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**AWARE**

CONSERVATION & PHOTOGRAPHY  
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**WILDEBEEST**  
THE GREAT MIGRATION  
BY PETER HUDSON

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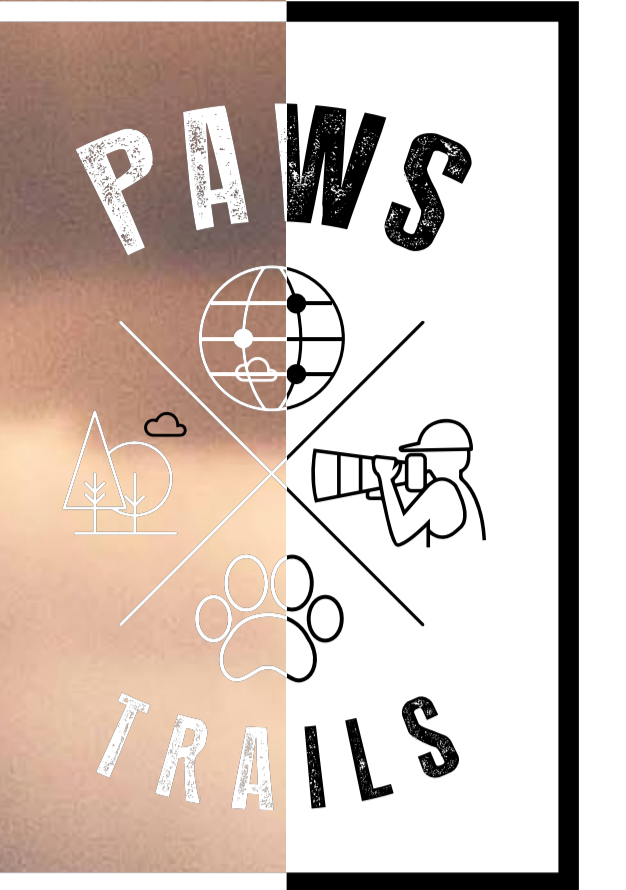
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**Publisher:** Paws Trails Explorers **Editor:** Raghul Patteri **Conservation Director:** Peter Hudson  
**Content Director:** Nisha Purushothaman, **Director Photography:** Hermis Haridas, **Design desk :** Nithya Purushothaman  
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Rahul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



Raghul Patteri  
Editor

Imagine a child's reaction to her favorite doughnut which is missing the mandatory topping of sprinkles, that in a nutshell is the plains of east Africa to you, if the wildebeests were to vanish from there. Among the most numerous animals to roam the African plains, the wildebeests are famous for the most defining image of the Serengeti - Mara ecosystem, The great migration. Every year hundreds of thousands of wildebeest along with zebra and gazelles migrate from Tanzania's Serengeti to Kenya's Masai Mara in search of lush grass. This is the biggest migration of mammals in the world and when they encounter the Mara river on the way, they are forced to take the plunge into the dangerous crocodile-infested waters.

The ecological significance of the wildebeest is hard to ignore. They are one of the most reliable sources of food for the big cats and other predators of the African savanna. The annual migration plays an important part in sustaining the ecology of the Mara river. The thousands of animals that drown or fall prey, contribute critical biomass to the river and its inhabitants.

In this edition of PT Aware, join Dr. Peter Hudson to learn more about these ungulates. Read about the threats they face and actions for conservation. Conserving the wildebeest population is important to the survival of the entire ecosystem of the region and it is imperative that solid measures are taken to ensure their survival.

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 wildebeest images for this edition. Our next edition will focus on the Serval cat, so prepare to upload your photographs of these secretive animals. Selected photographs will be published to portray the story of these mysterious cats.



Photo by: Todd Gustafson

EDITOR'S DEN



## FOUNDERS' NOTE

There are very few spectacles on earth like the annual great migration of Africa. The various factors at play and the sheer numbers of animals involved can be quite astonishing to the uninitiated. We consider ourselves fortunate to have witnessed this spectacle multiple times, but even now this event never ceases to cause us goosebumps. And how can you overlook the main protagonist of this epic journey, the humble Wildebeest.

More than a million Wildebeests migrate each year, braving continual hunts from predators, the murky waters of the Mara river and the lurking crocodiles. In the whole process they bring new life along the way by replenishing nutrients in the ecosystem. The migration also creates ample photographic opportunities with great chances of capturing the thundering herds, hunts, crocodile kills, baby births and more. It is a big magnet for tourists and brings much needed foreign exchange to the economies. Join us to celebrate these humble beasts of the savanna.

PawsTrails is spreading its wings around the world. This month we launched our first overseas wing - PAWS TRAILS CANADA. Canada is a huge country with amazing wildlife and abundant wild areas. Requesting everyone to follow us on our dedicated Instagram handle @pawstrailscanada. We aim to harness the power of community photography in Canada to spread the message of conservation. Proudly announcing our first event in Canada : World Wildlife Day - a wildlife photography exhibition, on the occasion of world wildlife day, 3rd March. Please follow us on Instagram to keep abreast of our different events. We cordially invite your partnership, participation and support.

We thank all the wonderful photographers who contributed the wonderful photographs which you enjoy in the pages of this magazine. The worldwide Paws Trails 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 Wildebeest 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

# Wildebeest

The Great Migration 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 truly is nothing quite like the migration of large numbers of animals moving across open savannah. The incredible sight of thousands upon thousands of large ungulates like wildebeest (*Connochaetes taurinus*) moving across the Serengeti plains, watching them cross the Mara river and seeing them face continual attack from predators, is just a remarkable spectacle. I am blown away by the sheer biomass of animals and their relentless onward movement, not stopping for anything but to grab a bite and then on again, undistracted by temptations of relaxing in the shade and undeterred by challenges from rivers, crocodiles and storms. This is a sight everyone should experience in their lives, just to marvel at the sheer excitement of the natural world and one that we must ensure remains for our children and grandchildren.

### **The Great Wildebeest Migration**

The wildebeest migration involves about 1.4 million wildebeest moving across an area of 30,000 square kilometers, accompanied by 0.6 million Zebra (*Equus burchelli*) and Thompson's Gazelles (*Gazella thomsoni*)<sup>1</sup>. They move seasonally between the dry and wet seasons from the southern short grass plains in the Ngorongoro Conservation Area up to the Mara - a round trip of at least 650 km a year. Of course, this is not a straight run and each animal moves on an average, between 4-7 km a day so most animals are moving more than 1,500 km a year. That is a

huge distance, and why it is referred to as the Great Migration.

The migration is driven by a gradient in the seasonal rainfall from the south eastern short-grass plains up to the tall-grass woodland and savanna habitats in the Mara. At the end of the wet season, after giving birth to their young, they must leave the plains where the grass has dried up and move northwards to the areas where it is raining and the grass is greening up. They seek special nutrients including nitrogen, sodium and zinc while the females with their growing young need magnesium. The short grass plains provide the best nutrients, but these are only available while the grass is green and growing. The nutrition levels in the south are particularly good because repeated volcanic eruptions have covered the area in a rich sediment pan made up of sodium, potassium, and carbonates.

Using information on food availability, timing and then fitting models to the movement of wildebeest movement<sup>2</sup> has shown that wildebeest move to get high quality grass -nutritious green grass and this is more important to them than food quantity. The variation in food quality explains not only the small-scale patterns of local movement but also the overall long-distance migration. In this respect the rain acts like a switch, making the nutrient rich grass available so once the grasses in the south are exhausted, and they have dropped their calves they must keep moving



Photo by: Peter Hudson





to get the better-quality grasses. Interestingly the wildebeest also give back and they also benefit the grass, they recycle nutrients back to the soil from their droppings and their feet break up and tiller the soil, pushing these nutrients back into the soil and in so doing the wildebeest can more than double the growth rate of the grass.

### **Conservation and Migration**

Naturally, the conservation of large migratory species requires maintaining large areas of ground with natural vegetation and a free and easy movement of the animals from one location to the other. The massive pressure on habitat from the incursion of agriculture, forestry, fences, roads and the sheer number of people would stop the movement of animals and destroy the migratory system. This has happened previously in multiple situations and we have lost and are about to lose many of the remaining big migrations. On the Great Plains of North America, the American bison once numbered as many as 30 million animals and were decimated by over-hunting. In Central Asia, the Saiga antelope has declined from over 1 million animals in 1980 to about 124,000 adults in 2018.

While our minds are always drawn towards the Wildebeest in the Great Migration, there are other wildebeest populations in East Africa that exhibit movements and they have been suffering declines. In Kenya, the wildebeest population



Photo by: Todd Gustafson

that migrates annually between the Maasai Mara and the Loita Plains has declined by more than two-thirds over 40 years due to the expansion of agriculture. In the Athi-Kaputiei ecosystem, the wildebeest migration between the Nairobi National Park and the Athi-Kaputiei Plains has declined by more than 90% over the past 40 years because of urbanization and fencing. In Tanzania, the wildebeest migration from Tarangire National Park to the Simanjiro Plains declined by 88% over 30 years due to cultivation and settlements blocking the migratory corridors. In every case, wildebeest populations collapsed when they are prevented from accessing their wet season ranges. The dry season areas are usually protected but the wet season range is invariably outside of protected areas.

The Serengeti-Mara ecosystem migration has been sustained because it has survived in a relatively intact ecosystem contained within a network of protected areas. Nevertheless, even this is threatened. Recall this is the largest large mammal migration in the world, of iconic importance for tourism and was the reason the Serengeti National Park was listed as a World Heritage Site. Tourism generated an estimated US\$1.2 billion revenue in Kenya in 2012 and US\$1.3 billion in Tanzania. If we were to lose this migration, not only the wildebeest but also the predators like lions and cheetahs would fall dramatically and this would





Photo By: Todd Gustafson

undermine East Africa's key tourism product.

There are concerns about what is happening in the Kenyan part of the Serengeti-Mara ecosystem. Expansion of large-scale mechanized wheat farming in the Loita Plains since the early 1980s has drastically reduced the wildebeest wet season range, forcing the wildebeest population to use the dryer rangelands in the south-eastern part of the Loita eco-unit, or to move to the Mara eco-unit, where there is increasing competition from cattle. At the same time the incursion of tens of thousands cattle into the Mara is reducing the grass and resulting in a desert situation with no food for the wildebeest and bringing the people into direct conflict with lions and other cats. The Big Cat Diary was effectively stopped when the local people poisoned the Marsh lion pride the television crew were following and the Big cat diary cannot be filmed today in the same location.

In 2010, the government of Tanzania put forward plans to build a road across 50 km of the northern part of the Serengeti National Park to link the coast to Lake Victoria. The expectation was that by 2035 the number of vehicles going down this road would be one every 30 seconds and this would destroy the migration. Of course the primary concern was on the wildebeest but there would be huge knock-on effects on other animals and the

vegetation. What was really worrying is that this was needed on economic grounds as a slight upgrading in the southern route, which would avoid the wildebeest would provide the economic improvements that were being sought. Markus Borner, a great African conservationist, who very sadly died last month, led a crusade to have it stopped. I wrote a letter that was published in the leading Science journal about this and the government listened and made the decision to scrap the road plans. Even so the threat has not gone away and we need to see improvements on the southern route to ensure this issue is solved for both people, wildlife and the economy of East Africa.

There are pressing problems for the whole Serengeti-Mara ecosystem which need to be addressed if we are to keep this very special migration system.

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