta. This is a temperate herb and its rhizome is used as anti inflammatory, anti microbial and also to treat blood pressure related health problems.

At Apeaw, this is one of the locations where tiger signs were found abundantly. Dominated by conifers.

Snow capped mountainous forests surrounding the Dri Valley

PLATE 4A: FIELD CONDITIONS

Temporary camping site at the Chelo camp; this place is where we camera trapped the tiger image about 50 m from the fire place.

Crossing the Dri river with the help of a make shift bridge before entering in to the Dibang Wildlife Sanctuary.

PLATE 4B: FIELD CONDITIONS

Enroute to Maapani besides the Dri river

A hanging bridge made of bamboo at Chigupaani

PLATE 5: WILDLIFE AND IDU MISHMI CULTURE

Igu's are the priests in the Idu community. They enjoy high social status and are believed to possess spiritual powers. The costume of Igu's comprise of eleven items collectively called as Amralapoh. An important item of the costume is the Amrala (priestly attire made of tiger and bear tooth)

Sporadic hunting of wildlife does takes place and a hunted giant squirrel skin was observed near Angrim valley

PLATE 6: TIGER EVIDENCES IN THE DISTRICT


GARMIN

PLATE 7: INFORMAL INTERACTION WITH WILDLIFE ENTHUSIASTS, LOCAL PEOPLE, IGU AND OFFICIALS

Interaction with Mr. Ipra Mekola, Member of State Wildlife Board, Govt of Arunachal Pradesh

Interaction with Mr. Ananta Meme at Anini

Interaction with Ms. Chipi Molo at Angrim Valley

Interaction with Mr. Junti Mikho at Anini

Interaction with residents of Alinye

Interaction with ITBP battalion posted at Dambeun

PHOTO CREDITS

GOPI.G.V
JAYANTA BORAH
DEB RANJAN LAHA
AZINGNA KHAMHO

भारतीय वन्यजीव संस्थान
Wildlife Institute of India

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