

Indian Rhinos in Protected Areas of Assam

A geo-spatial documentation of habitat changes and threats



Bibhab Kumar Talukdar is a M.Sc. in Zoology with specialization in Ecology and Wildlife Biology and secured his Ph.D. degree from Gauhati University in the year 2000. He has been working in the field of conservation since 1989. He has attended a number of national and international training/workshops/conference.

Bibhab is the member of the State Board of Wildlife, Govt. of Assam, and also I/CN/SSC; Asian Rhino specialist Group, Conservation Breeding Specialist Group, and Threatened Waterfowl Research Group. He was the member of the steering committee set up by the state government of Assam to prepare the new Forest Policy 2003 for Assam. He has been the Secretary General of Aaranyak, since its inception in the year 1989. He has published a number of scientific papers in journals of national and international repute.



Pranjit Kumar Sarma is a M.Sc. in Geography with specialization in Advance Geomorphology. He has gathered knowledge in the field of Remote Sensing and GIS technology from National Remote Sensing Agency, Hyderabad, India. From the year 2000 to 2003 he has completed two nation wide mapping project entitled "Wasteland Mapping of India" and "Disaster Management Mapping Programme of India" sponsored by Department of Space Govt. of India.

Pranjit Kumar Sarma is associated with Aaranyak from the year, 2004 and he is working in Aaranyak as a Programme Coordinator of the Remote Sensing and GIS division. His main task in Aaranyak is integrate and manage biodiversity related information into GIS domain.

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Pranjit Kumar Sarma

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About Aaranyak

Aaranyak is a scientific and industrial research organization, recognized by the Ministry of Science and Technology, Government of India based at Guwahati. Aaranyak has been working in the field of biodiversity conservation since 1989 in North East India and fostering scientific research along with culmination of combined gems of culture, indigenous knowledge and socio-ethical science to promote conservation. Aaranyak operates through six major programmes in North East India. For details about various programmes of Aaranyak, please visit www.aaranyak.org

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50 Samanwoy Path (Survey)
PO: Beltola, Guwahati – 781 028
Assam, India
E-mail : info@aaranyak.org
aaranyak@sancharnet.in

www.aaranyak.org

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Preface

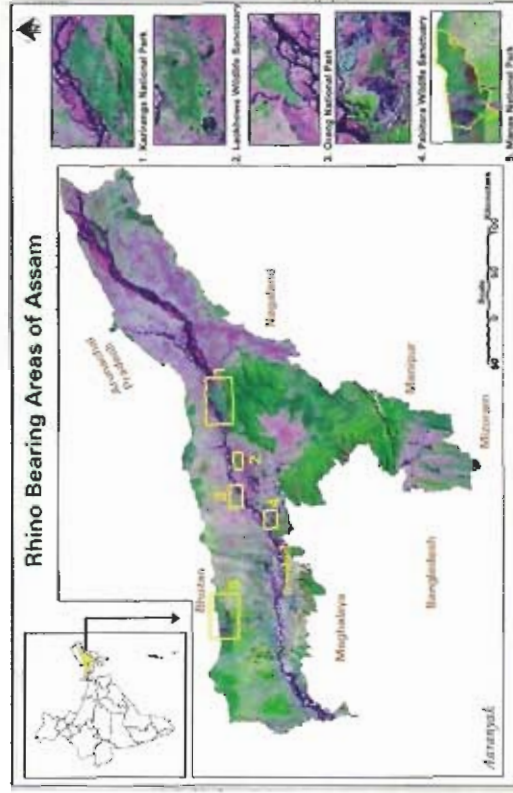
The Assam Forest Department has been making significant contribution towards conservation and protection of rhinos in parts of Assam. The efforts initiated by the Assam Forest Department have faced both triumph and trauma since 1980s. While in rhino bearing areas like Kaziranga, Pabitora and Orang witnessed steady growth of rhino population for successful protection measures, but other rhino bearing areas like the Laokhowa Wildlife Sanctuary and Manas National Park faced severe organized assault from well organized gang of poachers and wildlife traders during the socio-political unrest in 1980s and 1990s respectively leading to extermination of rhino population from these two sites.

Other than poaching, the changes in rhino habitat due to natural and man made alteration has also assumes significance towards long term conservation of rhino habitat. We have made a humble beginning of analyzing the rhino habitats in the five rhino bearing protected areas of Assam based on the satellite images on 1970s, 1980s, 1990s and 2000s to reflect the comparative changes in each of the rhino bearing protected areas of Assam using geo-spatial tools and intense ground verifications.

In this document, we have shown how the habitat of rhino bearing areas has changed over the years due to shift in river courses and natural and man made alteration. We have also shown the rhino poaching trend in Assam and steps needed to halt further assault on the rhinos. In Pabitora Wildlife Sanctuary we have gone one step ahead to determine the feeding suitability areas within the sanctuary for the rhinos using geo-spatial tools satellite images. We intend to continue the same study to determine the feeding suitability areas in other rhino bearing areas like the Kaziranga National Park, Orang National Park in coming years. It is hoped that the geo-spatial information on rhino habitat that has been generated and to be generated in coming years through our initiative will hands on to the sincere efforts made by the Assam Forest Department in the field of rhino conservation. We hope to contribute further towards rhino conservation in Assam through proper integration of scientific tools, environmental education, advocacy and working closely with the Assam Forest Department.

Introduction

The conservation of Great one horned or Indian rhino *Rhinoceros unicornis* in India and Nepal has been facing severe threats from poachers and wildlife trafficking in past couple of decades. Assam is one of the last strongholds of the Indian rhino and has the proud legacy of successfully conserving the species with a total wild rhino population of 2006 as estimated by the Assam Forest Department in the year 2006. Currently there are about 2600-2700 wild Indian rhinos surviving in India and Nepal of which more than 1800 are in Kaziranga National Park of Assam. In Assam the rhino is often been regarded as the epitome of conservation movement.



Rhino Conservation Efforts

The Indian Rhino has been a conservation dependent species since early 19th century because of the threats from poaching and destruction of grassland habitats. Assam Government has shown its long term vision towards conservation of forests way back in 1891 when it promulgated the Assam Forest Regulation 1891 to usher a new era of forest conservation. The first sincere efforts to conserve about a dozen

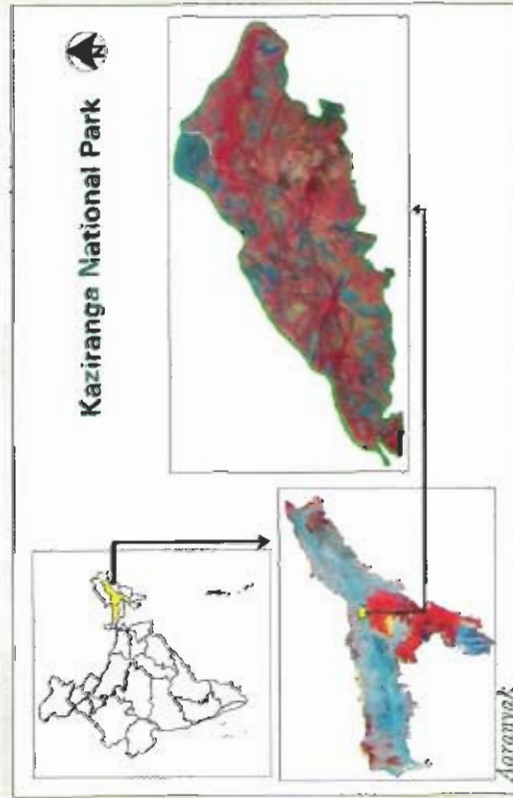
Acknowledgments

We would like to gratefully acknowledge the support, encouragement and cooperation rendered by Mr. M.C. Malakar, Chief Wildlife Warden of Assam, Mr. D.M. Singh (Director in-charge of Kaziranga National Park), Mr. N.K. Vasu (former Director of Kaziranga National Park), Mr. Utpal Bora (Divisional Forest Officer of Eastern Assam Wildlife Division), Mr. Pallab Deka (Range Officer of Baguri Range, Kaziranga National Park), Mr. Dharani Dhar Boro (Range Officer of Kohora Range, Kaziranga National Park), Mr. Prodipto Barua (former Range Officer of Agaratoli Range, Kaziranga National Park), Mr. L.N. Barua (Assistant Conservation of Forest, Kaziranga National Park), Mr. Abhijit Rabha (Field Director of Manas Tiger Project), Mr. Ritesh Bhattacharjee (Deputy Field Director of Manas Tiger Project), Mr. S. Momin (Divisional Forest Officer of Mangoldoi Wildlife Division), Mr. Jayanta Deka (Range Officer of Orang National Park), Mr. S. Dutta (Divisional Forest Officer of Guwahati Wildlife Division), Mr. Mukul Tamuli (Range Officer of Pabitora Wildlife Sanctuary), Mr. A.C. Das (Divisional Forest Officer of Nagaon Wildlife Division) and Mr. P. Saharia (Range Officer of Laokhowa Wildlife Sanctuary) during this initiative to map these rhino bearing protected areas in Assam. Mr. Mrigen Barua (Range Officer) also deserve our thanks for their encouragement and inputs on the map produced using the geo-spatial technology. We would also like to express our gratitude to all the colleagues working at Aaranyak for their continuous cooperation and support during this initiative. At the end we also offer our thanks to the David Shepherd Wildlife Foundation and Rufford Foundation of United Kingdom for their support and assistance to enable us publish this document and bring it into public domain for greater use of the information.

of rhino that was estimated to be found in Kaziranga was initiated in the year 1905 to declare Kaziranga, Manas and Laokhowa as Game Reserve and finally in the year 1908 formal pronouncement was made to declare the three areas as Game Reserve. Looking at the threats from poachers, the Assam Government framed the Assam Rhinoceros Preservation Act in 1954 prohibiting hunting, capture and injuring the rhinos and thus further strengthened the conservation and protection of the Indian rhino in Assam. In the year 1968, the Assam Government realized the need to convert the Kaziranga Wildlife Sanctuary into a national park and made sincere effort to enact the Assam National Park Act in 1968 which came into effect since 1969. In January 1974, in pursuance of the Assam National Park Act 1968, the Kaziranga was declared as the first National Park spreading an area of about 430 km².

Later on the Wildlife Protection Act of 1972 promulgated by the Indian Government and amendments made till 2005 has further strengthened the conservation and protection of rhinos by including the species in the lists of Schedule-1 species. The International Union for Conservation of Nature and natural Resources (IUCN) has listed the rhino as "Endangered" while the Convention on International Trade in Endangered Species of Flora and Fauna (CITES) has listed the rhino in "Appendix-1" boost up the rhino protection.

Status of Rhino and Habitat in Kaziranga National Park

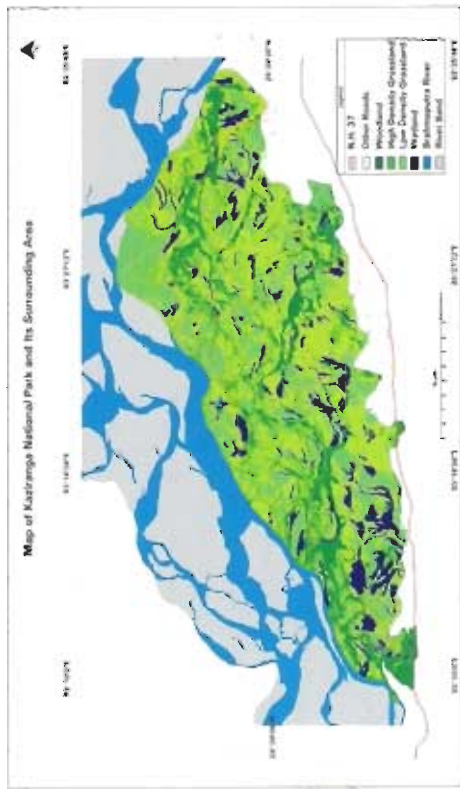


The Kaziranga National Park Kaziranga National Park of Assam, India is known worldwide for its success in the conservation history of Indian rhino. Spread over an area of 429.93 Km² in the flood plains of Brahmaputra, it harbors the World's largest population of One horned Rhino *Rhinoceros unicornis* (1855 Nos. in 2006), Wild Buffalo *Bubalus bubalis* (1431 Nos. in 2001) and the Swamp Deer *Cervus duvauceli rajnisinghi* (468 Nos. in 2000). Its conservation value was much recognized when it became one of the World Heritage Sites notified in India by UNESCO in the year 1985. A symbol of dedication for the conservation of animals and their habitat, Kaziranga, represents the single largest protected area within the North-east India to provide long term viable conservation. Kaziranga National Park is an outstanding example of significant ongoing ecological and biological processes in the evolution and development of natural ecosystems consisting of several communities of plants and animals.

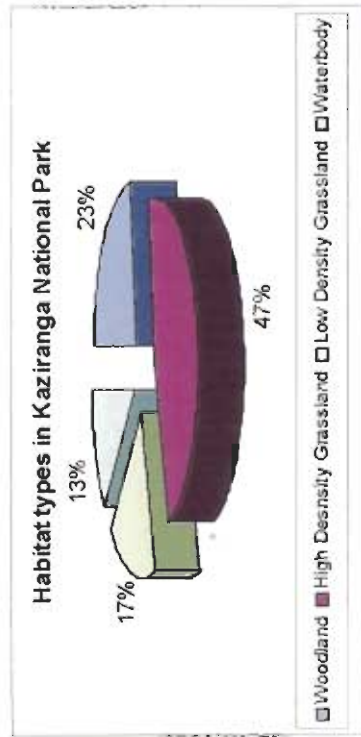
Kaziranga National Park lies between Latitudes 26°34' N to 26°46' N and Longitudes 93° 08' E to 93° 36' E. It is spread over the civil jurisdictions of Nagaon and Golaghat districts in Assam with mighty river Brahmaputra on the north and luxuriant Karbi Anglong hills on the south. With three new additions, having separate national park status, three proposed additions and two reserved forests namely, Panbari and Kukurakata reserve forests coming under the administrative control of the Kaziranga National Park, the geographical area then lies between Latitudes 26°33' N to 26°50' N and Longitudes 93° 05' E to 93° 41' E including a part in civil jurisdiction of Sonitpur district. Since then six more areas have been proposed to be added to the existing National Park. These are -

- 1st Addition (43.97 Km², Notified on 28-05-97),
- 2nd Addition (6.47 Km², preliminary notified on 10-07-85),
- 3rd Addition (0.69 Km², preliminary notified on 31-05-85),
- 4th Addition (0.89 Km², Notified on 13-06-85),
- 5th Addition (1.15 Km², preliminary notified on 13-06-85) and
- 6th Addition (376.50 Km², Notified on 07-08-99).

Besides these, the Panbari Reserved Forest (7.65 Km²) and Kukurakata Reserved Forest. (15.93 Km²) are also under the administration of Kaziranga National Park and thus provides more space to rhino and other wildlife to built up its population.



It may be pointed out here that out of the original national park area of 429.93 Km² that was declared in the year 1974, currently only 392.51 Km² areas are now available with the national park. That reverberates the loss of about 37.42 Km² landmass due erosion caused by the river Brahmaputra for its gradual southward movement.



The Kaziranga National Park (KNP) has completed hundred years of rhino conservation in the year 2005 with a successful rhino conservation history in the past century. The first rhino census in Kaziranga was initiated in the year 1966 and since then Kaziranga has witnessed steady increase in its rhino population. The successive rhino population in Kaziranga since 1966 till 2006 has been summarized in Table-1 that shows the increase in rhino population over the years.

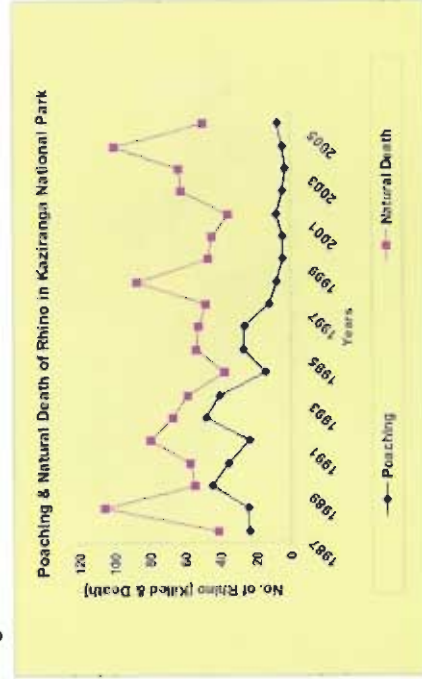
YEAR	MALE	FEMALE	YOUNG	UN-SEX*	TOTAL
1966	67	83	44	172	366
1972	203	188	148	119	658
1978	331	332	243	43	939
1984	283	296	201	166	946
1991	338	357	190	184 (+60)**	1069 (+60)**
1993	387	379	176	222	1164
1999	556	586	257	153	1552
2006	545	693	409	208	1855

Table-1: Population Comparison in different Census from 1966-2006 in Kaziranga National Park (Source: Directorate-Kaziranga National Park)

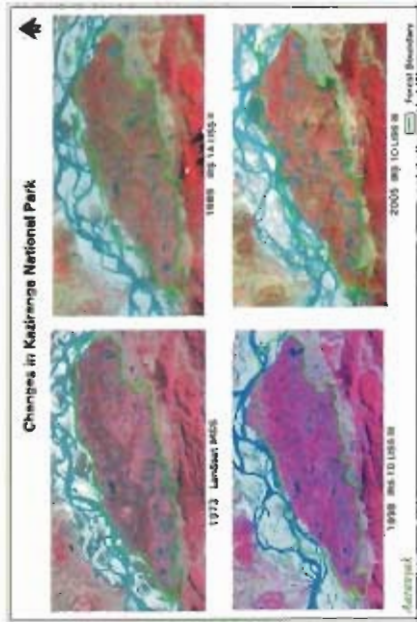
* denotes Un-identified Sex

** denotes the rhino counted in the addition areas in 1991.

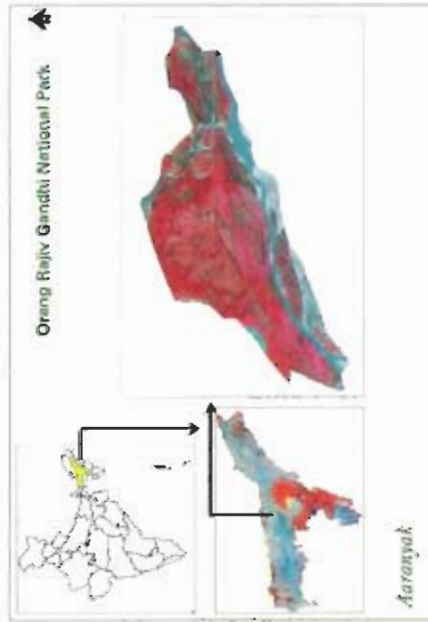
The single largest threat to rhino conservation in the national park is the poaching. In between the year 1987 and 2005, a total of 358 rhinos were poached while 1137 rhinos died due to reasons other than poaching.



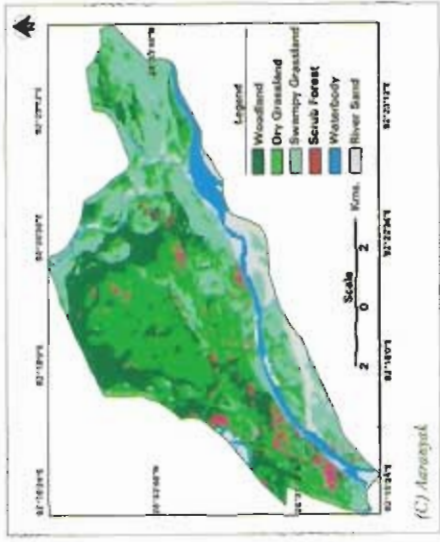
Besides poaching, the changes in habitat composition and loss of land mass within Kaziranga due to shifting of river Brahmaputra towards the south has emerged out to be future threats to rhinos and other wild animals. The changes in land mass and shift of river Brahmaputra in Kaziranga is sending signals to managers and scientist to address the conservation challenges with renewed planning and assess the response options available to ensure long term conservation of rhino in the world's renowned national park – the Kaziranga.



Status of Rhino and Habitat in Orang National Park



The Orang National Park has been often regarded as the man made forest dedicated to rhino conservation that lies within the geographical limits of 92° 16' E to 92° 27' E longitude and 26° 29' N to 26° 40' N latitude. Orang was earlier an abundant village which later on transformed into a forest with sizeable areas of grassland and wetlands. The total area of the national park is 78.80 km². Orang was declared as a wildlife sanctuary in the year 1985 keeping in view the potential habitat of Orang for rhino conservation along with other wildlife. In the year 1985, there were 65 rhinos. Later on in the year 1999 Orang was upgraded into a national park.



Based on the recent satellite imagery, the habitat types in Orang National Park has also been estimated that shows 31 percent of the national park is covered by swampy grassland while 32 percent is covered by dry grassland.

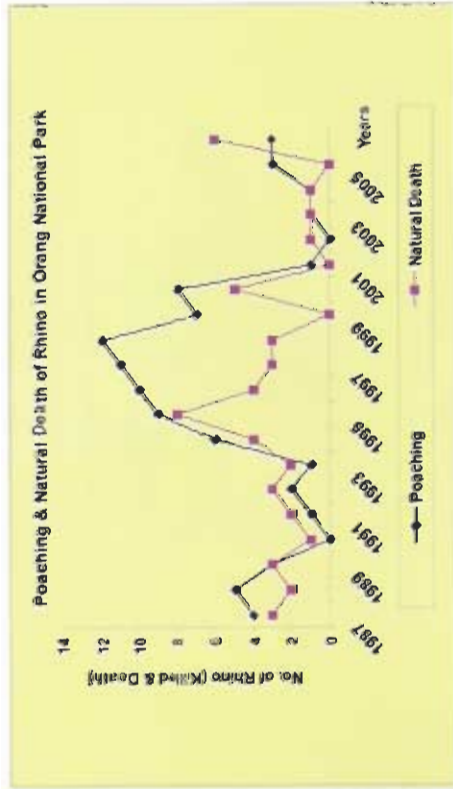


The rhino conservation in Orang was started with about 35 rhinos in the year 1972. The detailed rhino population estimates in Orang since 1972 has been summarized in Table-2.

Year	Adult		Sub-Adult		Calf	Total
	Male	Female	Male	Female		
1972	10	13	3	2	4	35
1985	23	23	-	2	10	65
1991	28	41	5	1	8	97
1999	17	17	1	2	6	46
2006	28	27	-	-	9	68

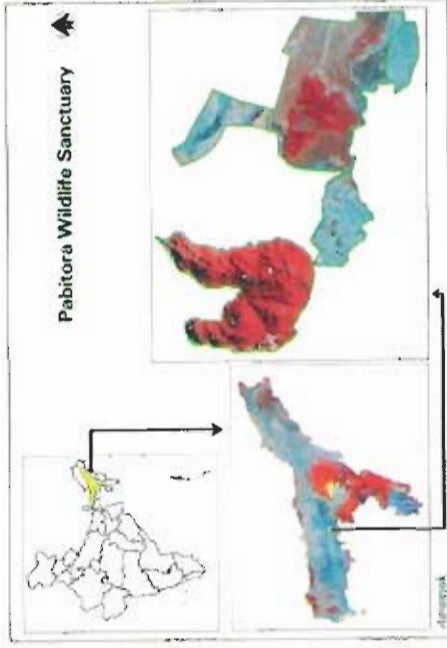
Table-2: Population Comparison in different Census from 1972-2006 in Orang National Park (Source: Divisional Forest Office, Mangoldoi Wildlife Division)

The national park has witnessed severe poaching threats during 1994-2000 when half of its rhino population were poached by well organized gang of poachers. In 1991, the total population of rhino was 97, but due to increase in poaching the population has declined to only 46 in the year 1999. However the officials and local NGOs considered the seriousness of the situation and proposed to upgrade the then Orang wildlife sanctuary to a national park in 1999. Aaranyak in collaboration with the David Shepherd Wildlife Foundation has sponsored over 20 wireless equipments to strengthen the anti-poaching patrol and similarly other NGOs like the WWF-India has also sponsored vehicles to add to the mobility of the anti-poaching patrol, while the Rhino Foundation for the North East India offered some other crucial in-kind support to the park. This combined initiative of forest department and NGOs has played a positive role in decreasing the rhino poaching to a great extent.

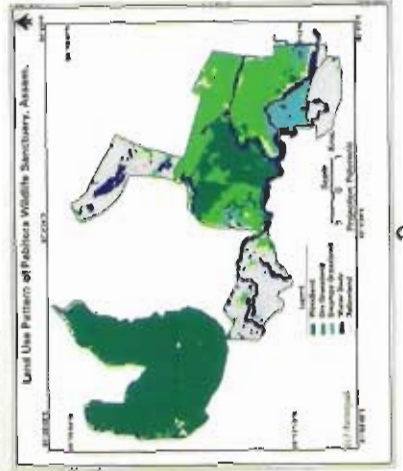


In Orang National Park the changes in habitat composition has been noticed based on four sets of satellite imageries. However in case of Orang, the river Brahmaputra has not eroded more land as it did in Kaziranga. The wetland areas have been found on declining while woodland has increased in parts of Orang national park. Intense grassland management is necessary to ensure suitable grassland available for the rhinos. De-silting of wetlands should be the top most priority to ensure water availability within the national park to stop straying out of rhinos from the national park to civil areas near by.

Status of Rhino and Habitat in Pabitora Wildlife Sanctuary

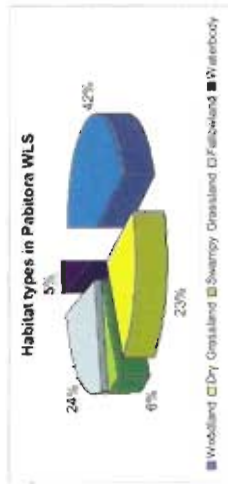


The Pabitora Wildlife Sanctuary (WLS) falls within 26°12'N to 26°15'N and 91°57'E to 92°5'E. The sanctuary area is flat with a gentle east to west inclination excluding Bura-Mayong hillock (Fig-1). Though the total area of the sanctuary is 38.81 km², the state government is yet to hand over an area of 11.07 km². Hence a total of 27.82 km² area is under the present management of the Assam forest department. The sanctuary is located in a flat terrain in the flood plains of river Brahmaputra, Kalong, Pokoria at an elevated at an average 15-25 m asl excluding Raja Mayong hillock which is 80-350m asl. The entire sanctuary area is part of the Brahmaputra flood plains. Being low lying, it is subject to annual floods and cause flood like situation in the sanctuary. As such, water remains round the year in different lakes,



swamps, making Pabitora an ideal ground for rhino and also migratory waterfowl.

The various habitat types in Pabitora WLS (38.80 km²) has been estimated which pointed out that about 23 percent area in Pabitora sanctuary is dominated by the dry grassland while 6 percent is covered by swampy grassland. Due to severe flood in the year 1998, the growth of grassland has been found retarded. The slow rate of grassland growth in Pabitora has been contributed by the local communities with their over 3000 population cattle grazing within the sanctuary everyday.

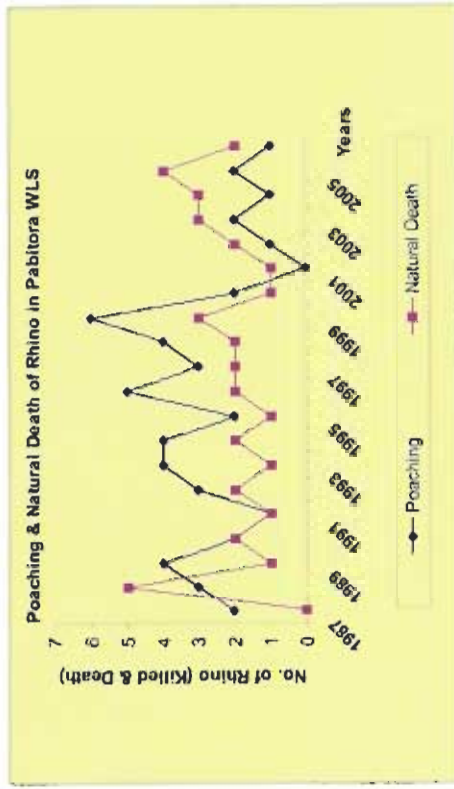


The Pabitora WLS has been successful in increasing the rhino population steadily since 1987. In fact Pabitora has the proud legacy of sheltering highest density of Indian Rhino in the world.

Year	Adult		Sub Adult		Calf	Total
	Male	Un-sex	Male	Un-Sex		
1987	17	—	5	8	5	54
1993	18	1	1	2	11	56
1995	11	3	3	1	9	68
1999	17	26	7	5	19	74
2006	18	30	—	12	21	81

Table 3: Number of rhinos in Pabitora WLS during 1987-2006 [Source: Assam Forest Department]

Poaching is the major threat to Pabitora WLS as 50 rhinos were poached in the sanctuary since 1988. A strong intelligence network is essential in the fringe villages to halt further large scale poaching of rhinos in the WLS. One of the silent methods that poacher often use in Pabitora WLS is the electrocution that has already taken 19 lives of wild rhino in the WLS. In one of the incident, two poachers were also killed accidentally when the electric line they put within the sanctuary to kill a rhino were miscalculated by them and that has invited death to two of the poachers involved in that attempt in Pabitora.

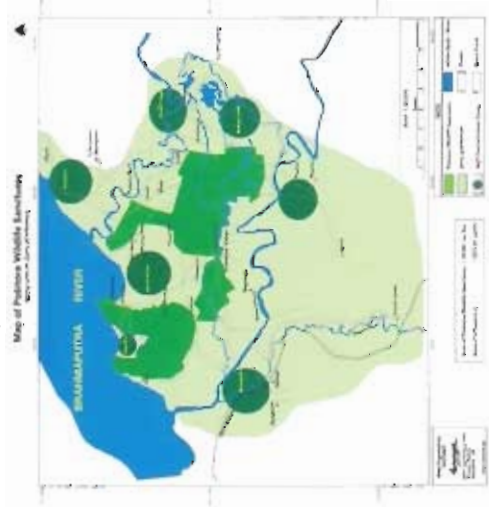


As the area of Pabitora is very small and the rhino population is steadily on increase, the stray out attempt of rhinos from the WLS to other civil areas has also been found increased. That has led to 27 rhino poaching outside the area of the WLS.

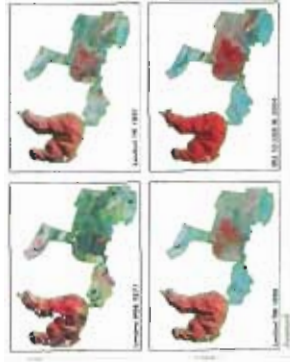
The changes in grassland dynamics within the sanctuary have forced more rhinos to stray out and in that process these stray rhinos become the easy prey to poachers. An intense mapping of stray out rhinos were attempted and based on the data received from used GPS, a map of rhino straying routes have been prepared to assist the Pabitora WLS authorities to set up more anti-poaching camps outside the WLS and provide anti-poaching staff to halt further attempt of rhino poaching in the rhino stray out routes outside the WLS. It has been found that although Pabitora WLS is only 38.80 km², but the rhino zone of influence is about 257.31 km². The Government of Assam should seriously think to increase the manpower in Pabitora WLS to cover the total zone of influence and temporary camps have to be arranged outside the WLS whenever rhinos stray out of the WLS.

Year	Rhino Poached Inside WLS		Rhino Poached Outside WLS	
	Bullet	Electrocution	Bullet	Electrocution
1988	1	0	2	0
1989	0	1	2	1
1990	1	0	1	0
1991	0	0	1	0
1992	0	0	1	2
1993	1	0	3	0
1994	0	1	0	3
1995	2	0	0	0
1996	1	2	0	2
1997	2	0	1	0
1998	1	1	2	0
1999	3	0	0	3
2000	2	0	0	0
2001	0	0	0	0
2002	0	1	0	0
2003	0	2	0	0
2004	0	0	1	0
2005	0	0	2	0
2006	1	0	0	0
Total	15	8	16	11

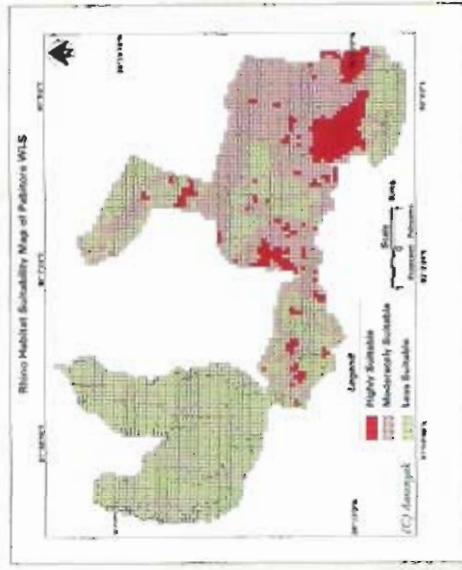
Table 4: Rhino poached in Pabitora WLS during last 16 years. [Source: Assam Forest Department]



The role of local communities in this kind of situation is significant and periodic awareness and orientation programme needs to be conducted in the fringe villages of the WLS to seek their cooperation and support towards rhino conservation and protection both within and outside the WLS to ensure long term conservation of rhino in Pabitora WLS.



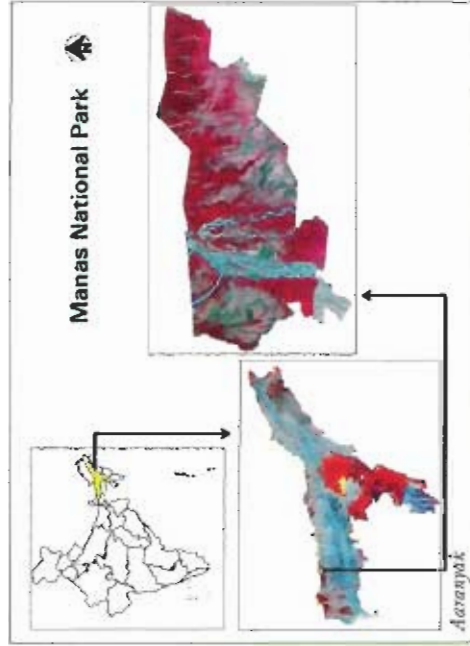
The change in habitat types in Pabitora WLS is also quite evident from the four sets of satellite imageries. One of the worrying factors is the increase in area of fallow land in Pabitora and decrease in suitable feeding sites of rhinos within the sanctuary.



Keeping the seriousness of this crisis in mind, attempts were made to analyze the feeding suitability area within the WLS based on grid analysis. The whole WLS has been divided into 100 m² grids and feeding suitability sites were measured based on ground observation and information from forest staff and our own efforts. It has been found that only 4.76 percent of area was found to be highly suitable as feeding sites of rhino while about 27.62 percent area was found moderately

suitable as feeding sites of rhino in the WLS. A detailed habitat improvement plan is required at Pabitora to increase the feeding sites within the WLS to reduce rhino straying out of the WLS. The cattle grazing pressure should be addressed urgently taking the local communities into confidence. Pabitora, being only 40 KM from Guwahati could be linked with tourism circle to increase the flow of tourist to enable local people to get some livelihood options from eco-tourism.

Status of Rhino and Habitat in Manas National Park

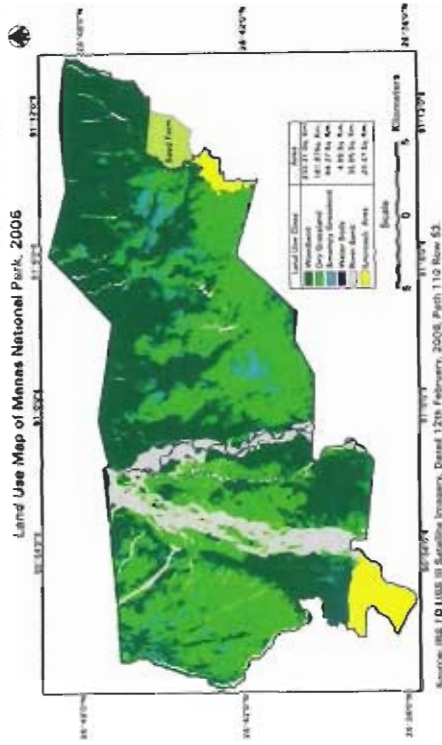


The Manas Wildlife Sanctuary which was established in the year 1928 to 500 km² when it was upgraded to a national park (26°37'-26°50'N, 90°45'-91°15'E) in the year 1990 by the Assam government. Currently the Manas National Park lies within the newly created Baksa and Chirang district of western Assam.

Manas contains 22 of India's Schedule-1 mammals as listed in the Wildlife (Protection) Act 1972 and at least 33 of its animals listed as threatened, by far the greatest number of any protected area in the country. Many are typical of Southeast Asian rain forest and have their westernmost distribution there, while other species are at the easternmost point of their range.

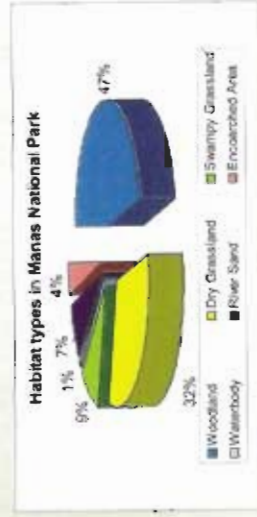
Manas had witnessed socio-political unrest during 1990s and severe damaged to its infra-structure responsible for effective anti-poaching patrol has been noticed along with decline in wildlife numbers including

the rhino. Prior to the unrest period in the whole of Manas areas, about 80 rhinos were estimated to be within the Manas national park. However during the unrest, all most all the rhino were poached by the organized gang of poachers. The damage caused to the key attributes of Manas has led to listing the Manas Heritage Site as "In Danger".

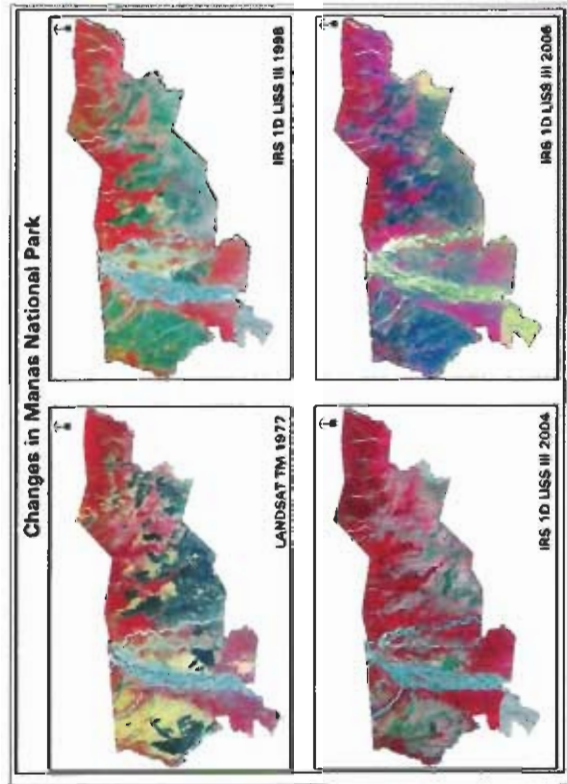


(C) Assamspk

The various habitat types in Manas were estimated of which 32 percent is covered with dry grassland, while 9 percent is covered with swampy grassland. The water body within the national park during winter is about one percent. The woodland dominates the national park with 47 percent area. Manas is one of the key sites within Assam where Assam Government is planning to re-stock rhinos from Kaziranga National Park and Pabitora Wildlife Sanctuary in coming years under the project widely known as the "Indian Rhino Vision 2020 (IRV 2020)". If rhino in viable numbers need to be re-stocked, the habitat quality within Manas in terms of rhino conservation needs to be maintained with vigorous habitat management tools.



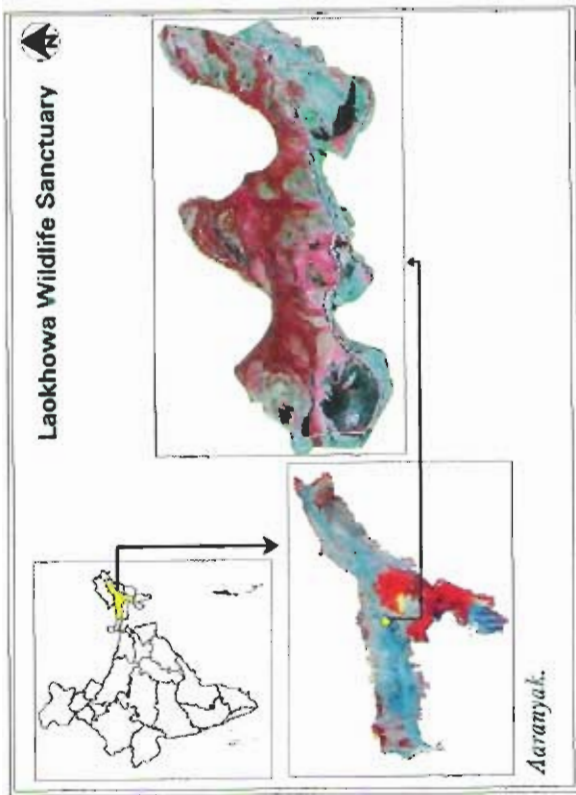
The analysis based on four sets of satellite imageries point out crucial changes of land use pattern within the Park from 1977 to 2006. An area of 20.05 sq. km has been deforested within the Park boundary within these years; out of which 15.33 sq. km. has been deforested in the southwestern part of the Park whereas 4.72 sq. km has been deforested in the eastern most part of the Park. Initially the surrounding forests of the Park were used for grazing and minor forest products collection by the local community of the fringe areas.



Similarly changes are also observed in the grassland pattern of the national park. Its has seen that swampy grassland areas of Manas National Park decreased from 94.38 sq. km. in the year 1977 to 44.37 sq. km in the year 2006.

The rhino-conservation has been found to be more challenging in Manas, specially after the post conflict era, where in the forest camps are attacked by the anti-socials and the forest staff killed, the morale of the park managers often becomes low. However with political stability reached it is time to regenerate the enthusiasm and make the rhino re-stocking in Manas National Park a reality under the IRV 2020.

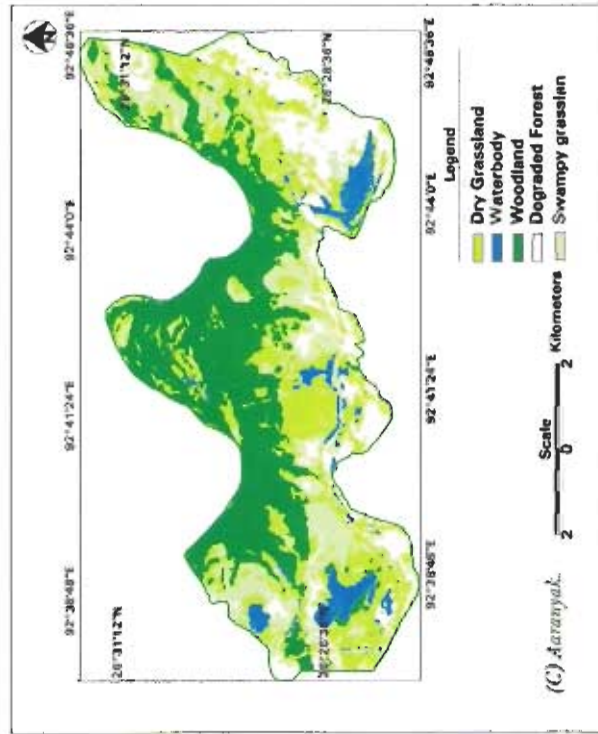
Status of Rhino and Habitat in Laokhowa Wildlife Sanctuary



Laokhowa wild Life sanctuary (LWLS) is situated in the state of Assam, India between the latitudes 27°30'N and 27°30'N and Longitudes 94° 08'E and 94° 08' in the flood plain of river Brahmaputra. The PA is located just in the central portion of the state of Assam. It is situated in the extreme north boundaries of Nagaon district touching the southern boundaries of Sonitpur district. The PA covers a part of the civil sub - division of Koliabor and Nagaon.

The Laokhowa was declared as reserve forest in the year 1907 vide notification No.11 dated 1/3/1907 and subsequently final notification has been issued on 1/10/1907 with an area of 25760 acres. The authorities after assessing the flora and fauna and its future prospect declared it as a GAME SANCTUARY in the year 1916 by notification dated 10/11/1916. The total area of the Sanctuary as per Gazette notification is 70.1 Sq. Km which was declared vide notification no. FRS-863/78/Part I/17 dated 6-9-1979.

Laokhowa WLS harboured about 70 rhinos in 1980. However during the ethnic unrest in between 1980-85, most of its rhino were poached. In 1981, six rhinos were poached, while in 1982 a total of 11 and in 1983 a total of 30 rhinos were killed by poachers and thus opened the pathways to exterminate the rhino population from the WLS rapidly. Currently there is no resident population of rhino available, although rhino does come to the WLS from Kaziranga occasionally.



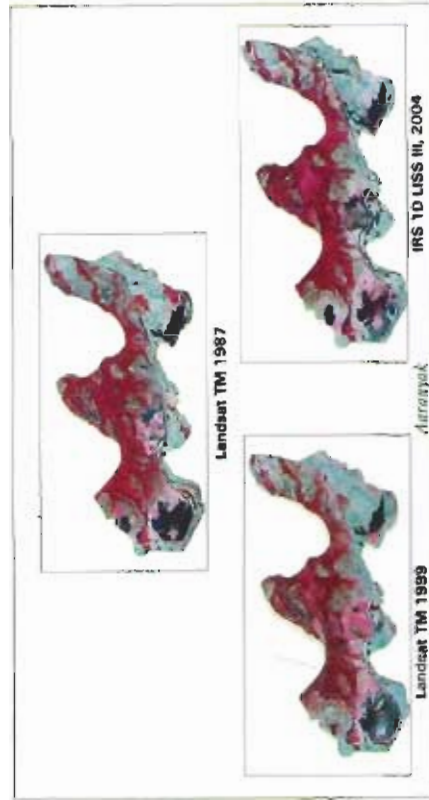
The habitat types within Laokhowa WLS were estimated of which 28 percent is dry grassland while 18 percent is swampy grassland. The grassland cover thus reflects the habitat availability for rhinos to restock in near future provided the security scenario improves in Laokhowa. The availability of 8 percent water body also provides hope that habitat could still house sizeable number of rhinos under the IRV 2020.



In the Laokhowa wildlife sanctuary significant changes has been observed in case of woodland area. It has been seen that woodland has increased in comparison to grassland area due to the natural succession process. It has been further observed that illegal human activities during the period of 1987 to 2004 have altered the forest land for non-forestry purpose.

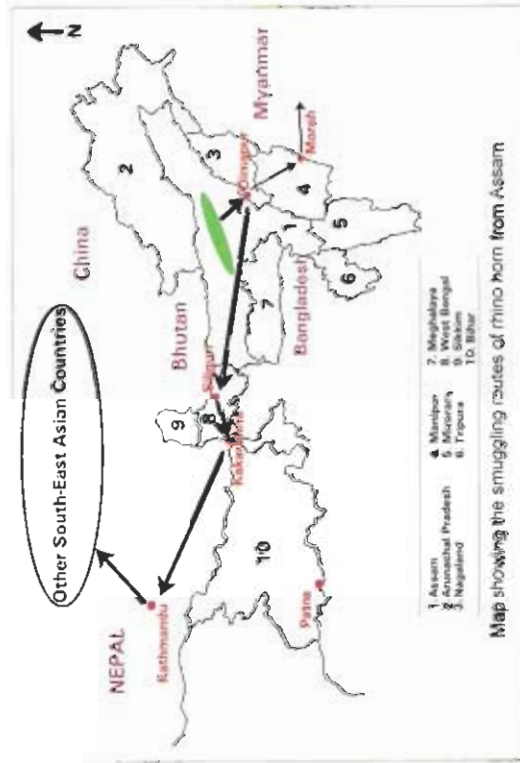
Another important observation that we have made during our intense field verification that the creation of artificial embankment through the wildlife sanctuary has leads to the increase of the degraded forest. People in the nearby fringe villages treat this embankment as the boundary of the sanctuary and most of the area in the south of the embankment used for agricultural purpose. Similarly a change has occurred regarding the grassland pattern of the sanctuary. The dry grassland has increased in comparison to swampy grassland in Laokhowa.

The Indian Rhino Vision 2020 also had the long term intention to restock rhino in the Laokhowa WLS. If the local people support conservation and political will further re-strengthened the possibility of rhino coming back to Laokhowa could not be overlooked at least from habitat point of view. However lots of hard work needs to be done to improve the security mechanism to ensure rhino protection in the WLS in years to come.



Future Strategy for Rhino Conservation in Assam

The threats posed to rhinos in Assam and also in its distribution range both within India and in Nepal, needs periodic assessment at regional level for follow up action. At no point of time, the anti-poaching staff of the rhino bearing protected areas could afford to be complacent. Combating the poachers has been an ongoing exercise that needs to be strengthened with improved intelligence gathering and rapid action to surprise the poachers and foil their attempts to poach rhinos. Continued monitoring is of utmost necessity and in fact the future of rhino in most of its habitat depends on how effectively we deal with the poaching threats.



In addition to poaching threats, it is high time to draw a road map to improve the habitat quality of rhinos in the rhino bearing areas of Assam. **Silting up of wetlands, transformation of grassland into tree forest needs scientific monitoring** to step in for improved habitat management. If rhino conservation continues to achieve success in future, habitat management would become the crucial key for long term rhino conservation in Assam. With geo-spatial technology available to assist habitat assessment, feasible solution towards effective management can't be far behind anymore.

Aaranyak



Assisting Rhino Conservation