AWARE
CONCERVATION&PHOTOGRAPHY
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Indian Rhino: Conservation success with a Megaherbivore

By Peter Hudson

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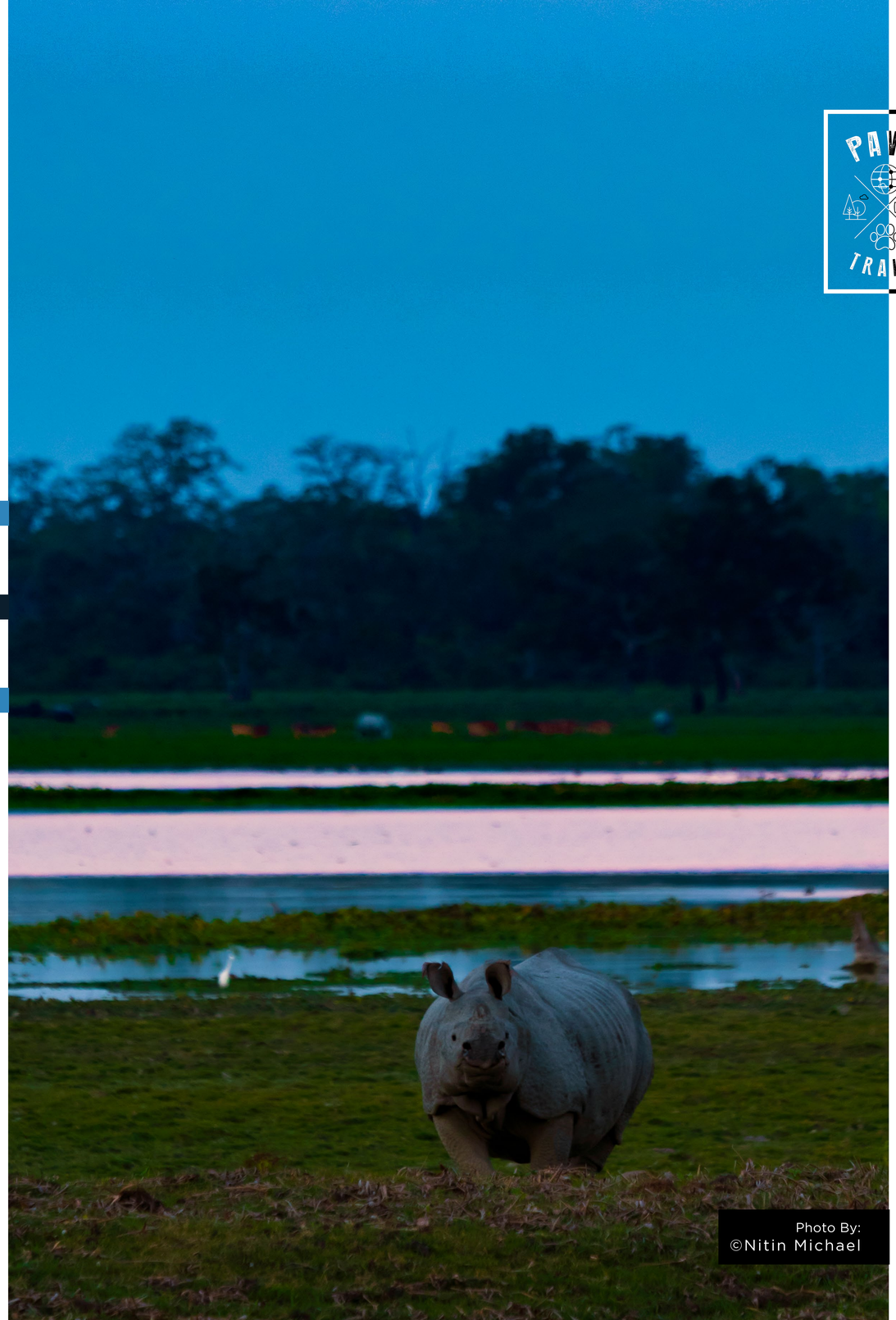

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Raghul Patteri
Editor

EDITOR'S DEN

So goes a famous quote whose origins are unclear -"For an actress to be a success, she must have the face of Venus, the brains of a Minerva, the grace of Terpsichore, the memory of a Macaulay, the figure of Juno, and the hide of a rhinoceros."

The proverbial thick hide, however, was not enough for the Rhino to survive the onslaught of poachers and habitat loss. The Indian Rhino population was decimated to such an extent that only 12 were left in the Kaziranga national park ok India. The Rhinos but did display an aspect of their thick skinniness in their marvelous recovery thereafter. Read about that heart-warming story of that recovery in this edition of PT Aware.

The effort to conserve Indian Rhinos is one of the happy stories in conservation and a textbook example of the importance and necessity of translocation as a tool to replenish and sustain a healthy population. Dr.Peter Hudson takes us through the nuances of this technique and other aspects of conservation efforts in general in this fascinating article.

At PawsTrails, we continue to associate ourselves with wildlife photographers from around the globe. It is no mean feat to capture inspiring images of a rare beast like the Indian rhino which is found hardly only in a handful of places. Hence these images are important to get the word on these fascinating beasts to the larger community. Habitat shots are effective in spreading awareness of the dependency of an animal on its habitat. Once again, we are grateful to all the wonderful people who have contributed the images that adorn the pages of this edition.

Our next edition will focus on the Dik-dik, so be ready to upload your best photos of these cute antelopes.

Photo by: Praveen P Mohandas

FOUNDERS' NOTE

Welcome to the last edition of PT Aware for 2021.

This year will be remembered as the time when the whole world pulled up its socks and undertook the biggest vaccination campaign in history to peg back the covid epidemic.

The results are now visible, and a good part of the world has gone back to normalcy.

At Paws Trails, we hope the world will come together in a similar fashion to compact climate change. Rogue and un-seasonal weather events are becoming a major problem in different parts of the world.

On a recent trip through the southern part of India, our editor was aghast to see unseasonal rains wreaking havoc with the harvest season. The heartbroken farmers were left helplessly staring at their harvest-ready crops now decaying in the fields. Extreme weather events are becoming more common. Rain (not snow) fell on the peak of Greenland's ice sheet for the first time in recorded history. Searing heat waves, raging floods, prolonged droughts, all are becoming more frequent.

Decisive action is overdue, even if it needs a complete re-think on our ways of life and habits, we must be ready for the change. Change can start with an individual, so we extort all our readers to be the change. Make small changes in your life, say no to all forms of single-use plastic, re-use and recycle, be mindful of the natural resources, reduce the usage of fossil fuels – there are a lot of things that each of us can do.

If nothing else, the corona pandemic has taught us that human will can surmount great odds. Now is the time to bring that spirit for the preservation of our planet – the only home that we have!

Hermis Haridas & Nisha Purushothaman
Founders - Paws Trails Explorers

THE STORY

Greater One-horned or Indian Rhino:

Translocation success with a Megaherbivore

By Peter Hudson
Conservation Director, Paws Trails
with Mary Fick,

Images by: Seema Suresh, Praveen P Mohandas, Nitin Michael, Jimmy Kamballur and Amartya Mukherjee

Peter Hudson is a scientist, photographer and conservationist. He undertook his first scientific expedition to Africa at the age of 21 and has been a regular visitor ever since. Passionate about nature, he manages his own 36-hectare nature reserve in Pennsylvania which is home to bears, bobcats and other animals.

In his professional career, Peter is the Willaman Professor of Biology at Penn State University. The focus of his research has been the infectious diseases of wildlife and in particular how new diseases emerge. For the past 11 years he has been working on how and why viruses move from bats to humans in an attempt to predict when viral spillover occurs. He has also been studying the wolves in Yellowstone, tortoises in the Mojave Desert and bighorn sheep in Idaho.

Peter is the Conservation Director at Paws Trails and uses his skills as a scientist and educator to increase awareness about conservation issues. He is supported by two interns at Paws Trails: Hayden Kissel and Shreya Menon. He is also heavily involved with the Random Good Foundation that undertakes story telling for social change. He is an adjunct Professor at The Nelson Mandela African Institute of Science and Technology based in Arusha, Tanzania and a Fellow of the Royal Society.

peterhudsonphotos.com

Photo by: Seema Suresh

The Megaherbivores

The rhinos along with elephants, hippos and giraffes constitute an interesting ecological group of animals that are called the Megaherbivores; animals whose body mass exceeds 1000 kgs and feed on terrestrial plants. In many ways these species are just the remnant of a much larger community of massive animals that used to dominate the landscape over many continents. During the Mesozoic (65-200 million years ago) the megaherbivores were represented by a remarkable diversity of dinosaurs and then during the Pleistocene (2.5 million to 12,000 years ago) many of the ecosystems had a wide range of strange looking mammalian megaherbivores like mastodons, giant sloths, and woolly mammoths.

Herbivores are in an arms race with their predators and to avoid being eaten they must either be faster, more agile and more astute than the predators or, they must grow to a size where they can defend themselves. Megaherbivores have taken the latter approach, sucking as much energy and nutrients as they can from plants and growing so large that predators can only bring them down when the adults are injured. To grow to such a size, these megaherbivores must have a slow life history, taking many years to obtain the energy to become massive, armed with a good thick skin and weapons to defend themselves with like tusks and horns. This slow life history entails long generation times with delayed maturity and few young each year which also means populations can't recover fast after a catastrophe or period of heavy hunting, and constant high mortality drives their population towards extinction. Indeed, the dominant explanation for the demise of the megaherbivores at the end of the Pleistocene was the combined effects of a change in climate with human over-exploitation through hunting. Not too different from the situation our remaining megaherbivores are currently facing.

Excessive and illegal hunting of elephants and rhinos is the major threat faced by the megaherbivores. Initially the hunters were primarily after the large quantities of meat but, this is not the case today, it is now mostly for their tusks and horns which are used in both eastern medicine and are considered signals of wealth. These megaherbivores consume large quantities of vegetation and are often destructive, so are hardly compatible with modern agricultural practices. As such they are limited to the remaining, and often fragmented, wildlands and protected areas of the world. Even in protected areas they are still persecuted by illegal hunting for ivory and horns. We have explored this in previous issues where we have examined both Indian and African elephants, the giraffes and now turn our attention to the Greater One-horned, or Indian Rhinoceros (Rhinoceros unicornis)

Photo by: Nitin Michael

Photo by: Praveen P Mohandas

Photo by: Praveen P Mohandas

Photo by: Jimmy Kamballur

which have shown a good recovery of numbers through protection and transloaction.

The recovery of the Indian Rhino

The Indian rhino was persecuted for many years. By the end of the 19th century the population had been decimated through excessive trophy hunting and by 1980 there were only 12 rhinos left in Kaziranga, an important national park in Assam, that should hold the focal population. Since then, the recovery of this species has been one of the great success stories of Indian conservation and it is good to see and celebrate such successes.

The Indian rhino was brough back from the very brink of extinction through action by the Indian government in concert with the state of Assam, so that now the IUCN estimates there to be about 3588 individuals in the wild. By 2012, more than 96% of the Indian rhinos were in Assam and the species had been eliminated from Bhutan, Bangladesh, and Pakistan. In contrast the Indian population is now burgeoning with good populations not only in Assam but also in Utter Pradesh, West Bengal and across the border in Nepal. They inhabit the alluvial flood plains in the foothills of the Himalayas, often spending large amounts of time in the tall grasslands along the valley bottoms. This deep and difficult habitat offers protection from attack by tigers, so rhinos have a competitive advantage over other herbivore species.

Photo by: Nitin Michael

Photo by: Seema Suresh

Photo by: Praveen P Mohandas

Translocation to spread the extinction risk:

Megaherbivore numbers can recover from heavy poaching if the poaching pressure is eliminated totally, and the habitat is in a good state with plenty of food and free from disease. However, when the habitat is fragmented, the rhinos can't disperse to the isolated islands of habitat and so we need to give them a helping hand to translocate them to the new sites. Occasionally translocations are also needed when small, isolated populations have lost their genetic diversity and the animals need new blood to improve genetic diversity and prevent inbreeding depression. I can't stress enough how important it is to ensure that the limiting factors have been removed from the area before the animals are translocated otherwise you are just feeding the precious animals to a mortality factor. With some other species, like Bighorn sheep, we have seen tragedy where the animals are reintroduced into areas where the habitat is not sufficient or the pressure from disease causes mortality.

With the recovery of the Indian rhino population, the IUCN downgraded their status from Endangered to Vulnerable in 2008. The real threat to them now is habitat loss and fragmentation, with more than 70% of the current population in Kaziranga. This makes the whole species vulnerable to a catastrophic event such as a fire or a disease outbreak that could devastate the

Photo by: Seema Suresh

Photo by: Seema Suresh

population. For example, in 2020 there was an outbreak of anthrax in Jaldapara National Park that killed at least 5 female rhinos out of a population of about 204 and this could have been much worse, so it is important to have multiple populations to spread the risk and reduce the likelihood of extinction.

There are several areas where there used to be healthy rhino populations on the border between Assam and Bhutan, but the populations have been wiped out by human persecution, either by poaching or during civil conflict. The areas are good habitat and simply need rhinos and so in 2005 the Indian government and the state of Assam launched the Indian Rhino Vision 2020 program with the objective of increasing numbers to 3000 rhinos in Assam by the year 2020, spread over seven protected areas. Initially, they planned to translocate and reintroduce rhinos into four new protected areas, but this became possible only in Manas. As a part of this program, 18 rhinos were translocated from Pobitora Wildlife Sanctuary and Kaziranga National Park between April 2008 and March 2012. Four of the animals were calves rescued and hand reared during floods at Kaziranga. Since rhinos can be stressed by long journeys in vehicles over rough roads some rhino translocations have involved moving them by hanging the animal upside down under a helicopter and moving them quickly to remote release sites. The first three months post-release is the most critical for rhinos to settle down in a new habitat and require careful monitoring.

One of the interesting features of rhinos is that communication between these highly solitary animals is limited. They do call and have a good sense of smell, but their eyesight is weak, and they locate the presence of other animals and discover their reproductive state by visiting fecal middens. When animals are translocated one of the big problems is that this is unknown territory with no other animals so they may just get up and move off through crops and villages looking for other rhinos. To stop this wandering behavior the translocation crew introduced middens along the edge of the reserve so the animals would visit them and think there were other animals beyond. Indeed, this did seem to work for the first two individuals released, subsequent releases then knew of the presence of the original two. Interestingly, while rhinos are solitary the released animals formed casual bonds with no aggression and spent time moving together through the new habitat.

More than 200 rhinos have been translocated through this vision program and by 2018 the Assam population had reached 2650 and the best estimate was that the final 2020 population was probably not far off the target of 3000. Reintroductions were followed up with active rhino guarding and the poaching risk has fallen dramatically. This has been so successful that the chief wildlife warden for Assam has

Photo by: Nitin Michael

Photo by: Jimmy Kamballur

Photo by: Amartya Mukherjee

called for a second Vision program to increase rhinos again with introductions into Laokhowa Burasapori, Panidihing and Dibru Saikhowa National Parks, areas where poaching had previously eliminated the rhino.

Other Threats

There are a few instances where the quality of the habitat has declined through the invasion of weeds into the habitat and over grazing by domestic animals. For example, Chitwan National Park carries the second largest population of Indian rhinos and the numbers have declined because fewer female rhinos are producing calves, and this is considered indicative of negative changes in habitat quality through weed invasion. An alternative explanation could be inbreeding depression and, while there is no evidence to support this, there are concerns in Jaldapara and Gorumara where the sex ratio is almost 4 males to 1 female and the males fight frequently. In such situations, the looser often tries to disperse away from the park but then they walk into neighboring agricultural areas and come into conflict with people.

Conservation action clearly requires strict anti-poaching measures and at times the use of fences to stop the rhinos from damaging crops. Many areas also require targeted programs to control invasive plants and prevent the spread of woodlands into wetlands through appropriate water management. Grazing by domestic animals must be controlled and the use of buffer areas which allows some domestic animal grazing and retention of wetlands could be helpful for the rhino population in contrast to the hard edges of the protected areas. Indeed, the rhinos are a species that need wetlands and to prevent them wandering away from the reserve into opportunities for poachers, they need to retain water and moist grasslands within the sanctuary.

Photo by: Praveen P Mohandas

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