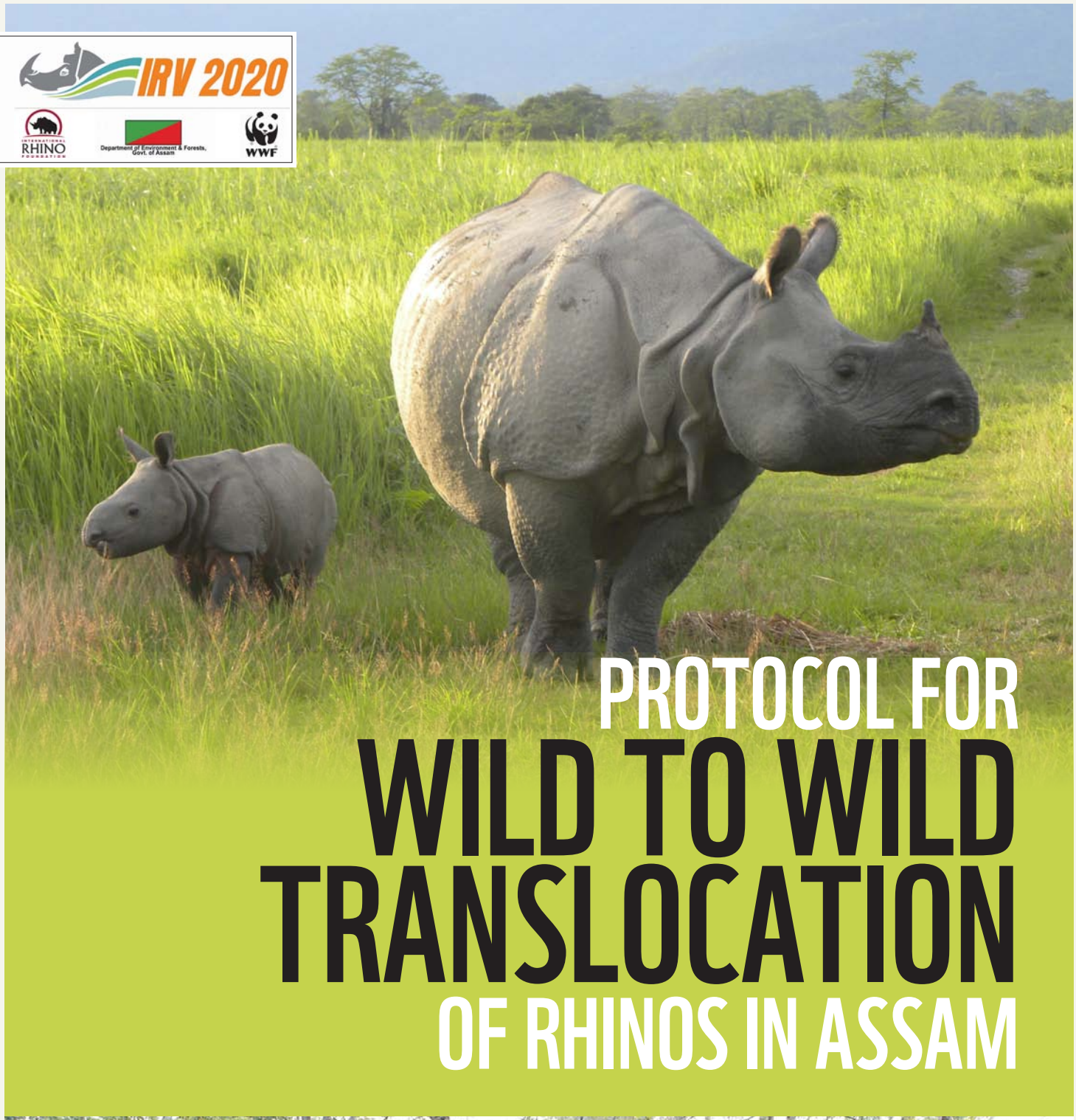
IRV 2020

RHINO FOUNDATION

Department of Environment & Forests, Govt. of Assam

WWF



PROTOCOL FOR WILD TO WILD TRANSLOCATION OF RHINOS IN ASSAM

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OF RHINOS IN ASSAM

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Translocation Core Committee (TCC) Assam

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FOREWORD

I am happy to learn that the Translocation Core Committee (TCC) set up to execute the rhino translocations under Indian Rhino Vision (IRV) 2020 in Assam has taken the initiative to prepare this important document for Assam to execute rhino translocations. The rhino translocations carried out in Assam during 2008 to 2012 has been taken as cases of learnings to prepare this document by obtaining inputs from various experts during 2014 to 2017 and also by adapting the IUCN standards to suit the local specifications. The document has been reviewed and has been adopted during the 12th meeting of the Rhino Task Force held in the office of the Principal Chief Conservator of Forests (Wildlife) Assam on 20th December 2019. The IRV2020 program in Assam has contributed towards the revival of the Manas National Park in Assam and in successfully re-introducing a breeding rhino population. The rhino re-introduction program have been also boosted by the rehabilitation of rhinos in the park rescued from various parts of Assam from time to time.

The rhino translocation program in Assam under IRV2020 has been successfully executed through the voluntary contribution and support from various experts and individuals and I take the opportunity to thank each one of them for their unique contribution and look forward for similar support in the future as well. I take this opportunity to thank the Government of Assam who have set up the Rhino Task Force in Assam who in turn designed the Indian Rhino Vision 2020 program as a collaboration between the Assam Forest Department, WWF India and IRF and subsequently supported by a host of other donors and partners. I would like to appreciate the contribution of the various officials of the forest department, other government departments, officials from the other institutes, non-government agencies, community based organizations and individuals without whose contribution the translocations could not have been carried out with success and this protocol would not have prepared. All the members of the Translocation Core Committee and the sub teams are highly appreciated for putting all of these together.

I am sure this protocol will be of great help in planning and executing rhino translocations within the state of Assam and also in other spaces as well. This document will also be useful as a guide for future generations to undertake similar works.

(M.K. Yadava)
Addl. PCCF-Wildlife & Chief Wildlife Warden, Assam and
Chairman Rhino Task Force, Assam

ACKNOWLEDGEMENT

The Rhino Translocation Core Committee (TCC) would like to acknowledge the contribution of individuals and organisations who were part of the successful translocations undertaken as part of the Indian Rhino Vision 2020 Program. We thank the experts and individuals involved in the program who have contributed voluntarily in this program. The Committee would like to express its gratitude to all the donors and Government agencies specially the Government of Assam, WWF & IRF for providing funds and support to the Indian Rhino Vision 2020 Program since 2005. The experiences gained by experts through translocations have been succinctly put together in the form of this protocol for conducting wild to wild Rhino translocations in Assam. The preparation of this document has taken a long time, beginning with a draft in 2014 to taking a proper shape in 2017. It has since received a number of reviews and has been finalized to be adopted in December, 2019.

The Government of Assam in 2004 took this landmark decision to launch a dedicated program for rhino range expansion in the State. We offer our sincere gratitude to all the officials for taking this path-breaking decision to undertake initiatives for rhino conservation in the State. We offer our sincere thanks to the Rhino Task Force, constituted by the Government of Assam, for designing this rhino range expansion program popularly known as IRV2020 in the State in collaboration with WWF India and IRF and for trusting the TCC to execute rhino translocations successfully in the State.

We are thankful to the people of Assam for supporting the program particularly communities residing in villages adjoining Manas, Kaziranga and Pobitora without whose support it would not have been possible to execute this program. All the staff of the Forest Department including the trained elephants, mahauts and ghasi deserve a special mention without whose contribution rhino translocation and re-introduction would not have been possible. All the senior officials of the department led by the Chief Wildlife Wardens and PCCF & HoFFs since 2005 need a special mention for their full support and advise to execute this program. Special thanks to the collaborating agencies like the Assam Police, Animal Husbandry and Veterinary Department, District Administration, College of Veterinary Sciences, Khanapara, Guwahati, various NGOs and CBOs who have extended necessary support for the execution of this program in Assam. Most importantly we extend our thanks to the Bodoland Territorial Council authorities and Government of Assam for their support towards the execution of the program.

Special thanks to all our donors WWF, IRF, USFWS and others who have contributed financially and technically for the execution of the IRV2020 program in Assam.

BACKGROUND

The 'Task Force for Translocation of Rhinos within Assam' was constituted by the Government of Assam vide notification No. FRW.24 / 2005 / 15 dated 30th June, 2005. Commonly referred to as the 'Rhino Task Force (RTF)', the team undertakes range expansion for the species by identifying and populating potential rhino habitats/Protected Areas (PAs) through wild to wild translocations.

RTF identified the need to create a new viable breeding population across the state, to ensure a secure future for the rhinos. For this, an enabling environment for population growth was required. A need was felt to distribute their population from the two specifically concentrated areas of Kaziranga National Park (NP) and Pobitora Wildlife Sanctuary (WLS), and secure them from any stochastic events affecting these areas.

In November 2005, RTF formulated and designed the 'Rhino Range Expansion Programme' (REPA) in Assam – a joint collaboration between the Assam Forest Department, WWF-India and International Rhino Foundation (IRF). Popularly known as the 'Indian Rhino Vision (IRV) 2020', it is a multi-partner programme where the Assam Forest Department and Government of Assam joined hands with international organizations and local communities. The programme is also supported by the Bodoland Territorial Council (BTC), US Fish and Wildlife Service (USFWS) and many other local, national and international organizations.

IRV2020 aims to attain a population of 3000 wild rhinos by the year 2020 across seven of its protected areas in Assam. The larger goal is to populate the potential rhino habitats identified as the Manas NP, Dibru Saikhowa NP, Laokhowa WLS and Burachapori WLS with a viable population of rhinos through wild-to-wild translocations from Kaziranga NP and Pobitora WLS.

The on-ground translocation of rhinos is one of the most critical components for the success of the IRV2020 programme. A dedicated team, namely the Translocation Core Committee (TCC), has been set up by the Assam Forest Department with the Chief Conservator of Forest-Wildlife as the Chief Operations Officer. The Committee includes members from both within and outside the forest department.

In the first phase of the translocation programme, the RTF and TCC were successful in the re-introduction of 18 rhinos to Manas NP. Plans are also in place to translocate a founder population of 10 rhinos to Burachapori-Laokhowa WLS from Kaziranga NP. Following this, six rhinos will be added at a later stage from the Pobitora WLS to make the population viable and genetically healthy.

Translocation of rhinos is a specialized operation that requires a strict protocol to maintain high standards during the operation. This protocol document has therefore been developed to provide a holistic view capturing all on-ground experiences gained on the subject, till date, in the state of Assam. Similar operations planned elsewhere can also benefit from this document prepared from actual field experience.

PROGRESS

Under IRV2020, the TCC has successfully conducted wild-to-wild translocations of 18 rhinos to Manas NP, i.e. eight from Kaziranga NP and 10 from Pobitora WLS from 2008 to 2012. Six sub-teams comprising various subject experts were ably supported by the frontline staff of areas from where the rhinos were selected and target PAs, who played a crucial role in the translocation process.

Table 1: Details of the first phase of wild-to-wild translocation of rhinos to Manas NP

S. No.	Batch	No. of Rhinos translocated to Manas NP	Place of capture	Date of release
1	1st Batch	2	Pobitora WLS	12/04/2008
2	2nd Batch	2	Pobitora WLS,	28/12/2010
3	3rd Batch	4	Pobitora WLS	18/01/2011
4	4th Batch	2	Pobitora WLS	9/01/2012
5	5th Batch	4	Kaziranga NP	20/02/2012
6	6th Batch	4	Kaziranga NP	12/03/2012

Following the translocation of rhinos to Manas NP, the park has been listed among the rhino-bearing areas in Assam. No rhinos were recorded in the PA since 2005. As on 6 March 2015, the Manas NP is home to 30 rhinos which includes 11 calves born under the Rehabilitation Programme.

In 2005, when the programme was designed, there were only three rhino-bearing PAs in the state, viz. Kaziranga NP, Pobitora WLS and Rajiv Gandhi Orang NP, with a total rhino population of about 2000. As per the 2012 census, rhinos are found in four PAs of the state with a total population of 2505 individuals.

RATIONALE:

The rhino population in the PAs of Assam is growing steadily over the years. In order to provide rhinos with better chances of survival, and prevent the effects of any stochastic events, it is necessary to provide them with more habitats through translocation to potential PAs. The translocation of a rhino under wild conditions is a specialized and complex process since all activities need to be well scripted in order to achieve a successful outcome and to minimize the chances of any unexpected situations compromising the safety of both the animal and the people.

TRANSLOCATION PROTOCOL:

Rhinos in Assam are translocated for conservation benefit of the species. Such translocations aim at improving the conservation status of the focal species, locally or globally, and/or restoring natural ecosystem functions or processes. Translocations can benefit the restoration of a species either through reinforcement or reintroduction. In the case of Assam, presently reintroductions are attempted in areas where the species have gone locally extinct due to varied reasons.

The process and activities involved in a translocation can be divided into three distinct stages –

a. Preparatory/Planning stage
b. Implementation (capture-transport-release) stage
c. Post-release stage

In Assam, the 'Translocation Core Committee' (TCC) has been formed to co-ordinate the translocations, including the post-release monitoring. The TCC is headed by a person not below the rank of a Chief Conservator of Forests who is responsible for conducting the translocations.

A. Preparatory Stage: The first step in any process involves detailed planning covering the minutest of details for the successful implementation of the actual translocations. The concerned party needs to:

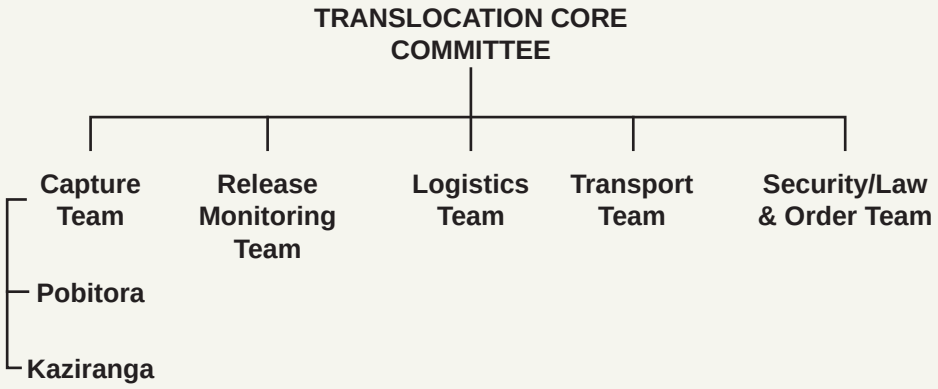
1. Obtain necessary permissions and complete all formalities for conducting the translocation exercise. As per the Wildlife Protection Act 1972, section 12, permission has to be obtained from the Chief Wildlife Warden to effect a capture and translocation operation. Also, under Section 12, since the species is classified as Scheduled I, permission has to be taken from the Ministry of Environment, Forest and Climate Change, Government of India. In addition, if the area concerned comes under the category of tiger reserves notified under section 38V, necessary approval needs to be obtained from the National Tiger Conservation Authority (Section 38 O).
2. Identify different logistical and technical requirements needed for carrying out the translocations under prevailing and anticipated conditions. The final list of logistic requirements will depend on the actual ground condition of the capture site, capture procedure to be adopted, transport type to be used, distance to be covered from site of capture to release, etc.
3. Identify all expertise available within the department and partner organizations to undertake various activities related to capture, transport, release and monitoring of rhinos during the translocation operation.
4. Identify budget needs, assess its availability and allocate funds accordingly. Adequate funds are to be allocated not only for site preparation and actual translocation of the rhinos, but timely and regular provisions are also to

be maintained for the long-term regular monitoring of the rhinos and to ensure adequate security in the new habitat.

5. Assess the preparedness of the target site, in terms of habitat, security for the translocated rhinos, human resources and funds available for regular monitoring. Security audits are to be conducted both prior to and after the translocation of the rhinos to maintain protection standards and to gear up to emerging situations.
6. Prepare a detailed plan of operation and timelines; and obtain approval from the Chairman, Rhino Task Force and Chief Wildlife Warden, Assam for translocation of rhinos.
7. Conduct pre-capture rhino-monitoring exercise at capture sites, viz. Kaziranga/Pobitora for identification of probable individuals for capture, and the tentative site of the capture operation.
8. Undertake community interactions for support, and information sharing at the capture and release locations.
9. Undertake trainings for the staff enlisted in the post-release monitoring and protection of the released rhinos.
10. Form sub-teams, as identified below, for the translocations; and assign roles and responsibilities.
11. Co-ordinate with the relevant line departments, such as the District Administration, Police, Veterinary and Health department, for their support and help.

In view of the aforementioned activities to be undertaken during a translocation operation, the following necessary execution teams are identified::

Chart 1: TCC and sub-teams



CAPTURE TEAM

Pobitora WLS and Kaziranga NP are the two source areas for rhinos in Assam. The very first step for initiating the translocation process is to form the various functional teams. One such team is the capture team for each of the PAs which will be headed by the senior-most forest officer (DFO or Director) in-charge of the source site. The capture team will have a strong and experienced veterinary sub-team which will include experts from the College of Veterinary Sciences, Khanapara, and the State Veterinary and Animal Husbandry Department. These specialized members will be supported by staff from the capture PA during the capture process with departmental elephants and wireless equipment. The capture team will be responsible for planning and executing all activities related to a successful capture of the rhinos. It will include making arrangements for necessary security measures with the Assam Police and District Administration. The team will have at least one person as a locator and identifier of rhinos to be captured. The selected person should be well experienced in working with the species. There will be one identified person for fitting the radio collars, preferably with some experience.

The experienced members of the veterinary team will be present throughout the translocation operation, from capture to release, to offer necessary support and for regular health monitoring of the captured individual.

TRANSPORT TEAM

Following the capture, the animal needs to be transported from the site of capture to the release site. The transport team will preferably be headed by an officer not below the rank of a Conservator of Forests, who will be responsible for the safe transport of the captured animal, as well as the journey of the accompanying team members in co-ordination with the Assam Police. The transport team will be supported by the logistics team in terms of provision of vehicles and equipment necessary to ensure a successful and safe transport of the captured individual from the site of capture to that of release. The team will be responsible for arranging the road security and clearance in co-ordination with the district administration and Assam Police. The transportation of the crated animal will be normally done in trucks moving in a convoy with proper security in place. The movement will be steady, not exceeding speeds above 40kms per hour. The team will also ensure regular health monitoring of the captured animal, at an interval of 1 hour or as found necessary by the lead veterinarian.

RELEASE TEAM

The release team will be formed in the target PA and will be headed by the

senior-most forest officer in charge of the PA. The team will receive the transport team with the rhino, and will provide necessary support for smooth transport of the animal to the exact location of release. The release team will undertake all activities related to the release of the rhinos; including preparation of the release ramp, observation towers, arrangement of trained elephants for post release monitoring, etc. They are also responsible for ensuring security cover for the release operations.

MONITORING TEAM

The monitoring team will be formed at the target PA (release site) and will be headed by the senior-most forest officer in-charge of the PA. This team will be responsible for ensuring long term monitoring of the rhinos in their new habitat and generating reports at an interval of three months along with monthly updates. Frontline staff will be formed into teams and trained to regularly monitor the rhinos using both modern technology (radio telemetry, etc.) and traditional methods (sign reading and physical observation).
The leader of the monitoring team will take the help of researchers and veterinarians to undertake the monitoring of the rhinos. The forest officer in-charge of the PA will be responsible for ensuring the protection of the released rhinos in the PA.

LOGISTICS TEAM

The logistics team will be responsible for making all arrangements for equipment (as per Annex-I), vehicles, food, accommodation, etc. involved in the translocation process at the sites of capture, release and during transport. This team will work in close co-ordination with all the other teams, and will be led by a person not below the rank of a Deputy Conservator of Forests operating from the Assam State Zoo. Appropriately designed crates, sledges and ramps to be used for the rhinos are some of the very vital pieces of equipment to be designed and constructed by the team. In addition, they will be responsible for arranging all tools and medicines necessary for the operation. Once the rhino is ready to be crated, the logistics team will go into action on the signal from the veterinarians/leader of the capture team. The team will utilize necessary machinery and manpower to put the sedated rhino into a crate and ultimately loading it onto a truck/tractor for transport. Similarly, once the truck reaches the release site, the team will make necessary arrangements of machinery and equipment to unload the crate and release the rhino in co-ordination with the release team. The logistics team will also keep equipment, skilled manpower and rescue gear in place to take care of any unplanned situations. .

SECURITY AND LAW & ORDER TEAM

The Security and Law & Order team's role is vital during the three days of actual action. This team has to ensure adequate security cover during the capture and release operations, and also during the transport of the rhino convoy. The security aspect is mainly handled with support from the officers of the Assam Police. The DGP of the state will be requested to identify a nodal person to offer all support to the rhino translocations.

COMMUNICATION AND PUBLIC RELATIONS TEAM

The Communications and Public Relations team will be headed by a person not below the rank of a Chief Conservator of Forests and will formulate communication strategies and interact with the media, public and VIPs. This team will be responsible for bringing out press releases, arrange press coverage of the event along with filming/documentation (including photography and video shoots) of the whole process. The role of this team is vital as they are responsible for informing the media and the outside world about the operation in its entirety, more so, since no media persons or any additional person other than the identified team members will be allowed to enter the site of actual operation. All other team leaders including the TCC will provide inputs and support to this team.

B. Implementation Stage: This stage includes locating the rhinos, capturing, transporting and then releasing the rhinos at their destination. The tentative operation schedule is as below:

Day 1 – Discussion among key team members and testing of equipment at Assam State Zoo. Transfer of logistics and equipment to capture site.

Day 2 – Capture team assembles at capture site (selected range) by noon and conducts mock drill along with a site visit for next day's capture; media briefing on the planned operation.

Day 3 – Capture operation starts early in the morning around 6.00 am and transport starts post capture, depending upon the journey time to the release point. Media briefing on the operation will be conducted at the capture range after the captured animal moves to its destination.

Day 4 – The rhinos are released in the early morning around 7.00 am. Post-release monitoring begins. Media briefing on the operation is conducted in a pre-identified area once the entire operation is completed successfully.

For better understanding of the activities to be undertaken, a mock-capture

drill needs to be done a day before the actual capture operation. This will also help in understanding the role to be played by each of the identified individuals taking part in the operations.

On the day of actual capture, locators are to move out in the select area at day break to identify probable rhino individuals for capture. Following this, a fully prepared veterinary and darting team, which stays on standby till information is received from the locators, will come into action. Once the rhinos are in a position to be tranquilized, the veterinary team selects the individual depending on its health condition and use the chemical immobilization technique. They observe the rhino till it is immobilized and comes to a complete resting position.

Once the rhino is on the ground, at least one of the veterinarians accompanied by an armed field guard will approach the animal to confirm the sedated condition of the rhino. On receiving the affirmative, the rest of the veterinarians will move to the site to give the sedated individual a safe resting position, and then carry out the health checks and body conditioning monitoring. The area will be cordoned off and guarded by frontline staff to ensure minimum interference. Later, at the release site, the veterinarians will also conduct ear notching on the rhinos as per existing internationally accepted standard for easy identification of the rhinos, and implant a microchip. The necessary parameters will be noted as per a pre-designed format (as per Annex–II) by the veterinarians, and blood samples will be collected and stored (as per standard protocol) for necessary testing and genetic profiling in a pre-identified laboratory. The radio collar team will then come into action, and will fit the radio collar at the neck, and test its functioning.

Once these are completed, the logistics team and other support members of the capture team will then begin work with sledges, ramps, crates, trucks, cranes and excavators. A small pit will be dug beside the sedated individual to place the sledge. Once this is done and the veterinary procedures are completed; the sedated rhino will be carefully rolled on to the sledge, secured by ropes, and slowly pulled towards the crate. The sledge will be properly aligned with the crate door and loaded with the help of a ramp by pulling the sledge with the rhino inside the crate. Once the sledge with the sedated animal is inside the crate, the crate door will be first partially closed and then fully closed after administration of the revival medicines by the veterinarians. Once the animal stands up, the crate doors will be fully secured and will be ultimately loaded on to a truck; to be kept in a shaded area. The crated animal will be watered and provided food at intervals as suggested by the veterinarians to keep it cool till the time of its release. Once the entire capture operation is completed, the capture team will hand over the charge of the animal to the transport team for transporting to the release site.

The transport starts in the afternoon and will move to the release site depending on the road and weather conditions. During transport, the convoy will stop at intervals of about one hour for the rhinos to be observed by the

veterinarians and also fed and watered. The weight of the animal is also to be ascertained during the transport in a pre-identified weigh bridge. A team of Assam Police personnel will accompany the rhino convoy - providing security and also to ensure easy movement for the convoy. The transport will be done through a pre-determined route, and the vehicles will move at an average speed of about 40 kilometers per hour, ensuring a journey with minimum stress for the crated rhinos.

The release team will prepare the release site as necessary, depending on the number of rhinos to be released. This number can be finalized only after the actual capture is completed. At least two release ramps will be prepared for four rhinos. Field staff will be positioned on elephant back at a distance (not to alert the rhinos) from the release ramps in different directions to monitor the movement and behavior of the rhino post release. Depending on the needs, instead of placing the trucks on release ramps, the rhinos with the crates may be placed on a flat surface with their doors near each other. This will allow related or friendly rhinos to be released simultaneously to facilitate easy adaptation in the new area. After the release is complete and the rhinos are observed to be normal, the charge of regular and long-term monitoring will be handed over to a dedicated pre-identified team.

A team of medical experts will be kept ready to attend to any human emergencies, if required, during the capture and release operations.

A media briefing programme will be conducted before the actual operations and also post operations. This will be arranged and conducted by the Communications team at the capture and release site in co-ordination with the on-site teams.

C. Post-Release Stage: This stage is mainly to do with the regular monitoring, patrolling and protection of the released rhinos in the newly released PA. A dedicated monitoring team should be formed, comprising frontline staff to work round the clock in shifts. This team will be regularly helped and guided by technical experts from WWF-India and College of Veterinary Sciences, Guwahati. Hard release procedures will be followed, in most cases, in release areas with an area of more than 100 sq. kms. For release sites with smaller areas, a soft release method will be adopted. The soft release will be done in a specially designed and constructed enclosure suitable for rhinos. The enclosure will have at least two sections - one more secured than the other. The rhinos initially will be released into the more secure section to get acclimatized to the enclosure. The rhinos will be kept there until they acclimatize, which will not be less than 10 days post release. The rhinos will then be gradually allowed to move into the second section covering a larger area. They will be maintained there for a duration depending on their behavior and ideally not for longer than 8-10 months from the date of release in this section. Post-release, an individual will be closely monitored and recorded

in terms of behavior, range and health for at least one year from the date of release. After one year, once the animal is observed to be settled in the new area, a general monitoring routine will be adopted. Post-release monitoring updates will be prepared on a daily basis by this team for managerial and security purposes and at an interval of three months for the TCC. The TCC will compile an annual report and submit it to the MoEF&CC. The TCC will also update the RTF and the Chief Wildlife Warden on a regular basis and when necessary.

The patrolling and protection will be carried out as per the standard plan of operation devised from time to time by the park management. Adequate protection measures will be put in place as per the findings from monitoring the rhinos for their daily security. Ideally a Law Enforcement Monitoring procedure will be put in place for ensuring better protection measures.

The staff involved in the monitoring of rhinos are to be trained and oriented every 3 to 4 months or as found necessary by experienced persons and also tested for their efficacy and capability.

At the time of capture, the rhinos will be fitted with radio collars for telemetry-based monitoring and ear notching (as per Annex-III) or other identifying gear will be fitted for easy physical identification. In addition, a rhino ID database following the IUCN guideline will be made for all the captured rhinos, for guidance to adopt physical monitoring once the collars stop functioning.

Monitoring for Radio-Collared Rhino:

- Radio-collared rhinos will be tracked using tracking equipment and data loggers. Tracking of rhinos will be carried out either on foot, elephant back, motorcycles, boats and vehicles depending on the area where the rhinos are ranging. Rhinos inside the bomas (the rhino holding enclosure) will be observed from platforms on the boundary using binoculars. If needed, the rhino will be approached occasionally on elephant back for closer physical observation.
- Each individual rhino will be provided a specific code and name for easy identification.
- Location of the free-ranging rhinos will be ascertained through the triangulation method and homing-in will be attempted thereafter for physical observation.
- Rhinos will be monitored and their details recorded as per pre-designed formats at least three times a day and also at night as per feasibility. Focal observation will be carried out using binoculars, and spatial ancillary information will be recorded with a handheld GPS device. Focal observation of behavior and health will be carried out whenever direct observation is possible.
- Veterinary observation will be done for body conditioning every quarter

and should also be specially arranged if the body condition is observed to be deteriorating or any marked behavioral change is observed.

- The behavior of the individuals will be recorded under the categories broadly defined as – feeding (approaching grass and taking it into the mouth), wallowing (almost all parts of the body submerged in mud and water), walking (animal moving attentively) and resting (animal is in the resting position or lying and sitting in relaxed position), browsing (approaching tree twigs, creepers and taking it into the mouth), etc.

Monitoring for Non-Radio-Collared Rhino:

- All individual rhinos will be identified and documented in the form of a Rhino Master ID profile prepared as per the IUCN-AsRSG norms (given in Annex–IV) by involving experts from WWF-India and IRF. The profiles will be verified and updated every year to document any physical changes the rhinos may have undergone.
- Non-radio-collared animal movement will be tracked and located by following the rhino signs like tracks, dung, feeding signs and wallowing sites, etc.
- Rhinos will be monitored and their details recorded as per pre-designed formats at least three times a day and also in the night as per feasibility. Focal observation will be carried out using binoculars and spatial ancillary information will be recorded with handheld GPS. Focal observation of behavior and health will be carried out whenever direct observation is possible.
- Veterinary observation will be done for body conditioning every quarter and should also be specially arranged if any deterioration of body condition or any marked behavioral change is observed.
- The behavior of the individuals will be recorded under the categories broadly identified as – feeding (approaching grass and taking it into the mouth), wallowing (almost all parts of the body submerged in mud and water), walking (animal moving attentively) and resting (animal is in resting position or lying and sitting in a relaxed position), browsing (approaching tree twigs, creepers and taking into the mouth), etc.

In case of any stray event, the protocol in existence in the state to deal with rhino stray cases will be followed.

Analysis of monitoring data and report

- The recorded monitoring data in pre-designed formats (as per Annex-V, Sample Data form) will be digitally recorded using MS-Excel software. It will also be integrated on to a LEM/GIS domain for mapping and analyzing the ranging pattern.
- The data on rhino monitoring will be jointly maintained by the concerned

Divisional Office and WWF-India staff stationed in the release area.

- Rhino-ranging maps will be prepared on a monthly basis and behavioral aspects will also be analyzed with technical support from WWF-India and veterinarians.
- A monthly update on the status of the rhinos will be prepared by the Monitoring team leader on the basis of all the monitoring information, for management interventions. Based on this six-monthly monitoring, reports will be prepared and submitted to the TCC by the Monitoring team.
- Scientific publications will also be published on relevant aspects, for the dissemination of knowledge and sharing of experience regarding the greater one-horned rhinos.

CONCLUSION

This protocol is prepared based on the experience gathered during the six rounds of rhino translocations conducted in Manas NP from Kaziranga NP and Pobitora WLS. The technical know-how garnered by various individuals in handling wild rhinos and their rescue has also been incorporated into the document. Furthermore, knowledge pertaining to the successful tracking and monitoring of the translocated rhinos in Manas NP since 2008, using both telemetry equipment and traditional methods, have contributed towards the framing of this protocol. A number of small changes incorporated into the procedures that were originally planned for the Manas NP translocations have made the procedure safer and more efficient.

List of individuals who contributed to the development of the protocol/translocations:

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1	A. Christy Williams	WWF International
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21	Dilip Kalita	Assam Forest Department
22	Dipankar Ghose	WWF India
23	Deben Kalita	Assam Forest Department
24	Faridulla Ali	Assam Forest Department
25	Gopal Chetry	Assam Forest Department
26	Garga M. Das	WWF India
27	Jayanta Das	WADWT

28	Kaushik Barua	AEF
29	Kushal K. Sharma	College of Veterinary Sciences
30	Krishna K. Deuri	Assam Forest Department
31	Labanya Ramchiary	Assam Forest Department
32	Mahendra K. Yadava	Assam Forest Department
33	Mohan Chandra Brahma	Assam Forest Department
34	Mohan Chandra Malakar	Assam Forest Department
35	Mohan Lal Smith	AH & Vety Dept.
36	Mukul Tamuli	Assam Forest Department
37	Narayan Mahanta	Assam Forest Department
38	P. Sivakumar	Assam Forest Department
39	Pankaj Sarma	Assam Forest Department
40	Prabhat Basumatary	AH & Vety Dept.
41	Pradipta Barua	Assam Forest Department
42	Pranab J. Bora	WWF India
43	Probod K. Brahma	Assam Forest Department
44	R.M. Singh	Assam Police Department
45	Rabin Sarma	Assam Forest Department
46	Ramesh Bhatta	WWF India
47	Rathin Barman	WTI
48	S.S. Rao	Assam Forest Department
49	S.K. Seal Sarma	Assam Forest Department
50	Santosh Pal Singh	Assam Forest Department
51	Shankar Hazarika (Late)	Assam Forest Department
52	Sunil Nath	Assam Forest Department
53	Surajit Dutta	Assam Forest Department
54	Surendranath Buragohain	Assam Forest Department
55	Suresh Chand	Assam Forest Department
56	Susie Ellis	IRF
57	Tariq Aziz	WWF India
58	Utpal Bora	Assam Forest Department

ANNEXURES

ANNEXURE - I

TENTATIVE LIST OF EQUIPMENT AND LOGISTICS

(Final requirements depend on the field condition as well as the condition of the individual rhino)

1. Crate (Height: 2.20m, width: 1.85m and length: 3.5m approx.) +
2. Sledge (shall depend on the individual and actual size of the crate door so that the sledge can be pulled inside) +
3. Ramp (shall depend on the individual and actual size of the crate door) – for loading as well as release (shall depend on the field conditions) +
4. Crate operating assembly (iron pipes, pulley, chain, etc)
5. Truck (3-tonnne capacity at least)/ Tractor/ Helicopter (as per conditions)
6. JCB/ Tractor
7. Crane (3-tonne capacity at least)
8. 4WD jeep/gypsy, etc. (for the team)
9. Cargo net (3-tonne capacity at least)
10. Nylon straps (3-tonne capacity at least)
11. Wireless Sets (about 5 nos.) for operation and transport.
12. Search Light/Torch light
13. Kit bags for capture team
14. Water containers (20l) – 2 nos.
15. Water sprayer – 2 nos.
16. Kudal/Spade – 2 nos.
17. Sabul – 1 no.
18. Axe – 1 no.
19. Dao – 1 no.
20. Trained elephants (with rhino exposure) – 4 to 6 nos.
21. Plastic Bucket & Mug – 1 no.
22. Stationery items like pens, papers, etc.
23. Small containers for disposal of medical waste like syringe, cotton, etc.
24. Mineral/drinking water bottles
25. Cotton/jute ropes
26. Tow chain (30ft)
27. Wire rope (1" x 20ft) and accessories
28. Casting rope (20ft X 2nos.)
29. Hammer (1kg)
30. Industrial Gloves – 3 to 4 nos.

31. Monitoring accessories$
32. Tranquilizing equipment and accessories#
33. Drugs & accessories*
34. Plastic hand gloves (nos. 5, 6 & 7) – 6 pairs
35. Face mask – 6 nos.
36. Blind fold (green cotton cloth)
37. Truck (tyre) tubes – 2 nos. (optional, if it is a wet area)
38. Diagnostic Kits for sample collection (for blood, dung, genetic screening as decided)
39. Arrangement of accommodation and food for the team in the capture, transport and release operation.

$Monitoring gear and accessories -

1. Radio collar (VHF/UHF, etc.)
2. Telemetry receiver, directional antennae and accessories
3. Ear notching tools and guide
4. Ear tags
5. Microchip with reader (optional)

*Drugs list -

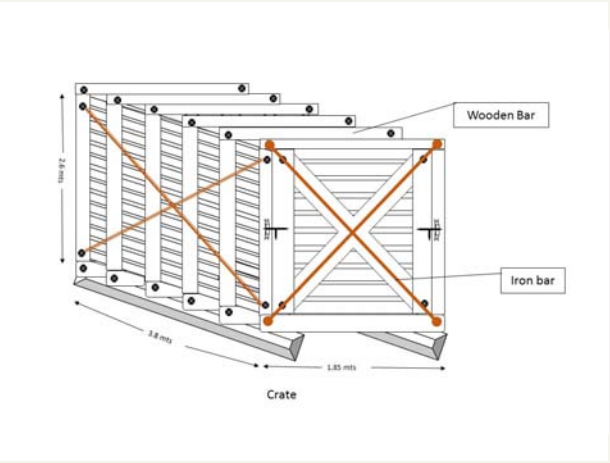
6.	Etorphine (Immobilon/etc.)	- 20ml x 1 vial
7.	Revival (Revivon/ etc)	- 40ml x 1 vial
8.	Acepromazine (Acepril10)	- 20ml x 2 vials
9.	Steroid (Dexamithasone)	- 10 ml
10.	Vitamin E injection (E care Se)	- 5ml x 1 vial
11.	Long acting Antibiotics (Flobac-SA)	- 30ml x 2
12.	Tetanus Toxide Inj.	- 4ml / animal
13.	Anthrax Vaccine	- 2ml/ animal (optional)
14.	Disposable syringe (2ml, 5ml, 10ml & 20ml)	- 10 nos. each
15.	Meloxicam	- 30ml x 1 vial
16.	Tribivet inj. (Vit B complex)	- 30ml x 10 Vials
17.	Betadine lotion	- 500 ml x 2 nos.
18.	Povibone iodine	- 200 ml x 2 nos.
19.	Cotton Roll	- 450g x 3 rolls
20.	Cotton Gauge Bandage	- 1 roll (big)

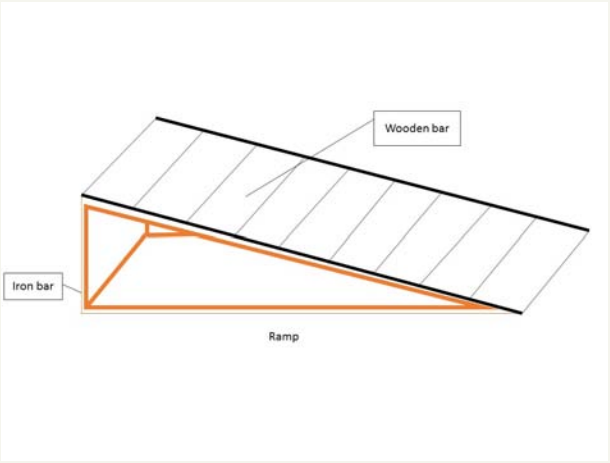
#Tranquilizing Equipment –

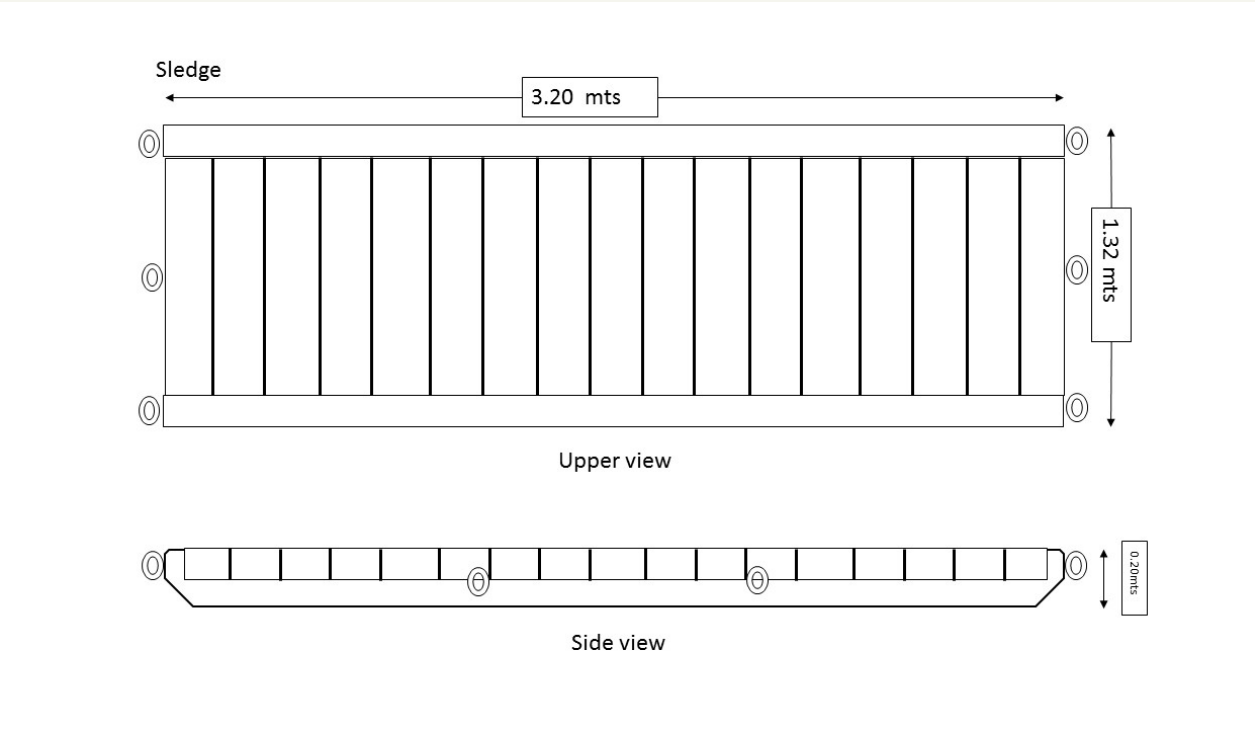
1.	Tranquilizing gun / Syringe projector (Dist-inject 60N, etc.)	
2.	Cartridge holder	
3.	Syringe charge (1 to 5 ml)	- 1 box
4.	Brown cartridge	- 10 nos.
5.	Rubber plunger/piston	- 5 nos.

6. Aluminum barrel (2ml, 5ml) - 5 nos. each
7. Tail piece - 5 nos.
8. Plunger positioner - 1 no.
9. Cartridge remover - 1 no.
10. Silicone gel - 5gm X 12 tubes
11. Ready dart container - 1 no.
12. Used dart container - 1 no.
13. Pull through (rifle cleaning stick) - 1 no.
14. Cotton casting rope - 4 nos.
15. Needle 3040K - 5 nos.
16. Feather stabilizer - 5 nos.
17. Cartridge ejecting pin - 1 no.
18. Pliers (medium size) - 1 no.
19. Cleaning rod - 1 set
20. Blood/Tissue collection kit - 1 no.
21. Ice box - 1 no.
22. Micro-chipping kit (optional)
23. Stethoscope & thermometer
24. Pressure pump
25. Carry kit/bags for syringe projector and other accessories.

+Crate / Sledge / Ramp views -

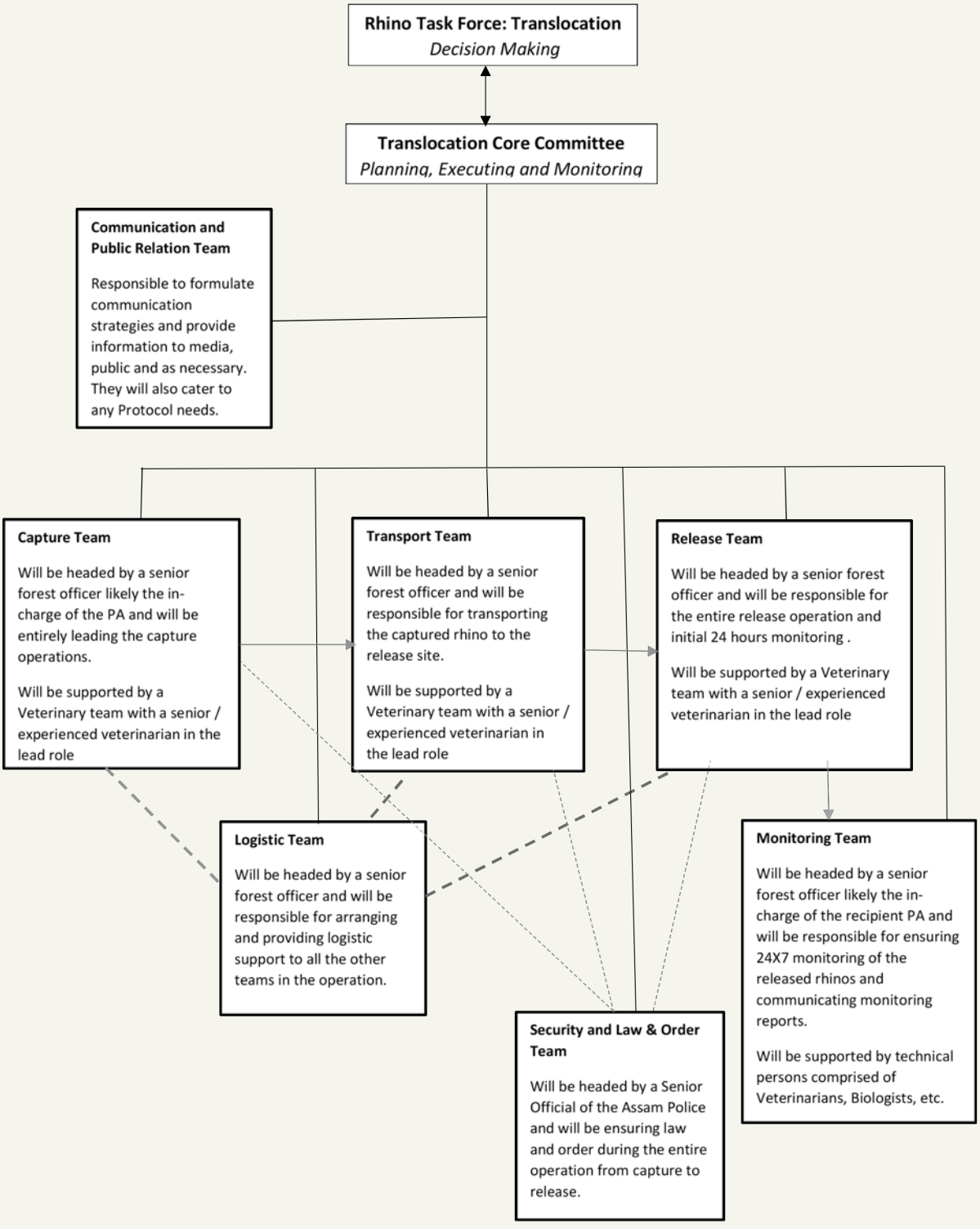






ANNEXURE - II

Schematic diagram showing the teams and their primary responsibility in the translocation



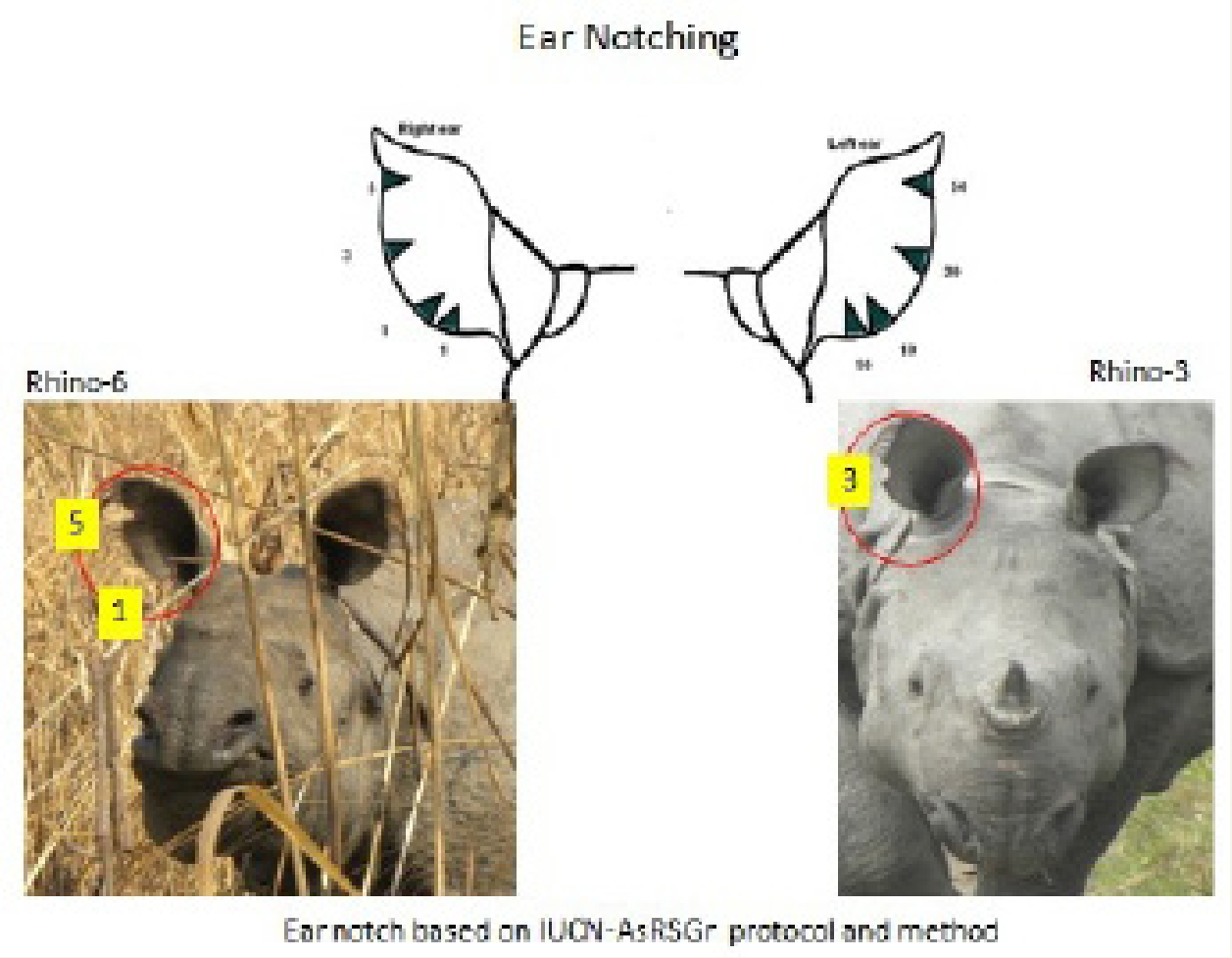
ANNEXURE - III

Format for recording rhino data during time of capture

Sl. No.	Cature Time	Date	Capture site	Microchip No	Radio collar No	Sex	Age	Weight (Kg)	Height (cm)	Neck girth (cm)	Tail length (cm)	Horn size (cm)	Length Tail to Upper lip (cm)	Front foot circumference (cm)	Back foot circumference (cm)	Lat	Long
1																	
2																	
3																	

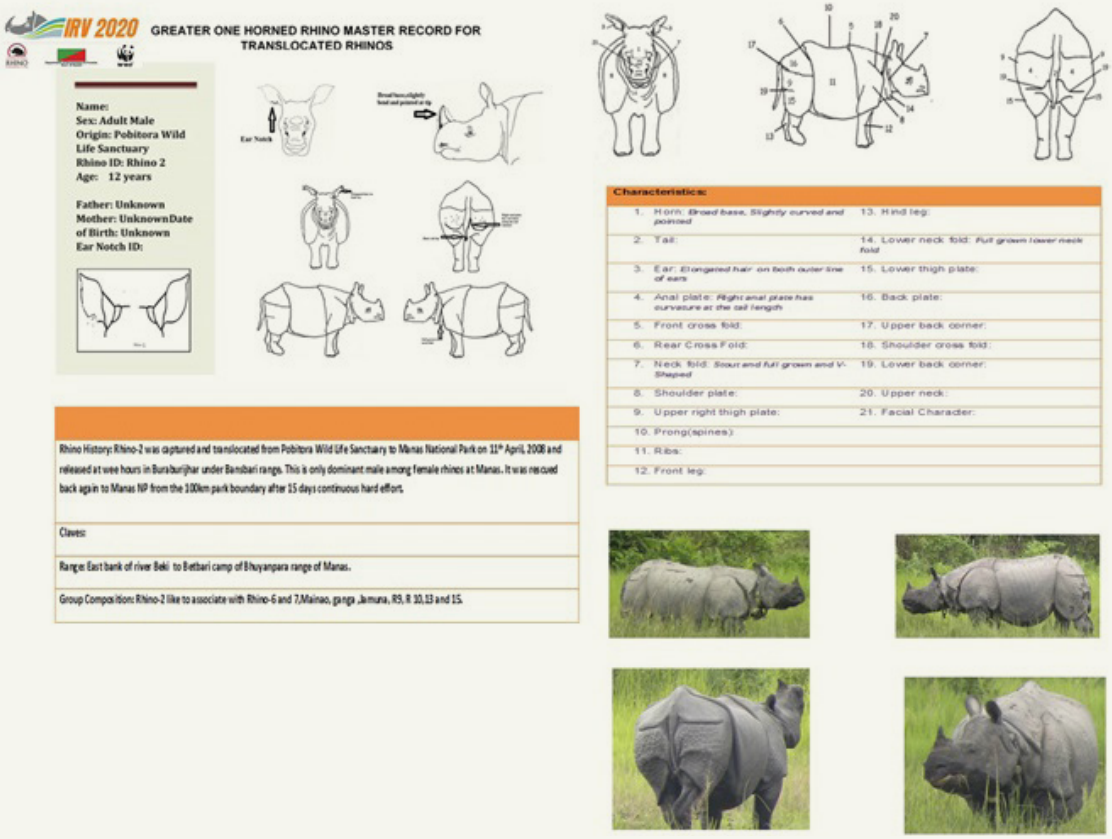
ANNEXURE - IV

Ear notching guideline for rhinos:



ANNEXURE – V

Master ID preparation guideline for rhinos as per IUCN-AsRSG norms**:**



ANNEXURE – VI

Sample data recording format for rhino monitoring (for individuals without radio collar)

Sl. No.	Monitoring Team Name	Date	Weather	Start Time	Mode of Patrol	Rhino code	Place name	Time of observation	Lat (rhino sighting)	Long (rhino sighting)	Rhino Activity (feeding, wallowing, etc)	Land Cover	Health status	End Time	Remark

Sample data recording format for rhino monitoring (for individuals with radio collar)

Sl. No.	Team Name	Date	Weather	Start Time	Mode of Patrol	Rhino code	Tracking location	Signal quality	Time of rhino observation	Lat (rhino sighting)	Long (rhino sighting)	Rhino Activity (feeding, wallowing, etc)	Health status	Land Cover	End Time	Remark

ANNEXURE – VII

Tentative list of equipment and resources for rhino monitoring

1. A central team of trained personnel to carry out rhino monitoring in groups, in addition to the camp-based staff. Each group should comprise at least three individuals. The monitoring will be done 24 hours x 365 days and 4 groups for a range/release site will be necessary i.e. – 12 persons.
2. The monitoring team is to be supported with at least one 4-wheel drive vehicle with a driver or two motorcycles, two departmental elephants with mahouts, one boat with boatman, wireless handsets, guns, torch-lights and searchlights and field gear (raincoat, boots, etc.).
3. The monitoring team will be equipped with binocular, telemetry equipment, compass, GPS, digital camera and data format during field monitoring and a computer for data compilation in their station/range.

ANNEXURE – VIII

Photo illustration of the translocation procedure

Photo 1 : Planning the translocation

Photo 2 : Orientation of team members prior to capture operation

Photo3 : Pre-capture veterinary preparations

Photo4 : Veterinarians getting the tranquilizing equipment ready in the field

Photo 5 : Checking the radio collars before the capture operation

Photo 6 : Locators from the capture team the first ones to move at day break

Photo7 : A rhino approached and darted

Photo8 : Darted rhino slowly gets down to a resting position

Photo 9 : Veterinarians carrying out health monitoring and ear notching

Photo10 : Fixing the radio collar

Photo11 : Logistic team approaching the immobilize rhino

Photo12 : Digging a pit besides the sedated rhino for placing the sledge

Photo13 : A sledge placed in the pit beside the immobilized rhino

Photo14 :The immobilized rhino slowly rolled onto the sledge

Photo15 :The immobilized rhino secured to the sledge

Photo16 :The sledge with immobilized rhino aligned with the crate

Photo17 :The immobilized rhino pulled inside the crate

Photo18 : The immobilized rhino is administered revival inside the crate

Photo19 :The revived rhino inside the crate

Photo20 : The crate with the rhino loaded onto a truck

Photo21 : Post capture media interaction

Photo22 : Crate doors opened for release of the rhinos

Photo23 : The rhinos move out from the crates

Photo 24 : The monitoring of rhinos in progress

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