

# PRE-AWARE

CONSERVATION & PHOTOGRAPHY  
JAN / FEB 2020

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**TIGER**  
BY PETER HUDSON



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Photo By:  
Shyam Bhagra

**Publisher:** Paws Trails Explorers **Editor:** Raghul Patteri **Conservation Director:** Peter Hudson  
**Content Director:** Nisha Purushothaman, **Director Photography:** Hermis Haridas, **Design desk:** Nithya Purushothaman  
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Raghul Patteri  
Editor

Wish you all a happy New Year, 2020!

The tiger is the largest of all cats and an iconic species which has captured the imagination of people since time immemorial. This charismatic animal is revered as the national animal of India, Bangladesh, Malaysia and South Korea, and is depicted popularly in ancient mythology and folklore. Even modern literature and films have featured the tiger prominently. When William Blake wrote his famous poem “Tyger Tyger, burning bright” the fiery imagery used throughout seems to conjure the aura of danger around the tiger. The Poet seemed to be telling us not to mess with the tiger, otherwise risk getting burned!

Metaphorically, perhaps that is what has happened. Modern humans not only messed with the tiger but also set in motion a drastic series of conservation issues that we are still reeling from. We not only decimated the tiger populations (from about 100,000 tigers in the 1900s to just 1400 in 2008 – a fall of 98.5%) but also the habitats and many other species which inhabited these places and causing impacts on ecosystems and climate.

In this edition of PT Aware, join Dr. Peter Hudson and explore the different facets of tiger conservation. Learn why the tiger is both a charismatic and a flagship species and why it is a testbed for conservation activities. Today, there are primarily three issues that plague the tiger – habitat destruction, poaching of their prey and poaching for body parts. Among these, the third is the greatest immediate threat and if this can be curtailed, there would be an upswing in tiger populations. Unfortunately, there is a huge demand for tiger body parts, making the animal worth more dead than alive.

PT Aware brings you interesting facts about different species and conservation issues from around the world. We associate with brilliant scientific minds and gifted photographers to bring you the best of both worlds, the latest scientific perspective, and spectacular photographs. Thanks to all the wonderful photographers who shared their giraffe images for this edition. Our next edition will focus on the Wildebeest, so prepare to upload your photographs of these intriguing animals. Selected photographs will be published to portray the story of these African ungulates.



Photo by: Amartya Mukherjee

EDITOR'S DEN



A tiger with orange fur and black stripes is walking towards the camera on a path of brown rocks. The background is filled with tall, green grass. The right side of the image is overlaid with a semi-transparent brown box containing text.

# FOUNDERS' NOTE

Welcome to the seventh edition of PT Aware. With this edition, we enter our second year of publishing.

If you grew up in India, China or Southeast Asia, your childhoods would have been incomplete without the magical tales of the tiger. Popular literature and folklore have featured the tiger prominently in these cultures both as heroes and villains.

They were both revered and feared and there was an aura of mysticism associated with these magnificent cats.

Tigers are difficult subjects to photograph, being extremely elusive in nature. The thick vegetation of their typical habitats combined with the clever camouflages helps them blend into their surroundings, making them difficult to sight and frame. But, once you get past these obstacles, they can give you awe-inspiring photographs.

It is our request to the nature photography community that you select a tour operator that benefits the local communities in all your expeditions. Conservation cannot be treated as a nature or scientific issue which has to be dealt with by conservationists and researchers. No conservation activity can be successful without the participation and support of the local communities, and hence modern conservation approaches take into account the social angle too. This is very salient for tiger conservation since one of the biggest threat to tigers is the demand for body parts worldwide. Awareness programs at both levels, the areas of poaching and the areas of consumption, along with strict action from various governmental agencies are the need of the hour.

We thank all the wonderful photographers who have contributed the wonderful photographs which you enjoy in the pages of this magazine. The worldwide PawsTrails community helps us to harness the power of community photography and use it as an effective tool to drive home the message of conservation and peaceful co-existence with our fellow beings. Thanks again for all the wonderful tiger images, and we pray for your continued support to help us tell the tales of fabulous species from different corners of the earth.

[www.pawstrails.com/register](http://www.pawstrails.com/register)

**Hermis Haridas & Nisha Purushothaman**

Founders - Paws Trails Explorers



THE STORY

# Saving the Tiger: The Flagship Species

Recent scientific and conservation activities for the Tigers of India

By Peter Hudson,  
Conservation Director,  
Paws Trails







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**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. He has been running scientific studies on the wolves in Yellowstone, tortoises in the Mojave Desert and bighorn sheep in Idaho. He is currently involved in a major project in Australia investigating the viruses associated with bats.

**Peter established a new global health institute at Penn State that seeks to develop the concept of One Health, whereby the future health of humans is dependent on that of the environment, livestock management and the conservation of wildlife. 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](http://peterhudsonphotos.com)

[instagram.com/peter\\_hudson018](https://www.instagram.com/peter_hudson018)

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There are a few priority species that are the test bed for conservation – important, charismatic and special species that if we can't save them in the wild then there really isn't much hope for most other species, let alone ourselves. Of course, the panda, the emblem of the World Wildlife Fund, is one that comes to mind immediately as does the tiger (*Panthera tigris*). These species are not only priority species, they are also flagship species, since in protecting them we will also save their habitat, food species and many other species.

The real objective of conservation is to retain a functioning ecosystem, but to do this we sometimes have to focus on a single flagship species and then let everything else fall into place. This requires a free-living healthy population of the flagship species, that won't be wiped out by some extreme event like a tsunami or a disease outbreak. How do we ensure this does not happen? Well we need a good number of individuals, spread over multiple areas, these areas need to be connected and then good variation in the genetic, behavioral and ecological traits of the species (figure 1).

### Genetics and Tiger Conservation

If you read these articles regularly then you will know that scientific techniques have progressed very fast over the past 10 years,

and now we can sequence the full genome of any species or subspecies and make comparisons between genomes to determine which population is really genetically separate from another and identify which are subspecies. This has had annoying repercussions for bird watchers since there has been "taxonomic inflation" as scientific workers have applied the rules of "the phylogenetic species concept" to identify new species and then made name changes. One species of hummingbird I once worked on and published papers about, no longer exists and as such I wonder if anyone will ever read that work when the species doesn't exist!

The reclassification of species and subspecies has big impacts on conservation policy. The job of the IUCN (International Union for Conservation of Nature) is to determine the status of every species and subspecies, so when we divide a species into 2, then they need to redefine the status of each species. This has happened recently with the division of African elephants into the savannah and forest elephants and may change quite soon for the giraffe. Indeed, despite the interest and importance of tiger conservation there is also debate about how many tiger subspecies there really are. This is important since conservationists need to know what they are working with and which individuals should be allowed to breed in captivity, translocate between areas or find habitat corridors to connect populations – and you can't do

### Figure legends

Figure 1: Tiger conservation landscapes and protected areas in the tiger range. Note how the protected areas within the respective Tiger Conservation Landscapes are connected by habitat, with potential to facilitate tiger dispersal between them. The Nagarahole National Park is in south west India. The "S" and "P" refer to locations of Sariska and Panna Tiger Reserves, reserves with no connectivity and where tigers went extinct – see text. After Wilmramanyake et al 2011.

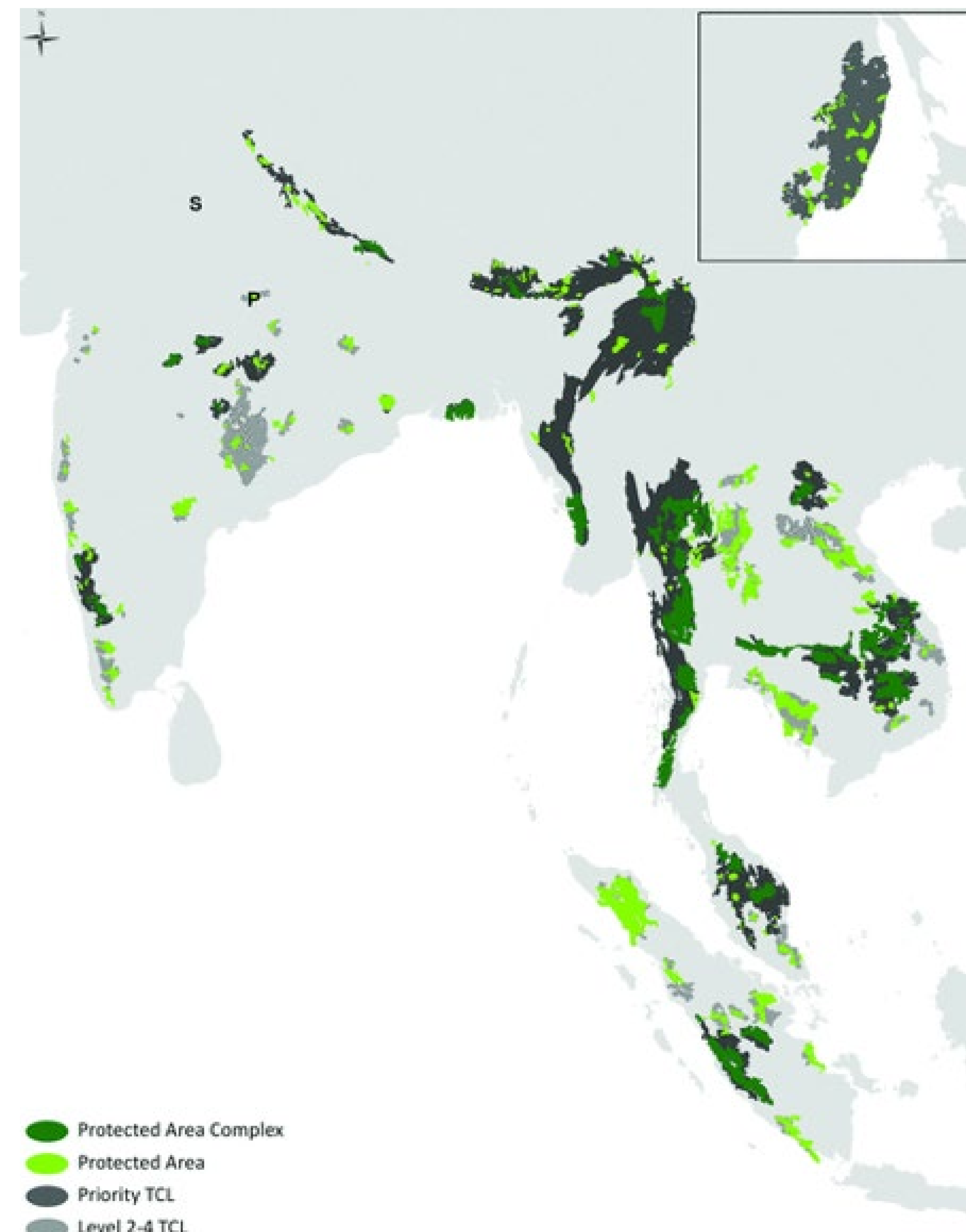


Figure 1









this without knowing what you are working with. This is equivalent to a farmer not knowing how many fields they have to harvest – we need to know what we are working with.

At the end of the Pleistocene era, the total tiger population hit a low and their genetic variation fell as they passed through a “genetic bottleneck”. One consequence of this is that even though the tigers subsequently expanded across Asia, there is still not a large amount of variation between the different populations. The IUCN currently recognize 5 free-living subspecies: the Bengal, Indochinese, Amur, Malayan, and the Sumatran. The South China Tiger is probably extinct as are three other subspecies. The Bengal is listed by the IUCN as endangered while the Sumatran and Malayan are listed as critically endangered. However, a recent study that applied modern genomic techniques and also incorporated the more traditional morphological measurements has recently proposed that there are in fact just 2 tiger subspecies in the wild: what they propose to call the Continental tiger and the Sunda tiger. The Continental tiger would include most of the subspecies including the Bengal, Caspian, Amur, South Chinese Indochinese and Malayan. The Sunda Tiger would include the Sumatran tiger and those populations in Bali and Java. The WWF recognize the tiger as 2 species and the IUCN say their specialist cat group is reviewing the



information so my suspicion is this finding will be endorsed.

### **Pressures on Tigers**

Essentially there are three main threats to tigers. First is the destruction of habitat in a part of the world where the human population has increased dramatically and is encroaching into natural areas and replacing tiger forest with farmland and forestry. Roads and farmland break-up the habitat so the tiger population is fragmented and no longer viable and if they do try and move between tiger habitats then tiger-human conflicts arise.

Second is the poaching of prey – tiger density depends on a good prey base and as the density of the prey falls, through poaching, so tigers need larger and larger areas. Overhunting of game is not uncommon in Asia and this leads to tigers having effectively nothing left to eat and so we see increased attacks by tigers on livestock and people.

Third is the continued illegal poaching of tigers. Tigers are killed and almost every part of their body including bones, eyes, whiskers and teeth are used to treat ailments and disease. The desire for tiger parts has skyrocketed in recent years as the Chinese have a newfound wealth and spending power and this has been reflected in a growing interest in traditional cures. This demand could be curtailed really quite quickly with increased support from the Chinese



Photo by: Balakrishnan Raju









government and social pressure to have this use of animal parts considered socially unacceptable but sadly it continues without intervention.

To try and put this into perspective, there are roughly one million square kilometers of unoccupied tiger habitat that is devoid of tigers because of the poaching of tigers and their prey. As such you could say poaching is the greatest immediate threat to tigers range-wide since if this is stopped the numbers would increase. In the longer-term habitat destruction and the need for landscape connectivity is the main issue.

#### **Tiger Conservation**

More money has been spent on tiger conservation than any other single species – and yet it inhabits just 7% of its former range and 70% of the tigers alive today inhabit just 0.5% of their former range. In 1973, the Indian government set up Project Tiger and established Tiger Conservation Units around the country, protected areas that are exclusionary and set aside for a sustainable tiger population. This was followed in 2008 by the World Bank’s Global Tiger Initiative. These exclusionary tiger units have caused issues with local people since the units impinge on culture, religion and the livelihood of local people. Herein lies a major issue in the conservation issues for the tiger – we need these exclusionary protected areas that are linked to others for a sustainable tiger population, but

these antagonize local communities and we need their support for success.

Tiger numbers fell dramatically last century from about 100,000 tigers in the 1900s to just 1400 in 2008 – a fall of 98.5%. Since then tiger conservation has seen signs of recovery with about 1800 individuals in 2010, and now 2600 in 2018. One goal of tiger conservation is to get these numbers back to about 4000 by 2022. With no persecution the current reserve system could accommodate about 10,000 tigers. The current plan is somewhat similar to that of the African rhinoceros recovery program; first secure a series of source sites protected from poaching, then to switch attention and resources to conserving the corridors and adjacent habitats that connect and surround the source sites, so that these populations can expand. The real issue is that poaching of game and tigers continues and the habitat corridors are imperative for the dispersing young male tigers as they go off in search of new territories and females.

Tiger conservation needs a landscape approach for long term success. There are issues with small fragmented populations – they start to suffer from inbreeding and do not have genetic viability so the tigers from these locations must be able to disperse and integrate with other populations and at the same time allow new tigers to be introduced.







The tiger conservation units need landscape connectivity with suitable habitat in the corridors, otherwise the tigers are walking through farmland. We know tigers will disperse more than 100km (60 miles) and yet are reluctant to cross more than a few kilometers of unsuitable

land cover.

Historical evidence has shown that even heavily hunted tiger populations can recover once the hunting is curtailed, as long as there is good connectivity between the subpopulations. One of the areas

well connected is the Nagarahole National Park, tiger densities there ranged from 7.3 to 21.7 tigers/100 km<sup>2</sup>, and camera traps showed there was rapid turnover of individuals who either died or dispersed in and out of the park. Nagarahole is

embedded within a landscape across the Nilgiri range in the western Ghats and is connected to other reserves by suitable habitat (figure 1). The success of the Nagarahole tiger population lies in its connectivity to other reserves and has about





300 tigers. In contrast poaching eradicated tigers from Sariska and Panna, two of India's premier tiger reserves and the populations have not been reestablished since there was a lack of connectivity (figure 1). As a consequence, the Indian government was forced to transport tigers by helicopter into these areas and reestablish the reserves.

If we could stop poaching tomorrow, then tigers would bounce back quite fast but the continued destruction of tiger habitat, particularly the corridors, is very worrying for the long-term sustainability of tiger populations. The Asian Development Bank estimates that about \$750 billion per year will be invested over the next decade in new infrastructure projects in the Asia-Pacific region. Much of this will go into roads and highways that will traverse reserves and fragment habitat even more. There is a need to strongly advocate for and secure existing corridors and produce a landscape of connectivity.

### References

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## What can you do to help tiger conservation?

**1. Encourage a young person** to respect and admire tigers by helping them with a school project or develop a specific interest in tiger conservation awareness. Encourage them to tell their friends and others. Wouldn't it be wonderful to inspire the next Greta Thunberg for tiger conservation and even better if this were a young Chinese pen-friend?

**2. Be a responsible tourist and photographer** and visit tiger reserves but travel with tour operators that support the communities that live alongside the tiger reserve and ensure your ecotourist dollars go to help tigers. Be respectful while you are there of the tigers and their habitat, and ensure your driver does the same.

**3. Purchase only forest-friendly products** – ideally those with the label of The Forest Stewardship Council which means the product is from a responsibly managed forest. This is where trees are harvested legally, highly hazardous pesticides are not used, the rights of indigenous people are protected, and help save the habitat of tigers. This is not trivial – The WWF discovered a link between the use of toilet paper on supermarket shelves in the United States and the destruction of tropical forests and tiger habitat in Sumatra.

**4. Increase awareness about tigers** and tiger persecution to bring social pressure on people that use tiger products. Do this within your social circles by donating and/or becoming associated with the social media of the World Wildlife Fund, Panthera, Smithsonian Tiger Conservation Fund, Born Free and National Tiger Sanctuary. Post your photos on social media and highlight the issues of persecution and habitat destruction and hashtag the organizations doing good work.

**5. Adopt a tiger with WWF or Born free** where you can symbolically adopt a tiger for yourself or another and help fund the conservation work. There are different adoption packages available, ranging from as little as \$5 a month and it is a great way to fire the enthusiasm of a young person.















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CONSERVATION PHOTOGRAPHY  
Photo by: Peter Hudson



**PAW** AWARE  
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Photo by: Ganesh Namasivayam

















**PT. AWARE** Photo by: Sai Kumar



**PT. AWARE** Photo by: Arindam Halder









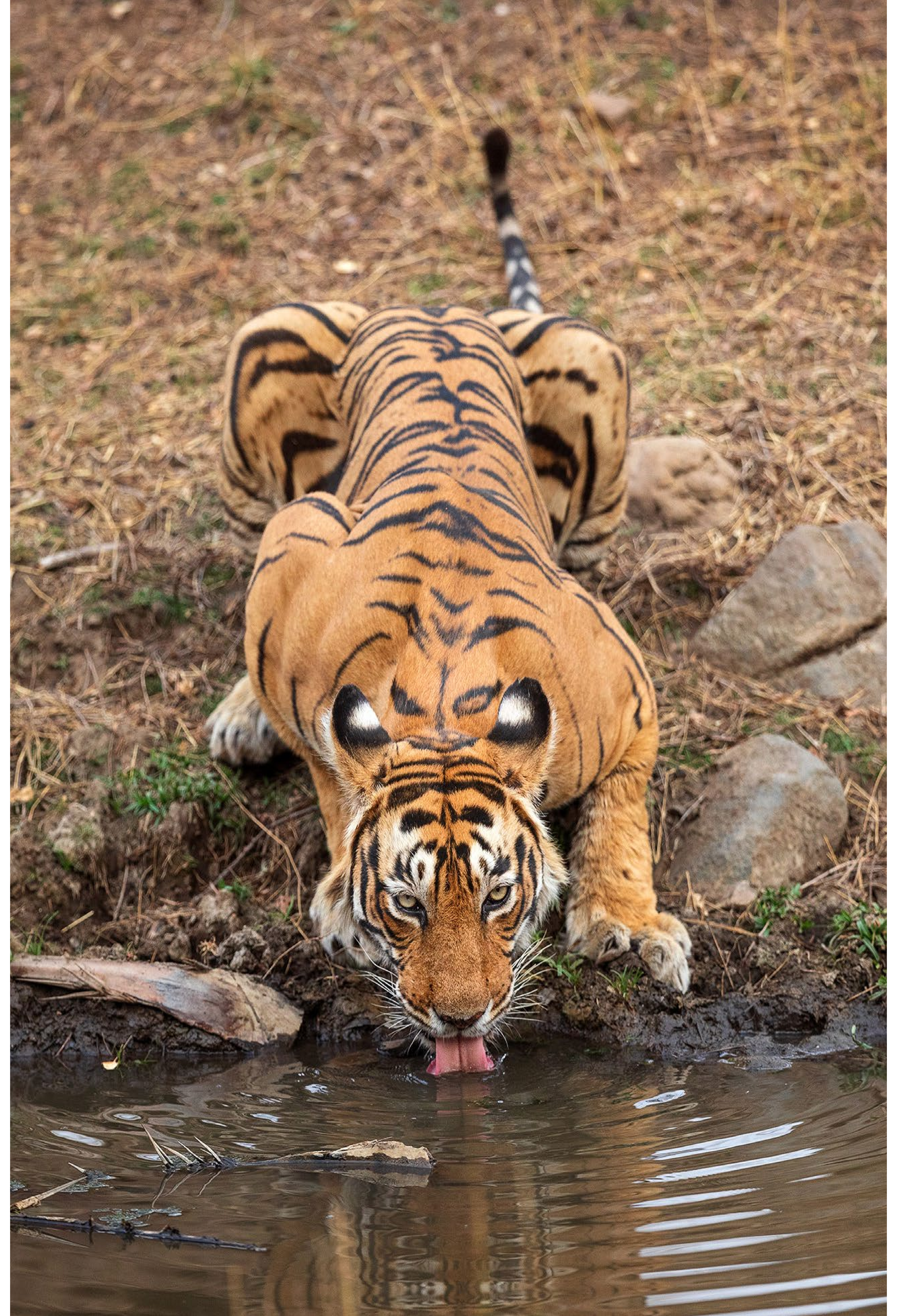








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