

Participatory Elephant Monitoring in Community Lands, Garo Hills Elephant Reserve, Meghalaya, NE India.

Interim Report Submitted to Sir Peter Scott Fund for Conservation Action, IUCN



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I. OVERVIEW

Samrakshan Trust has been working in the Balpakram Baghmara Landscape towards wildlife conservation, with the elephant as the flagship species since 2004. The Baghmara Balpakram Landscape in the south Garo Hills district of Meghalaya is one of the most important areas for the survival of the endangered Asian elephant. This area falls within the Garo Hills Elephant Reserve and supports the second largest population of elephants in northeastern India. This population is continually under threat from an expanding human population and habitat degradation; this is further hastened by unplanned cultivation, expansion of orchards and ill-conceived development plans such as mining. Increasing contact between humans and elephants has given rise to increased levels of Human Elephant Conflict, which has always existed to some extent.

Samrakshan Trust started a unique participatory monitoring method for detecting elephant presence in aking by trained informants in 11 *akings*. The purpose was to obtain basic information on elephant presence in a part of the landscape and to help design future land-use changes that would be conservation friendly. Participatory monitoring for more than 2 years revealed many important trends on the seasonality, levels of conflict, differences in groups sizes and differences between herds and solitary animals. As part of this exercise 36 villages or *akings* within the project areas were tracked and maps produced for the first time.

It was also realised that information on elephants needed from areas other than human-dominated areas was still lacking. The participatory monitoring exercise has been able to establish just the basic information. However information on elephant movement across community forests, orchards and other non-inhabited areas of the aking remain unknown. The continuing monitoring work, supported by the Sir Peter Scott Fund will aim to gain comprehensive knowledge on the use of aking lands by elephants.

II. ACTIVITY PROGRESS

Title of the Project: Participatory Elephant Monitoring in the Community owned lands, Garo Hills Elephant Reserve, Meghalaya, NE India.

The overall goal of the project is to negotiate a land use plan for community owned forests that will minimize Human Elephant conflict and allow communities to improve their livelihoods at the same time.

Activity progress during this period has been depicted through the following table

ACTIVITY	STATUS
An existing framework for collecting information on elephants by communities in Africa was modified and translated into the local Garo language for ease of use by locals.	Completed
In each of the aking, a reliable local volunteer was identified as the <i>informant</i> for that Aking. In some cases, there was more than one informant for a single Aking identified. Support and cooperation was requested from headman (Nokma – as known in the local Garo language) and villagers were requested to pass on information on elephant presence in their crop fields and areas adjoining habitations and any other area where elephants were sighted.	Completed
Mr. Ajay Desai, the Co-Chair of the IUCN's Asian Elephant Specialist Group visited the field and conducted a training workshop for team members as well as helped in fine tuning the methodology	Completed
Information is being gathered on the following parameters – 1. Location or landmark near which elephants were sighted 2. Date and approximate time when the animals were sighted 3. Did they cause damage to crops, property or life (yes/no) 4. Approximate number of elephants (herd/solitary) 5. Activity of elephants (conflict/non-conflict) Such information is being recorded by the informant in Garo in a logbook.	Ongoing
The data on elephant presence is being entered into a computer and the GPS locations mapped in GIS domain.	Ongoing
GPS locations of elephant visits to all 11 Aking across the study period have been overlaid on a map showing the study Aking as well as adjacent ones. The map shows below depicts all elephant visit locations overlaid on the <i>aking</i> boundaries, state highways and the Simsang River. Protected areas (Baghmara Reserve Forest, Balpakram National Park and the Siju Wildlife Sanctuary) are also depicted. Aggregations of points on the map are areas of repeated visits by elephants across time and may be considered as 'hotspots' of elephant activity. Considering the	Completed

fact that the data originates from sightings and detections of elephants by villagers, it is understandable that it is concentrated around <i>gittims</i> or hamlets. This map is reproduced at Fig 1, below	
Production of a map depicting all the <i>Akings</i> in the landscape.	Completed
Physically tracking elephants across the landscape in order to understand precise areas that elephants use over different seasons.	To be initiated

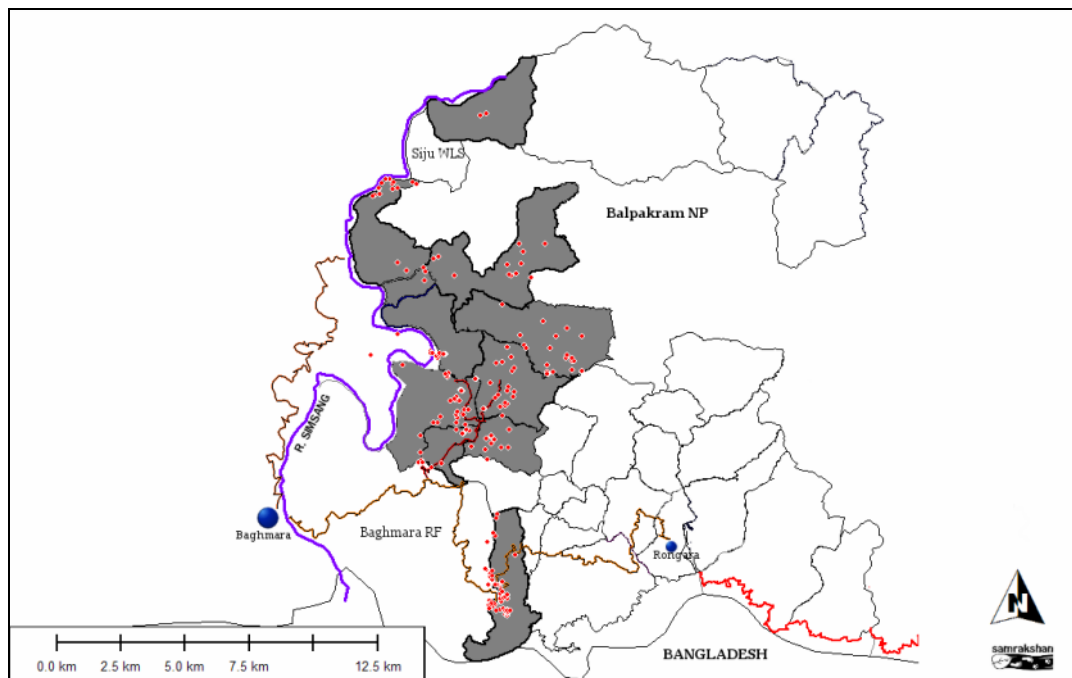


Figure 1. Locations of all elephant visits with the study *Akings* shaded in grey.

III. OUTCOMES

Presented below is a summary of outcomes of the project. Since this is an interim report, several outcomes are a work in progress. More comprehensive and complete outputs are expected at the end of the project period.

- Seasonality of elephant visits to areas of human habitation or crop fields is a common observation in virtually all studies on HEC in Asia and Africa. Seasonality is seen as a consequence of various factors, primary among them being the availability of edible crops (Sukumar, 2003). Other reasons for seasonal presence of elephants in areas dominated by humans are the relatively low availability of forage in forests, preference for crops and incursion of habitations into seasonal movement routes used by herds. However, availability of edible crops such as paddy rice and millets has been shown to be a significant enticement for raiding bulls or herds. Patterns of seasonality are also expected to be more marked in areas where seasonal, rain-dependent crops such as paddy rice and *jhum* (slash and burn cultivation) rice are grown.
- The 11 *akings* constituting the study area show differing levels of elephant activity. This may be explained to some extent by a combination of factors peculiar to the particular area. The *akings* have an average area of 6.6 sq.km., ranging in size from 11.5 (Hangsapal) to 1.48 sq. km. (Balkhal)¹. Figure 2 compares the frequency of elephant visits to different *akings*. The figure demonstrates that some *akings* have considerably higher frequency of elephant visits than others. Panda (21%), Siju (12%) and Halwa Ambeng (14.4%) appear to be the three *Akings* most visited by elephants. Panda and Halwa Ambeng both lie in close proximity of the Baghmara Reserve Forest. Panda shares a significant part of its boundaries with the Reserve Forest. Siju *aking* shares boundaries with the Siju Wildlife Sanctuary, Balpakram National Park and the Samsang River. Araiteka *gittim* of Siju *aking* is also in very close proximity with the Siju-Rewak RF elephant crossing area (connecting the movement of elephants from the Balpakram NP towards Rewak RF), designated as an elephant corridor by some authors (Williams and Johnsingh, 1996; Tiwari et. al., 2005). Variation in the visits by elephants to different *akings* may be a consequence of various factors such as seasonal movement patterns, forage availability, incursion of agricultural fields and orchards into their traditional routes; variations on the scale of *akings* may not be explained

without an understanding of their movement and usage of different land-use classes. Some of the major aggregations of elephant presence can be seen to be at the edges of large forest areas and habitation as seen in Panda (to the east of the Baghmara RF) and Siju (adjacent to the Siju WLS). Unfortunately, there are no comparative studies in this area with which elephant visit frequencies at this scale could be compared. Gurung and Lahiri Choudhury (2000) states that 4.11% of villages in South Garo Hills district are raided daily for Food crops and Cash crops each for the period of 1997-98.

- Elephants and conflict:

Conflict between humans and elephants are found to exist in differing degrees in almost all areas of overlapping presence. This was witnessed within our study area too. We were interested to know if the frequency of elephant visits to different *akings* translated to a similar degree of conflict related incidents in these areas. Information collected by informants in the *akings* was able to classify most of the elephant visits into conflict/non-conflict visits. A visit was classified as a 'conflict incident' if it involved crop raiding, damage to orchards or damage to other property. 'Non-conflict incidents' were occasions when elephants were found to be moving without causing any damage. Some incidents could not be classified into either category because of the lack of visibility. These were not considered for this particular analysis.

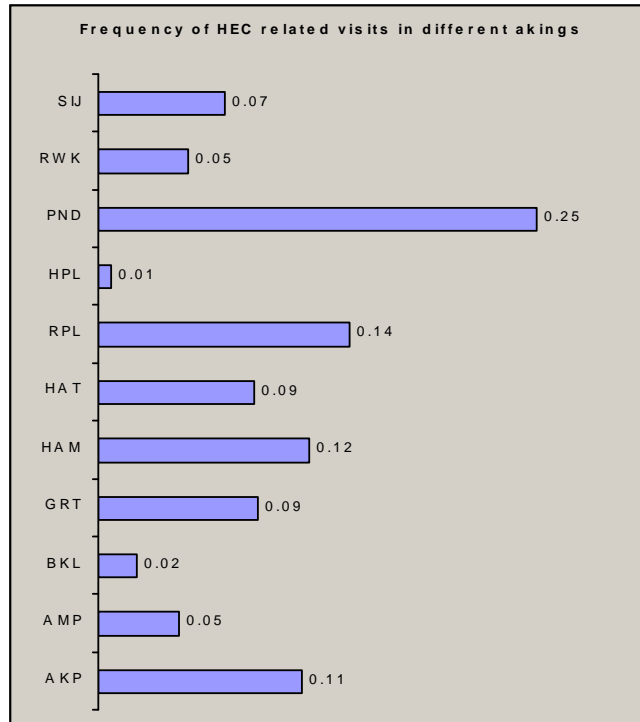


Figure 2. The figure placed below depicts frequency of incidents of elephant visits that were cause of Human Elephant Conflict across the study period.

- Solitary animals or herds:

Studies on elephants and crop raiding have frequently led to comparisons between solitary males and female dominated herds and their comparative tendency for causing HEC. A large number of these studies have concluded that solitary males or bachelor herds are more likely to raid crops and cause damage than female herds.

The figure placed below displays the total number of visits by solitary animals as well as herds across the entire study period. Clearly, the number of visits by herds is more than the number of visits by solitary animals. Two seasonal peaks, indicating an increase in the number of visits during that period is observed to be consistent for both solitary animals and herds. The intensity of the second peak in Sep-Oct is weaker in case of solitary animals. The first peak observed in June, coincides with the sowing and initial period of *jhum* rice, maize and millets. This is also the start of the monsoon when large congregations are seen in elephants.

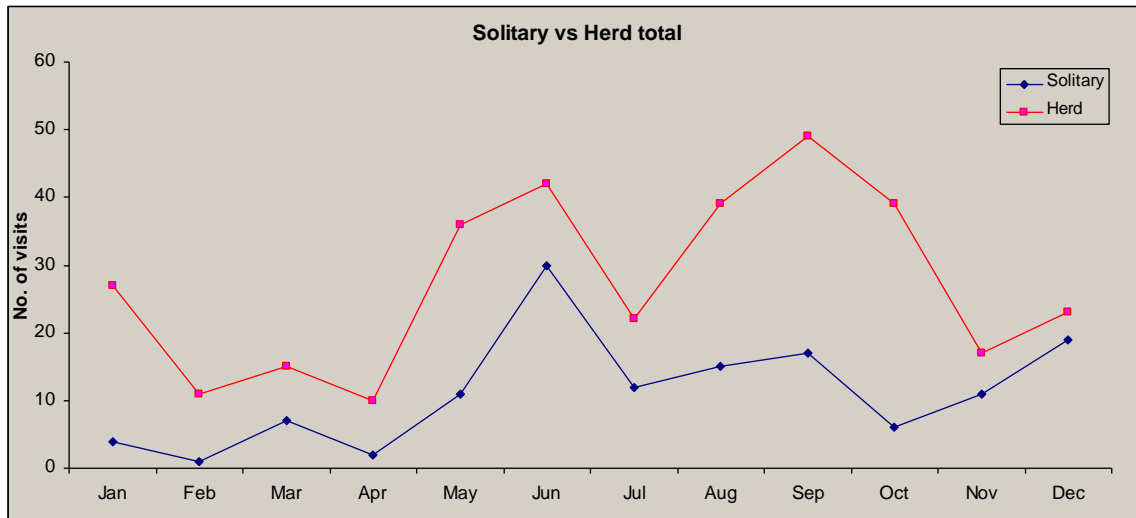


Figure 3. Total visits by solitary animals and herds

- Movement of elephants across the Simsang River:

The Simsang River is the only major river in the study area. It is the largest river in the Garo Hills, flowing towards the west from the Nokrek mountain range and forms the western boundary of the Balpakram Baghmara Landscape. The upper part of this river is not navigable due to a large number of waterfalls and huge stones (Meghalaya District Gazetteer, 1996). The lower portion of the river however, has many deep pools and can also be traversed on boats. A regular boat service runs between Baghmara and Balkhal, during that part of the year when the water level is high enough.

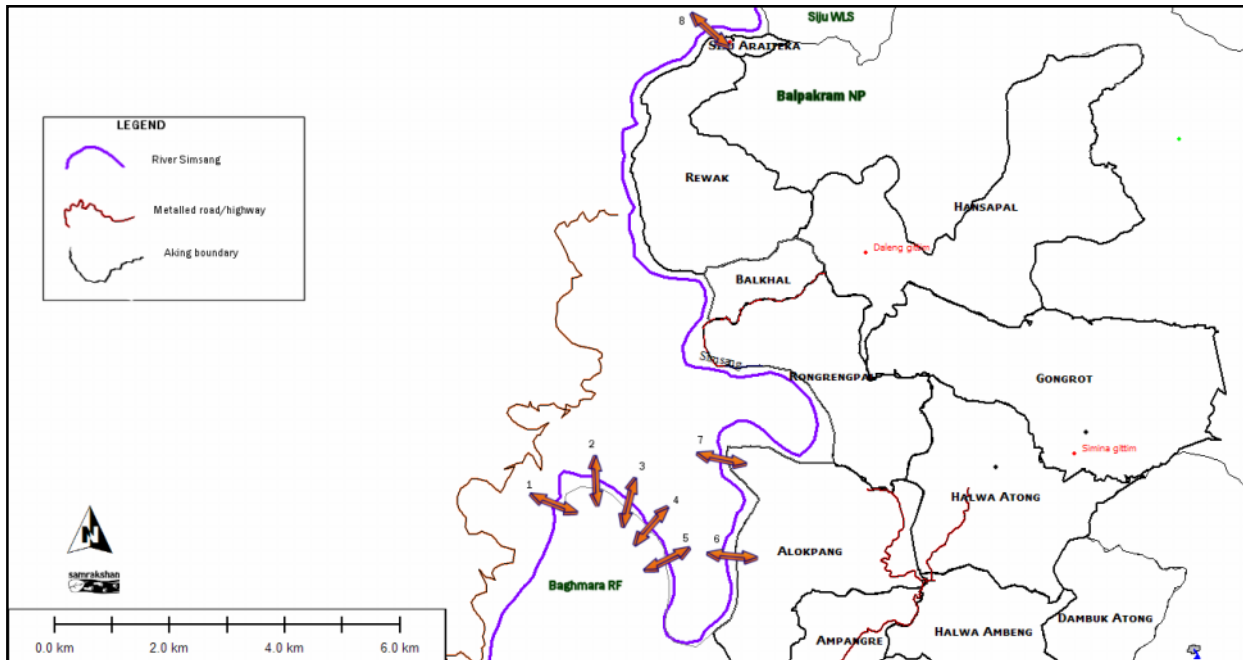
Elephant movement across the river is crucial to understanding their movement patterns. In this regard, a great deal of attention has been focused on the ‘Siju-Rewak elephant corridor’ across the river Simsang connecting the Siju WLS with the Rewak RF. This is believed to be a connecting link for the movement of elephant populations between Balpakram NP and Nokrek (Williams and Johnsingh, 1996; Tiwari et. al., 2005).

Existing information appeared to indicate that movement of elephants across the Simsang was only through a narrow ‘corridor’ connecting the Siju WLS and Rewak RF on opposite sides of the river. This however, did not agree with our observations and discussions with the dwellers of the *akings* located beside the river. We conducted a short study to ascertain the location of regular crossing points of elephants across the Simsang between Siju in the north to Baghmara in the south. The survey was able to identify many crossing points on this stretch of the Simsang River which are used frequently by elephants across all seasons. These routes were later checked by the field team to confirm the usage by elephants.

Figure 4 shows that the majority of the movement routes are located towards the southern part of the river where it is shallower. The northern part of the Baghmara RF sees regular movement of elephants across the river at five locations. These are illustrated in Figure 11 with arrows. These points and the associated elephant trails were investigated and the following information collected:

- i. This point has been known to be used in the rainy season. Observers noted that elephants crossed over to a large patch of bamboo forest across the Simsang from the Baghmara RF and fed extensively on bamboo shoots (*Melocanna bambusoides* and *Bambusa tulda*).
- ii. This particular path leads from the Baghmara RF to Gokha *aking* situated on the other side of the Simsang. It is a large and well worn elephant trail that is used frequently. It is also the largest major elephant trail in Gokha *aking*.
- iii. This is one of the largest and oldest crossing points through which there is regular movement of elephants from the Baghmara RF to Gokha *aking* on the other side. It is used throughout the year and elephants are known to cross over even in the wet season.
- iv. This path along with the routes 5 and 6 are used frequently to cross over to Bulawe *gittim*. There is a lot of back and forth movement and the area was found to have many elephant signs.
- v. See 4.

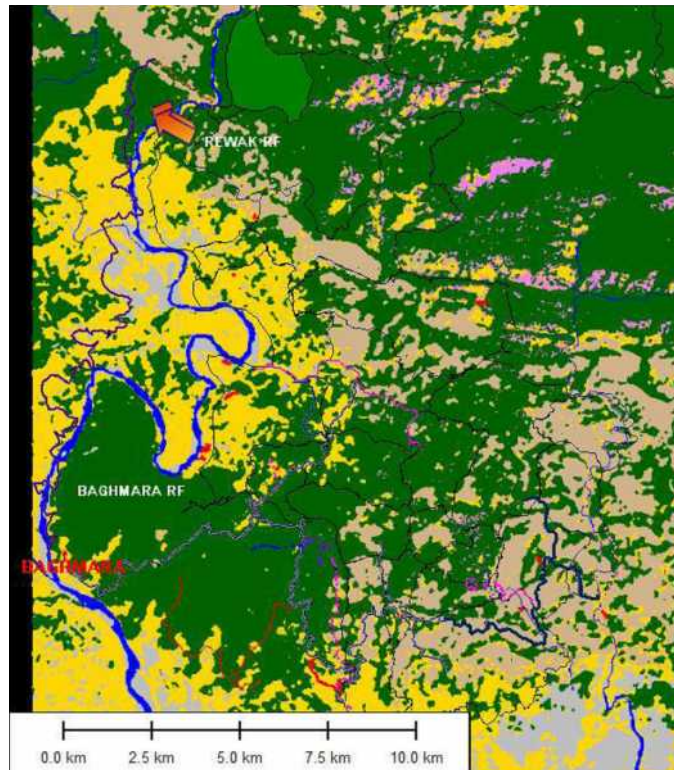
- vi. This is one of the two crossing points in Alokpang *aking*. There is frequent movement between Baghmara RF, Bulawe on the other side of the river and this point. The crossing point on the Alokpang side is an areca orchard.
- vii. There are two crossing points located close to each other at this point which allow elephant's easy access to the Dawakol *gittim* which they visit for crop raiding. They are known to usually use this path at night.
- viii. This is the Siju - Rewak crossing point. Elephants cross over from the Siju Araiteka *gittim* to the Rewak RF across the Simsang. Although this has been shown as one crossing point in the map, there are various routes within 250-300m along the river which show regular use by elephants. Incidentally, the Rewak RF was apparently cultivated in the past and was converted into a RF only by 1900. The movement on this route is seasonal in nature.



ix.

Figure 4. Points of crossing by elephants across the Simsang River. Details in text below

- We continued our Aking mapping activity from the previous year which is a major part of the overall elephant monitoring exercise to prepare a comprehensive map of the landscape which included the boundaries of the Akings. Since there is no existing map available which could be used, we completed the Aking mapping activity in the initial period of the project as well. The mapping was done manually and then it transferred into GIS platform. Nokma and village elders of the particular Aking were consulted and knowledgeable individuals who knew the extent of Aking boundaries identified. This exercise managed to yield Aking boundaries of all the 36 Akings in the landscape in the beginning of 2008.
- Two major roads pass through the Balpakram Baghmara Landscape (See map in below indicating both roads) NH 62 connects Baghmara with Williamnagar via Siju. This road passes through the Rewak Reserve Forest (for ~3 km) which is used regularly by elephants crossing across the Simsang River from Siju. The second road is a State Highway (SH 31A) that connects Baghmara with the block headquarters, Rongara. A large part of this road (~15 km) passes through the Baghmara RF which is an important elephant area and has a resident population as well as seasonal visitors. There is a great deal of elephant activity within the RF especially along the road as the road almost bisects the Reserve Forest.



Both these roads have seen various encounters between wild elephants and humans on motorbikes or other vehicles. This problem is especially heightened at certain times of the year. Although, statistics are not maintained and most cases of encounters with elephants on the road go unreported, rough estimates based on conversations with people and personal experiences indicates a minimum of 3 to 4 encounters per week. Some of these turn violent and dangerous with elephants damaging vehicles and chasing people. Such incidents reduce public support for the conservation of wildlife and threaten to precipitate a larger resentment with wildlife.

As part of our participatory elephant monitoring programme, major roads were being monitored and signs of elephant presence and crossing points were identified and monitored over a period of time. This provided important information on the points along the road where elephants crossed. These points were identified and mapped with the help of GPS receivers.

IV UNEXPECTED RESULTS

There were several developments during the reporting period that were not foreseen but have added considerably to our conservation effort. A summary of such unexpected results is presented below:

1. A joint initiative was then developed to reduce human-elephant conflict along these roads by Samrakshan Trust and the Meghalaya Forest Department represented by the Forest Range Officer. The awareness materials were prepared by us and these materials were then printed as handbills and distributed by our staff to motorists entering the reserve forests along with an explanation of the precautions that are to be followed to avoid conflict. This was highly appreciated by most motorists and was especially useful to people who are not frequent visitors on this route. Simultaneously, signboards were also prepared by the Meghalaya Forest Department from this material to be put up at various important crossing point locations within the reserve. On the 16th of July, 2008 Samrakshan's staff and Forest Department staff together visited all the major conflict locations on these roads previously identified and put up signboards for the benefit of the public. A total of 16 signboards were put up – 11 in the Baghmara RF and 5 in the Rewak RF. This is expected to generate awareness among the people using the roads to behave with wild elephant and avoid the human elephant conflict.
2. An exercise to systematically identify and map with community support biodiversity rich areas or Biodiversity Significant Areas (BSA) in the *akings* was completed. The exercise has several stages, Stage I was restricted to identifying BSA in community owned lands. BSA were defined as:
 - Old growth natural forests/pristine areas (in disturbed or virgin state). These could also be old and abandoned jhum areas that have natural vegetation in them. There may also be primary forest patches in *akings* that are not being jhummed because of the terrain and aspect. Community Reserves, some *akings* may have reserves which are well protected.

- Corridors (disturbed or not) linking biologically significant areas with one another or even to the government reserve forest – Baghmara Reserve Forest or the Balpakram National Park.
- River and streambeds that provide suitable microhabitat for wildlife. Aquatic bodies like *waris* (deep pools in rivers/streams) and small natural ponds that may be important for wildlife as well as for aquatic fauna like turtles, otters and water monitor lizards.
- 'Niche' habitats, these are particular areas where particular species may be found. For instance it is possible that are some areas within an *aking* where particular pheasants are found. These may not necessarily be good forest areas.

Key informants were identified for each *aking* – *nokmas*, *ojhas* (traditional healers), hunters, elders and collectors of forest produce. Their knowledge of the land was used to identify biodiversity rich spaces (as defined above) within their own as also other adjacent *akings*. These spots were then visited, recorded with a GPS, detailed notes including nature of use, profile of the users, cultural significance, and anecdotes of each spot, if any were made. We were able to identify and map 74 BSAs across 36 *akings*. Interestingly eight distinct conglomerations of BSA have been identified and plans on how these areas can be secured are being drawn up.

3. One of the key developments during this period has been the campaign that we have undertaken against coal mining in the landscape. Because of the unique land tenure system prevalent in the state of Meghalaya and on account of omission on part of regulatory authorities, the state has been ravaged by unplanned and unsystematic mining. Unique forests and biodiversity rich sites have been progressively annihilated as a result of such mining. The Balpakram Baghmara Landscape had so far escaped attention of the mining interests, though in recent times the coal rich areas of the landscape too have begun to attract prospectors. Chitmang Gongrot, one of the key constituents of the elephant range within the Balpakram Baghmara Landscape is a site where mining had become imminent in recent months.

Samrakshan set up and coordinated a coalition of NGOs, called the "Chitmang Hills Anti Mining Forum" in order to run a campaign against the proposed coal mining. Significant data on elephants as well as maps generated as part of the Sir Peter Scott Fund / Foundation Ensemble supported project were used as part of the anti mining campaign. Thus the project has already directly contributed to an active conservation by enabling the anti mining campaign.

Several prominent local NGOs joined the coalition in order to orchestrate an anti mining campaign. The campaign included public education, lobbying with political leaders, grassroots mobilisation and legal action. Through a combination of these approaches, it has been possible to have the mining attempt stymied, at least in the short run. We will continue to keep a watch to ensure that this pernicious attempt is not revived.

A more lasting solution to the problem of illegal mining within the state will have to be found. This is in fact most crucial for the preservation of elephant habitats in the region. The extensive habitat destruction that mining unleashes is completely unsustainable from the point of view of long term persistence of elephants in the region. Samrakshan along with its local NGO partners is working towards implementing such a long term solution in the state.

V. NEXT STEPS

The next stage of the project will refine the rough profile of spatial distribution of elephants that we now have with us. This will be possible as a result of the capacity building that the project has undertaken during the first 12 months. We now have a cadre of trained locals who are able to collect data rigorously and faithfully. This enables us to cover much more ground than would be possible with formal researchers. The next few months till the close of the project in June 2009 will be devoted to tracking elephants in an attempt to understand precise parts of the landscape that they use across different seasons. Essentially, we will attempt to track herds as well as solitary animals to determine specific parts of *Aking* lands, the Baghmara Reserve Forest and the Balpakram National Park that these animals are using. This will also help us understand seasonal variation in the use of different parcels of land by different elephant herds as well as individual animals.

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