

Pristine or Produced: Examining the Extent Mankind has Transformed the Planet

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Objectives:

1. Research how ancient civilizations and past humans transformed their landscapes through deforestation, agricultural practices, hunting, species introductions, etc.
2. Choose three unique landscapes around the world to research more extensively.
3. Illustrate before and after images of three distinct landscapes that have experienced massive transformations due to human activity.

Methodology:

Most people have emotional attachments to the landscapes that they consider to be pristine, or untouched by man. These places are usually thought to be the worthiest of conservation efforts due to the fact that they are "untainted", but researchers are now realizing that such places rarely exist. Virtually every landscape on this planet has been altered by mankind. For example, the majority of the public would consider places such as the Amazon and Congo Rainforests to be pure wilderness, when in reality, they are overgrown gardens of past civilizations. For this project, I researched various landscapes around the world to gain a better understanding of the extent that mankind has transformed the surface of the planet.

Evidence of past human altering their landscapes comes in all shapes and forms. It can be dug up as artifacts or found in old trade documents. We can use satellite imagery to peer under the treetops of thick forests to identify new archaeological sites. We can even find clues in the current landscape to piece together the past. For example, if the oldest trees in a forest are species that typically only grow in open spaces, we can conclude that area was likely once cleared for agricultural purposes.

During my research process, I examined each of the Earth's continents to understand how each landmass has been altered by humans since the beginning of civilization. By investigating topics such as native plant species, CO2 levels, agriculture practices and colonization, I was able to comprehend how humans can create large scale changes to their environments. After completing broad research, I identified three key landscapes to focus on and further examine: the Amazon Rainforest, Scottish Highlands and the African Savanna. For these three areas, I investigated the known history, as well as new archaeological discoveries.

After researching, I created illustrations of each key location. These graphics include paintings of past and current states of the landscapes, or what they might look like today if they had been untouched by man. I also created graphics that demonstrate the extent of human alteration on the planet. Producing these paintings allowed me to place myself in these spaces and gain a deeper understanding of how drastically mankind has changed each landscape.



"Most of the world is profoundly altered by human activity, often stretching back thousands of years. We knew what we were doing. From the tropical rain forests to the tundra, from the tussock grasses of New Zealand to the once forested Scottish peat bogs, and from the floodplains of China to the heaths of central Europe, we have been transforming landscapes, wetting and drying, foresting and deforesting, planting and burning, grazing a plowing, hunting megafauna to extinction, and transporting new species in their place."

-Fred Pearce, *The New Wild*

Amazon Rainforest:

Today, most people think of the Amazon Rainforest as a beastly jungle, unchanged for thousands of years. In reality, very little of the rainforest is truly pristine jungle. Less than five hundred years ago, much of the Amazon was cultivated crops. Before the arrival of Europeans it is estimated that the population of the Americas was over 50 million, half being in South America. In some areas, the population density was greater than it is today. Populations were widely spread and the people used the land extensively.

"There was one town that stretched for 15 miles without any space from house to house, which was a marvelous thing to behold. There were many roads here that entered into the interior of the land, very fine highways. Inland from the river to a distance of six miles more or less, there could be seen some very large cities that glistened in white and besides this, the land is as fertile and as normal in appearance as our Spain."

-Spanish conquistador Francisco de Orellana, 1542

The earliest explorers were the only Europeans to ever see the American cities in their full glory. By the time the next conquistadors arrived, the magnificent city described by Francisco de Orellana was already in ruin. Many of these great cities were swallowed by the newly unrestricted forest and forgotten over time. However, new satellite imagery technology is allowing researchers to remotely look deep in the jungle to find evidence of ancient cities, temples, roads and other infrastructure. We now know that large sections of forest that were previously thought to be untouched by man were once home to sprawling urban centers and extensive farming operations.

"What is today one of the largest tracts of rain forest in the world was, until less than five hundred years ago, a chunk of tropical suburbia."

-Fred Pearce, *The New Wild*



This painting illustrates a typical riverbank in the Amazon Rainforest today.

An example of what the same riverbank would have looked like 600 years ago.

Over the last couple decades, archaeologists have been discovering hundreds of sites that prove that the Amazon was once quite densely populated. The ancient civilizations that lived there used riverbanks as centers or trade, agriculture and urban settlement. Beyond the riverbanks, and reaching far from the city limits, the jungle was also cleared for farming. Today, deep in the rainforest, tens of thousands of miles of raised banks have been discovered. Hundreds of years ago, these raised banks were used to elevate crops so they would be clear of seasonal floodwaters and frosts. Researchers have also discovered other evidence of human activity like corn pollen, charcoal and farm tools in the deep rainforest.

"The earth moving involved in creating them must have been comparable to building the pyramids. They completely altered the landscape. Every feature of this land is manmade"

- Clark Erickson, University of Pennsylvania

The jungle also still holds living proof of the large-scale agriculture that was needed to feed the huge ancient populations. Maya nut trees were one of the most popular crops in these civilizations and can still be found today all over the rainforest. Knowledge of the Maya nut was lost for hundreds of years but is now being rediscovered by scientists and local cultures. As the Amazon reveals more and more secrets, it is becoming increasingly clear that mankind has impacted almost every corner of the rainforest.

"It is hard for some people to imagine that a large tree growing in the wild is cultivated. But that is what it is: an ancient cultivated crop."

-Erika Vohman, President of Maya Superfoods

Scottish Highlands:

Today, the Scottish Highlands are famous for their treeless views of mountains, glens and grasslands. However, until 5,000 years ago, the majority of this land was covered in forest. When Scottish ancestors began using early agriculture practices, they also began clearing woodland to make more room for farms. For thousands of years, woodland cover steadily declined as the population of Scotland increased and more land was needed to grow crops. It is estimated that around half of the natural woodland was cut down by 80 AD. During the 17th and 18th centuries, much of the remaining forests were heavily exploited to fuel the timber, charcoal and tanbark industries. By the 20th century, only 5% of Scotland's land area remained as woods. Although there was an increase of attention towards forest reforestation in the early 1900's, both World Wars took a toll on the woodlands and by 1947 only 3% of the land remained in tree cover.



Current example of the Highlands landscape, the land is clear of all vegetation besides grasses.



This image shows how the Scottish Highlands would have appeared before large scale deforestation.

After the World Wars, both the government and private owners have worked to restore woodlands across Scotland. Today, about 10% of the Scottish Highlands is now forested.

African Savanna:

Most westerners would consider the African savanna as a prime example of pristine wilderness. In reality, much of the grass and bush landscape that westerners think of as "natural Africa," is less than 150 years old. The idea that Africa is full of primeval landscapes can largely be traced back to Teddy Roosevelt's famous safari in the early 1900's. Roosevelt returned to the United States describing "the heart of the African wilderness" as a "Pleistocene" landscape untainted by humans. However, less than 20 years before Roosevelt's safari, the landscape he saw looked incredibly different.

Until the height of the scramble for Africa, the continent was dominated by the rich cattle kingdoms and much of the land surface was in pasture. For hundreds of years, cattle grazed on the savanna, keeping the grasses short and preventing other vegetation from growing. This all changed in 1887 when Italian soldier accidentally brought a cattle plague virus called Rinderpest to Africa. In less than a decade, Rinderpest spread across the continent, killing millions of the cattle that the African kingdoms heavily depended on to survive. Wherever the cattle died, the African people also suffered. The disease spread to wild cloven-hoofed animals like giraffe, antelope, wildebeest and buffalo. The spread of Rinderpest also coincided with a large drought, which made it even more deadly for both humans and animals. Between the cattle catastrophe and the drought, many of the once mighty tribes and kingdoms were devastated.

"In some respects [sleeping sickness] has favoured our enterprise. Powerful and warlike as the pastoral tribes are, their pride has been humbled and our progress facilitated by this awful visitation. The advent of the white man had not else been so peaceful."

-Frederick Lugard, British Army Captain



Illustration of a typical modern African savanna.



This image shows what the same landscape likely would have looked like as a cattle pasture before Rinderpest.

After only 2 seasons, land that was once endless cattle pasture was transformed into woodland or bush. The new vegetation led to the spread of the Tsetse fly, an African pest that causes sleeping sickness in humans. The disease killed millions more across Africa, over 4 million in Uganda alone. The Tsetse also prevented the cattle tribes from attempting any recovery. Even today, extremely fertile areas of Africa are unable to be inhabited by cattle or humans due to the fly.

"There are two ecosystems, created and separated by people. In one, farmers and cattle herders reign and the bush and the tsetse fly are tamed. In the other, the West's vision of "primeval Africa hold sway, the bush runs wild, and the tsetse flourishes. But what is apparently most wild and primeval is actually most recent."

-Fred Pearce, *The New Wild*

Results:

All over the world, researchers are finding new evidence of extensive past forest clearance. Erle Ellis, a Geographer at the University of Maryland, estimates that by five thousand years ago, humans had already altered at least a fifth of the Earth's land surface. Even though the population of humans was far fewer than it is today, the people were spread out and large areas of land were required to sustain populations due to primitive farming methods.

Below is an example of the most commonly used map to show remaining wilderness areas untouched by man. However, after concluding my research, it is clear that almost every landscape has been changed by human activity at some point in history.



"Most of the world's surfaces results from long and complex interactions between human activities and natural processes."

-Oliver Rackham, *British Landscape Historian*

Conclusion:

Humans have been altering the surface of the earth for thousands of years. From the great plains of North America, to the Australian Outback, from the Congo Rainforest to high in the Andes, people have been shaping this planet for their own benefit for centuries. While there are those who think human modifications depreciate the value of a landscape, we can also find comfort in knowing that nature can regrow and thrive even after large scale transformations. The Amazon Rainforest, the Scottish Highlands and the savannas of Africa are prime examples of nature flourishing even after massive human disturbances.