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BRINGING BACK MANAS

Conserving the forest and wildlife of the Bodoland Territorial Council

Eds: Vivek Menon, Rahul Kaul, Ritwick Dutta, NVK Ashraf and Prabal Sarkar

Wildlife Trust of India

10 Years in Service of Nature

Department of Environment & Forests, Government of Assam

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CHAPTER IX

Bringing back rhinos (*Rhinoceros unicornis*) to Manas National Park

Rathin Barman, Anjan Talukdar, Murali Pai, NVK Ashraf, Bhaskar Chaudhury and Vivek Menon

While the Greater Manas concept was being conceptualized, groundtruthed and prepared for protection, it was important that the biodiversity resources of Manas National Park that had been in the past laid waste by poaching be restocked. Of these, the greater one horned rhino (*Rhinoceros unicornis*) being an endagered species was a prime candidate for restocking. The species was once found in large numbers in Manas but had, in the recent past been extirpated.

The population of rhinos has seen a seesaw scenario in the park. The famous naturalist E.P. Gee estimated 15 rhinos in 1966 (Spillett, 1966). This grew to 40 in ten years time in 1976 (Laurie, 1978). However, Sanjoy Debroy, the veteran forest officer estimated 75 rhinos in 1977 and the official number fluctuated from that to 100, till the early 1990s. Although 100 was the upper estimate in 1990, the lower estimate was between 80 and 85 animals. At the peak of their distribution, they were found in Gurchara, Rahang, Gudabil, Sarpuli, Lathajhar, Biati, Panbarijhar, Raisinghlazhar (all under Bansbari range), Sinkangandha, Bilattari, Makibaha, Sanmari nallah, Koraibarizhar, Bansbari nallah (all under Bhuyanpara range) and Sadan nallah and Gabharukhunda nallah (all under Panbari range).

Poaching then hit the park and although only 40 odd numbers were recorded as poached in the first few years of the 1990s, by 1995 the forest department estimated that as few as 12 animals could be left (Menon, 1996). The sharp fall in rhino numbers is attributed to civil unrest in Bodoland (see previous chapter). Most of the recorded poaching was only from the Bansbari range and no records were kept in the other two ranges due to the absence of forest personnel for many years. Several biologists reported that no rhino was left in Manas although local reports of few surviving rhinos persisted. Recent reports from park authorities are that a few rhinos had survived the massacre in the Bhutan foothills and are slowly showing signs of returning to the park. Even the most optimistic official will however not put a number at more than six and it is a fact than there is no recorded proof of rhino sighting in Manas for the last 10 years.

In 2006, the Wildlife Trust of India (WTI) and the International Fund for Animal Welfare (IFAW) in collaboration with the Assam Forest Department and the Bodoland Territorial Council started a rehabilitation and reintroduction project with three orphaned rhino calves. If one is to learn from the lessons of Jaldapara, it is easy to surmise that even a small population of rhinos in Manas, or in the future in Laokhawa would take several decades to reach its past numbers. The only known method to shortcut this is to reintroduce large numbers of rhinos from other viable populations in Assam. Rhinos have been successfully reintroduced into the Dudhwa National Park in 1984 (Sale and Singh, 1987). Given that Dudhwa has taken 20 years to reach 20 rhinos and Jaldapara stayed in the 20s for over 20 years (but has since then shown a dramatic upswing), it can be theorized that a founding population for restocking should be minimum of 30 odd (three dozen) animals. However, the first step towards such a restocking was to test the area to see if the factors that let to the extirpation of the animal have disappeared in the first place and see if the situation now is favourable to restocking. The use of orphaned and rehabilitated calves in preparing the ground is therefore a careful strategic step in bringing back the rhino to Manas. These rhinos, it was strategised, would test the local will to preserve the species, anti-poaching readiness and also habitat suitability. Therefore the governing

council of the Centre for Widlife Rehabilitation and Conservation (CWRC), chaired by the Forest Commissioner of Assam and having as members the Chief Wildlife Warden of Assam and the two park directors as well as representatives of WTI, recommended that orphan calves from the centre in Kaziranga be used for this purpose. The Deputy Chief Executive Member of BTC, Sri Kampa Borgoyari, welcomed this move.

The CWRC was established in 2002 in Panbari reserve forest near Kaziranga National Park with the objective of rehabilitating wildlife that get displaced especially during floods. The greater one horned rhino is one of the several species of wildlife that get displaced due to floods.

Two major reasons for the displacement of rhino calves in Kaziranga National Park have been the floods and injuries caused due to unsuccessful predation. While five of the 13 cases brought to CWRC were injured due to predation, four cases could solely be attributed to the floods. Since most of the calves that withstood predation were seriously injured, none of them survived in spite of medical care.

As per the rhino rehabilitation protocol developed by WTI in consultation with experts on this subject (Ashraf *et al*, 2005) the calves are milk-fed till they are 18 to 20 months of age and subsequently moved to the release site for acclimatization in a confinement (*boma*). As per the WTI protocol on the rehabilitation of rhino, prepared under the IUCN guidelines on reintroduction, the rhino would spend at least two years in the enclosure before being let out to the wild (Annexure 35). The animals graduate into adulthood in the very same place they are going spend the rest of their lives.

A site selection team headed by the Chief Wildlife Warden of Assam identified the Kuribeel area in Bansbari Range of Manas National Park as the ideal location for establishing the rehab station. The presence of few watchtowers nearby ensured that security to the rhinos could be in place 24 hours. Since the plan was to move the rhinos in trucks, it was also important that the *boma* is located along an existing forest camp road.

1. Construction of "*boma*" at the release site

The construction of the enclosure (*boma*) at Kuribeel area in Manas National Park began in November 2005 with vegetation clearance and demarcation of the area for grouting poles for power fencing. The *boma* is a twin-paddock of roughly 25,000 sq.m. each, connected by a narrow strip of corridor that would facilitate the transfer of the rhino from one section to another (Fig.124). The

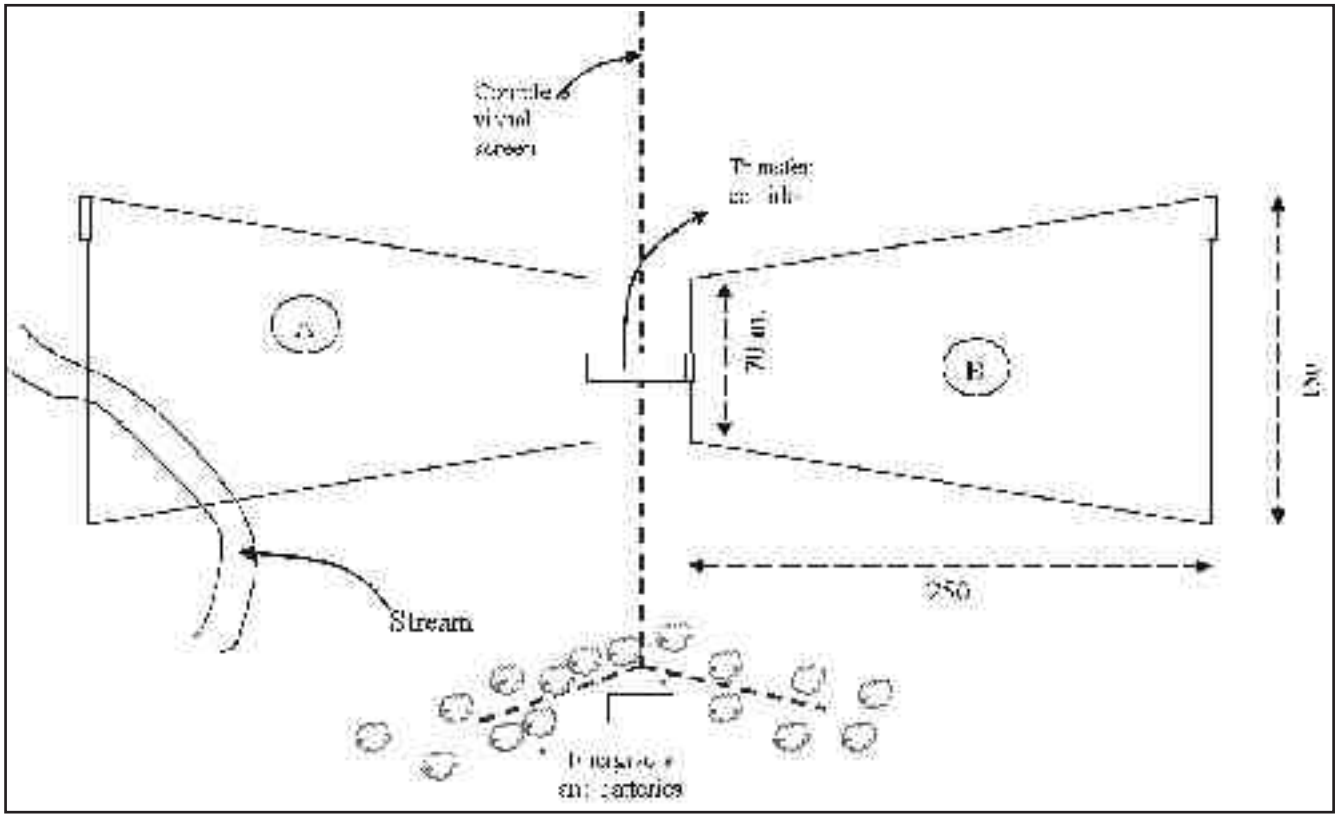

Fig.124 Draft layout of the proposed Rhino *boma* in Manas National Park

twin paddocks were deemed essential as a backup option if anything went wrong with one paddock. Wild elephants are known to damage power fences and a standby enclosure was considered essential to deal with all possible emergencies. Moreover, the rhino could be moved to the other paddock if one zone gets overgrazed.

The power fence, run entirely by solar power, was installed by Suraksha Energizers, Bangalore. All activities including grouting of poles and installation of the power fence was completed on the 15th of January 2006. Since the beel (water body) passed through only Zone "A", the idea was to house the rhino here during the summers and move the animal to Zone"B" during monsoons when water for wallowing is not a must. This would also allow any repair works to be carried out in Zone "A".

2. Relocation of the first rhino

A hand-raised three and a half year old female rhino calf, undergoing rehabilitation at CWRC was relocated (Fig.125) from the centre to the Rhino Rehabilitation Station in Manas National Park in February 2006 for eventual reintroduction to the wild. The calf was barely three to four months old when rescued from floods in 2002.

Rhinos have been translocated worldwide, from wild to wild and from captivity to wild (Sale and Singh 1987; Morkel & Kennedy-Benson, 2007). Successful wild to wild translocations of the greater one-horned rhinoceros has been carried out in Nepal and India for the purpose of reintroduction and the species' range extension. Though rhinos under rehabilitation have been quite commonly translocated to wilderness areas in Africa, this was the first time that a greater one-horned rhinoceros was rehabilitated in a protected area.

Design and fabrication of the crate

Literatures are available on the crate specifications for different species of rhinos (Suwal and Shakya, 2000; Morkel and Kennedy-Benson, 2007). Rhinos in India have been moved to far away locations in the past by road, and Guwahati zoo itself has done it few times in the past. The Guwahati zoo authorities recently shipped a rhino to Trivandrum Zoo in Kerala by road.

Fig.125 The rhino calf at CWRC, a few months before its relocation to Manas National Park

Considering the fact that local expertise was available in Assam itself, the Assam State Zoo was contacted for inputs on rhino crate design and fabrication. The zoo authorities provided an illustration, based on which a crate was made at the CWRC campus. The crate dimension (9x4x5.5 feet) was decided based on the morphometrics of the rhino calf. The crate was built on a strong foundation of six wooden frames firmly secured by nuts and bolts. The crate had a sliding door in the rear and a vertical folding door in the front that can also be used as a ramp when opened and laid down to ground level (Fig.126).

The rhino was radio-collared on the 20th of January 2006, almost a month before the actual relocation day. She was chemically restrained with Meditomidine hydrochloride, the drug of choice for such minor operations like radio-collaring in captive rhinos. Blood samples were also collected for screening against tuberculosis (Fig. 127). The entire operation lasted for about 40 minutes. Dr. Sharma and Dr. Dutta from Guwahati Veterinary College conducted the immobilization operation.

Preparations for crating

Soon after collaring, preparations began to habituate the rhino to the crate. Habituation began with both the doors open in the beginning and subsequently with the front door closed (Fig.128). The animal was fed inside the crate especially the concentrate mix, morning and evening. Soon the rhino got so habituated to the crate that it even began sleeping inside it. Habituation period which began after collaring on the 20th of January lasted until the day of the crating on the 20th of February.

Crating the rhino

In spite of a long period of habitation to the crate, the rhino felt suspicious of something and hesitated to enter into the crate on the scheduled day (20th of February, 2006). Every time the animal entered the crate, she would retreat back immediately. The team of veterinarians from Guwahati Veterinary College was ready to tranquilize and load the animal into the crate, should all the efforts to crate the rhino fail. A strong wooden sledge was already in place to drag the

Fig 126 The crate with the sliding door on the rear.

Fig. 127 Blood collection after radio-collaring

tranquilized animal into the crate (Fig. 129). Such sledge-like platforms are essential to move the rhino to the crate once the animal is tranquilized. In "wild to wild" translocations, captured rhinos are secured to such wooden sledges and dragged to loading sites using tractors (Sale and Singh, 1987; Suwal and Shakya, 2000).

Though crating exercise began the previous night itself, it could be achieved only on the 20th morning. The crating process itself was not without any setbacks. Soon after the door slid down, the rhino managed to kick the door off the sliding channel. The keepers managed to restrain the animal physically by inserting MS pipes through horizontal slits of the crate. Meanwhile veterinarians from Guwahati

Fig. 128 The rhino inspecting the crate and entering inside for food.

Fig 129 A wooden sledge was in place to move the rhino to the crate after darting.

Veterinary College stepped in and administered a long-acting tranquilizer (*Azaperon)* and the animal keepers simultaneously reinforced the sliding door with supporting poles of bamboo. By the time the drug could take its full effect, the rhino had managed to knock off a few wooden planks on the roof. Such damages to crates have happened during rhino translocation in the past and rhinos have been translocated at times with a nearly barren top. The firm front door, the crucial one in any rhino crate, bore the brunt of the onslaught. There was a small slit door on top meant for dropping fodder and placing buckets of water. This got damaged as it came directly in the firing line of the horn.

Though the basic frame of six vertical supporting frames was well secured by nuts and bolts, it was still decided to reinforce the crate by securing it with three L-angles around. This process took about three to four hours. The entire crate was then wrapped around with a netting to minimize visual contact with people around.

Loading the crate into the truck

Since no cranes were available locally, a recovery van was employed to drag the crate into the truck. The truck was already placed in a trench to bring the truck floor to the ground level. The crate had to be dragged for a distance of about 20 meters, but the process took a long time due to delays at different stages of the exercise (Fig.130). It took about 45 minutes to bring the crate near the truck. It then had to be turned 180^{o} to ensure that the crate is loaded with the front side of the animal (i.e. the side with the ramp-door) facing the rear side of the truck. This took almost an hour since the recovery van had to position itself in the opposite side to turn it around. The space available in the premises was also not adequate to accomplish this task in quick time. The last hindrance came while actually loading the crate into the truck. The crate could not be pushed as the truck floor was about three to four inches above the ground level. The crate had to be lifted and dragged, for which the recovery van had to be placed on the other side of the truck. This process again took an hour and as a result the entire loading operation took three hours. During the entire operation, the rhino was lying on the floor due to the effects of the long-acting tranquilizer. The effects of Azaperon is known to last for up to eight hours and in fact no additional dose was required during the entire transportation.

Fig. 130 The crate being lifted by the recovery van into the truck.

With the Chief Wildlife Warden of Assam Mr. M.C. Malakar flagging off the transportation, the truck left CWRC premises at about 7.00 PM, about two hours later than the scheduled time of departure.

Transportation of the rhino

An armed guard from the Forest Department, a veterinarian and two animal keepers of WTI traveled in the truck. A convoy of four vehicles comprising a team of veterinarians from Guwahati Veterinary College, WTI staff and personnel from the Forest Department also accompanied the truck. The CWRC project leader Mr. N.K. Vasu and WTI Trustee Prof. P.C. Bhattacharjee, also traveled with the team. The vehicle would stop every two hours to facilitate a detailed inspection of the animal. The animal was sometimes seen standing up and eating the fodder dropped through the trap door.

The truck traveled via Tejpur and Mangaldai, and reached Manas on the 21st morning around 9.30 AM. The last 22 km stretch from Barpeta road to Bansbari took nearly two hours because of the poor condition of the road. The truck also had to negotiate a riverbed and a stream-bed at two places (Fig.131). These stretches could be negotiated without any major hiccup as it was the right season to travel along that route. Any incidence of heavy showers the previous days would have made the task impossible.

Release of the rhino into *boma*

The only smooth part of the entire translocation operation was the release. Manas National Park authorities, headed by Director Mr. Abhajit Rabha and Mr. Ritesh Bhattacharjee, were already there at the release site in Kuribeel to receive the rhino. Mr. Kampa Borgoyari, Executive Member, Department of Environment and Forests , Bodoland Territorial Council flagged off the release of the rhino from the crate.

The truck was reversed into a trench dug close to the enclosure (*boma*) gate. The rhino, resigned to its fate inside the crate, showed no interest in getting up when the front ramp-door was opened. The animal appeared to be dull but got up soon after a dart of medicine was fired at her. She took nearly 30 minutes to come out as she kept exploring the surroundings by sniffing in the air (Fig. 132). To facilitate a smooth release and make the rhino feel "at home", four to five gunny bags of the rhino's dung, brought on the previous day from CWRC, were already placed in piles inside the boma.

There were large groups of onlookers, especially people from the media to witness and document the event. There was that remote possibility of the rhino getting excited and running amuck and breaking open the power fence. Armed forest guards with at least six elephants were lined on the two sides of the *boma* to discourage the rhino from

Fig 131 The truck carrying the rhino negotiating a stream bed before reaching *Kuribeel*.

Fig. 132 Release of the rhino into the boma in Manas National Park

darting off towards the power fence. The veterinary team was ready to face the emergency should the animal break open the fence. However, nothing of that sort happened as the animal, soon after getting out of the crate, rushed to the middle of the enclosure.

Lessons from the first translocation

There is scope for improvement in every undertaking, especially in such rare activities like wildlife relocation. Several lessons were learnt during this first translocation exercise:

- Reinforcing of the crate with L-angles wouldn't have been necessary if the horizontal planks had been nailed to the basic frames from inside.
- The channel for the sliding door should be deeper (at least an inch) and also padded with a thin metal lining to facilitate a smooth sliding of the door once the trigger is released.
- The roof height of the crate should be increased by at least six inches to make it beyond the reach of the rhino.
- More attention to be paid during the habituation process. No alterations are to be made to the crate during the last few days.
- At least two hours could have been saved if a crane had been employed for the purpose of lifting and placing the crate. The limited space within the CWRC premises also made maneuvering of the vehicles rather difficult. Cranes that can lift 3 tons of weight should be employed for loading large rhino calves in future.

3. **Relocating two more rhinos**

Following the transfer of a rhino in February 2006, two more rhino calves were moved from CWRC to the Rhino Rehabilitation Station in Manas National Park on the 28th of January 2007.

The operation was conducted in the presence of the Chief Wildlife Warden and Directors of Kaziranga and Manas National parks. As per the directive of the Ministry of Environment & Forests, Dr. Parag Nigam of Wildlife Institute of India was also present to take part in the operation.

Fig 133 WTI Veterinarian recording the pulse of the rhino

Radio-collaring & disease investigation:

One month before the day of transfer, both the rhinos were chemically restrained at CWRC for radio-collaring and collection of clinical samples for disease screening. The anaesthetic procedure was conducted under the supervision of Dr. Bupen Sharma and Dr. Bijoy Dutta of Guwahati Veterinary College. Ketamine-Meditomidine-Ditomidine combination was used for the procedure. The operation was conducted on the 28th of December 2006 (Fig. 133).

Crates: The crates used this time were slightly different from the one used for the previous relocation operation. Three major modifications were done to the old crate: (i) the height was increased by eight inches to keep the horn away from striking distance, (ii) the sliding door channel was not only made deeper (1 inch) but also reinforced with a lining of GI plates to prevent the door from slipping out, and (iii) a one meter long channel of L-angle above the sliding channel was also in place to retain the sliding door in vertical position and guide it along the channel while crating (this jutting angle was subsequently cut once the crating was completed).

Since even well-planned schemes can go awry when there is imperfection in the division of labour, different teams were assigned the following tasks:

(i) Crating the rhinos
(ii) Loading and unloading
(iii) Tranquilization and health monitoring
(iv) Media relations

During the crating of the first rhino, two people had to be on top of the crate to guide the door through the channel and two behind the crate to unleash the rope (Fig. 134). Last minute changes were also made to crate in the first instance. These were probably the reasons why the rhino hesitated to enter the crate. This time the entire trapping operation was "remotely" controlled with no one standing near the

Crating: The rhinos were sharing the same paddock till they were separated to facilitate crating them individually. Soon after their separation, they were habituated to their respective crates for more than two and half months. During the first rhino move, the habituation period was not more than a month. Like in the earlier occasion, the rhinos were invariably fed inside the crate, be it fodder or concentrate. The rhinos became so habituated that they often slept inside the crate.

Fig 134(a & b) Crating techniques employed in 2006 and 2007

crate. A long MS pipe, hooked on to the sliding door on one side and to a long rope on the other and supported in the middle by a wooden hinge/fulcrum, acted as the release mechanism (Fig. 134).

As soon as the concentrate mix was placed inside the crate, the rhinos walked in without much ado. They had been starved off fodder and concentrate the previous day evening. The keepers moved to a nearby location behind the crate and took their positions near the rope that is connected to the sliding door. The rope was severed with a dagger at one stroke and the door automatically came down the channel without any hindrance.

None of the untoward incidents experienced during the previous year's crating happened this time. The rhinos did become frantic and began knocking the front door and violently shaking the entire crate. Soon after crating, both rhinos were given a shot of the long-acting sedative, Azaperon and the animals calmed down within ten minutes of administration of the drug. The crating operation began at 8.30 AM and was completed by 9.30 AM. The animals remained in the crate until they were loaded into the truck at about 2.30 PM. The rhinos readily consumed the fodder given to them during this time.

Like the crating and loading operation at CWRC, the unloading and release process at the release site in Manas National Park was also uneventful. Both the rhinos quietly walked out of the crate within minutes of the door being opened. Earlier, dung samples of both the rhinos were scattered insite the *boma* in the vicinity of the crate to encourage the rhinos to come out without any apprehension. During the first release, the rhino not only took nearly 30 minutes to come out of the crate but also darted into the grasslands in the middle.

Loading: In the first rhino relocation exercise, the loading process took nearly three hours as a recovery van was employed to drag the crate on the to truck. This time the crates were lifted and loaded into the respective trucks using a crane (Fig.135). The entire operation was over in 45 minutes. Loading began at about 2.30 PM and was over by 3.15. Both the crates were loaded with the ramp side of the crate towards the rear side of the truck. i.e. the rhino facing the rear, so as to facilitate easy release into the *boma* upon reaching the release site in Manas National Park.

Fig. 135 A crane used to load the crate with rhino for relocation into Manas NP

Release: Two days before the arrival of the rhinos, the older rhino had been confined to section-B of the twin *boma* . Slight modifications had to be done to the *boma* to facilitate this transfer and confinement. The plan was to release the two new arrivals into Section-A, and mingle all the three after three to four days of habituation. One by one, the trucks were reversed into a trench dug close the enclosure gate (Fig. 136). Unlike the first rhino last year, these two rhinos were up on their feet even before the door was opened.

Fig 136 Rhino walked out of the crate in no time

Post-release: Soon after release, both the rhinos were seen nibbling blades of grass. The day after the release, both were seen together, moving around and exploring every part of their new home (Fig. 137). One animal keeper from CWRC was stationed at the rehab station for a month to train the incumbent keeper on the husbandry practices to be followed. The animals received the concentrate mix every day for a period of 30 days. Thereafter, the rhinos were left on their own with only salt-licks being given as supplement.

Fig 137 Released rhinos exploring the habitat inside the *boma*

4 Relocating the fourth rhino

As per the discussion and decision taken in the governing council of CWRC on 8th of November 2007, chaired by the Commissioner and Secretary, Environment and Forest, Government of Assam and subsequent permissions from Chief Wildlife Warden, Assam and Ministry of Environment and Forest, Government of India, a female rhino calf of about two years of age was relocated on 23rd February 2008 from CWRC to Manas National Park. This was the third such translocation of rhino calves from CWRC, Kaziranga to Manas National Park since January 2006.

To facilitate the accomodation of the fourth rhino in Manas, Governing Council advised the project management to increase the area of the *boma* before its translocation. In January 2008, about 19 acres of grass land was added towards the northern side of existing *boma,* thereby increasing the total area of the pre-release site to 33.35 ha. The three sub-adult/adult rhinos were confined to Zones B & C so that Zone A could be reserved "exclusively" for the fourth rhino (Fig. 138).

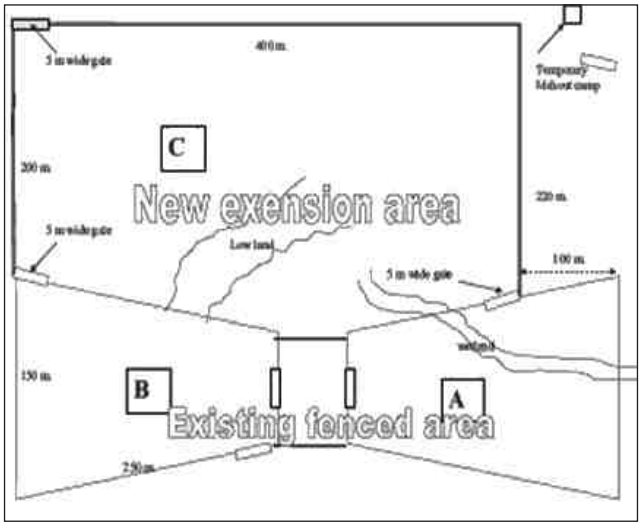

Fig. 138 Schematic diagram of modified pre-release site at Manas National Park.

Sledging and Crating

Unlike the three rhinos moved in 2006 and 2007, the crating of this calf was different in many ways. Since she was wild caught and not hand-raised at the CWRC, the question of habituating the rhino calf to a crate did not arise. The animal, housed in a paddock, was darted and drugged to the crate.

In January 2008, a month before the relocation day, the animal was chemically retrained for carrying out disease screening procedures for Tuberculosis and other minor infectious diseases. The animal was also radio-collared at the same time. This was done with the help and expertise of the College of Veterinary Science, Khanapara, Guwahati. A VHF collar was fitted on the animal for post-release monitoring at Manas (Fig. 139).

Fig. 139 The fourth rhino calf under sedation at CWRC

On the day of relocation, on the 23rd of February, 2008 the calf was chemically restrained by firing a dart from a distance of about five meter, with a combination of 25 mg Meditomedine hydrochloride and 200 mg Ketamine hydrochloride. The tranquilization team was led by Dr. B. Sarma and Dr. B. Dutta of the College of Veterinary Sciences, Khanapara, Guwahati. WTI veterinarians Dr. Anjan Talukdar, and Dr. B. Choudhury assisted the experts during the process. Once sedated and secured to the sledge, the calf was dragged in the crate and then loaded into the truck using a crane (Fig. 140). The exercise was witnessed by senior forest department

Fig. 140 Calf being sledged to the transport crate

officials and representatives from IFAW. The truck reached Manas on the early morning of 24th February and the calf was released into the pre-release site by the Field Director of Manas National Park. Unlike the last relocation, this calf was released into a separate stabilization zone created with wooden poles inside the electric fenced *boma* (Fig 141). The plan is to hold the calf at this stabilization zone for two months and later release it into Zone-A of the *boma*. The calf was provided concentrates in the stabilization zone on a daily basis. She will spend another two years in the pre-release enclosure before being considered for release.

Fig. 141 The rhino calf being directed to the stabilization zone within the *boma.*

All the four rhinos moved to Manas have been females. The fifth rhino calf rescued is a male and he will be moved only in 2009. The first rhino is almost five years of age, and considering the fact that rhinos reach sexual maturity at this age, it is important to socialize her with a male at the time of her release from the *boma*. She has already undergone two years of *in-situ* acclimatization and and is ready for release along with the other two females.

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