

# THE MYSTERY OF EASTER ISLAND

## An Ecology Case Study

Article by Rhett A. Butler

The history of Easter Island, its statues and its peoples, has long been shrouded in mystery. Some have suggested that aliens marooned on earth planted the statues as signals to their fellow aliens to rescue them. Others have said that the statues were constructed by a great race of guilders that were stranded on the island and built them before being rescued. Still others are convinced that an ancient society with the capability of flight constructed them along with the Nazca lines in Peru. However new evidence based on pollen analysis supports a much simpler theory, that the Easter Island inhabitants destroyed their own society through deforestation.

When Easter Island was "discovered" by Europeans in 1722, it was a barren landscape with no trees over ten feet in height. The small number of inhabitants, around 2000, lived in a state of civil disorder and were thin and emaciated. Virtually no animals besides rats inhabited the island and the natives lacked sea-worthy boats. Understandably, the Europeans were mystified by the presence of great stone statues, some as high as 33 feet and weighing 82 tons. Even more impressive were the abandoned statues-as tall as 65 feet and weighing as much as 270 tons. How could such a people create, and then move such enormous structures? The answer lies in Easter islands' ecological past, when the island was not a barren place.

The Easter Island of ancient times supported a sub-tropical forest complete with the tall Easter Island Palm, a tree suitable for building homes, canoes, and latticing necessary for the construction of such statues. With the vegetation of the island, natives had fuel wood and the resources to make rope. With their sea-worthy canoes, Easter Islanders lived off a steady diet of porpoise. A complex social structure developed complete with a centralized government and religious priests.

It was this Easter Island society that built the famous statues and hauled them around the island using wooden platforms and rope constructed from the forest. The construction of these statues peaked from 1200 to 1500 AD, probably when the civilization was at its greatest level. However, pollen analysis shows that at this time the tree population of the island was rapidly declining as deforestation took its toll.

Around 1400 the Easter Island palm became extinct due to over harvesting. As well, its capability to reproduce had become severely limited by the proliferation of rats, introduced by the islanders when they first arrived, which ate its seeds. In the years after the disappearance of the palm, ancient garbage piles reveal that porpoise bones declined sharply. The islanders, no longer with the palm wood needed for canoe building, could no longer make journeys out to sea. Consequently, the consumption of land birds, migratory birds, and molluscs increased. Soon land birds went extinct and migratory bird numbers were severely reduced, thus spelling an end for Easter Island's forests. Already under intense pressure by the human population for firewood and building material, the forests lost their animal pollinators and seed dispersers with the disappearance of the birds. Today, only one of the original 22 species of seabird still nests on Easter Island.

With the loss of their forest, the quality of life for Islanders plummeted. Streams and drinking water supplies dried up. Crop yields declined as wind, rain, and sunlight eroded top soils. Fires became a luxury since no wood could be found on the island, and grasses had to be used for fuel. No longer could rope be manufactured to move the stone statues and they were abandoned. The Easter Islanders began to starve, lacking their access to porpoise meat and having depleted the island of birds. As life worsened, the orderly society disappeared and chaos and disarray prevailed. Survivors formed bands and bitter fighting erupted. By the arrival of Europeans in 1722, there was almost no sign of the great civilization that once ruled the island other than the legacy of the strange statues. However, soon these too fell victim to the bands who desecrated the statues of rivals.

Easter Island is a prime example of what widespread deforestation can do to a society. As the forests are depleted, the quality of life falls, and then order is lost. The example of Easter Island should be enough for us to reconsider our current practices.



Figure 1 Location of Easter Island on the Globe.

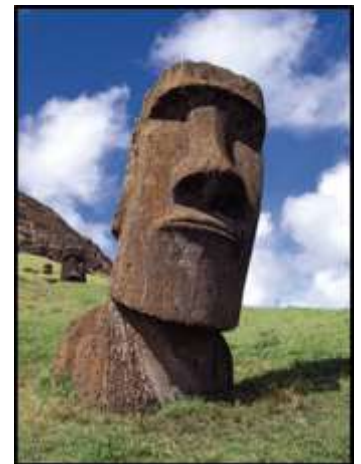


Figure 2 **Moai** are giant human figures carved from rock on the Polynesian island of Rapa Nui (Easter Island) between 1250 and 1500 CE.

### Article Questions

1. Define the word *sustainability*.

**It is the ability to live in a manner that ensures that the resources used today are preserved and renewed so that ecosystems can remain diverse, productive and healthy for many generations to come.**

2. Explain what happened to all the palm trees on Easter Island.

**They went extinct because they were overharvested to make canoes and for making the ropes and materials needed to erect the Moai statues.**

3. Where did the rats come from and why did they have such a negative effect on the palm tree?

**The rats stowed away on the ships of the first human arrivals on the island. They had a negative impact on the palm because the rats ate the palm seeds needed for the palm's reproduction.**

4. Explain what happened to the birds on Easter Island.

**Their numbers began to greatly diminish as the islanders began to turn to them as a food source because, without canoes, which were made by the extinct palm, they could no longer go out to sea to catch their original diet of seafood and dolphins.**

5. What did the decline of porpoise (e.g. dolphin) bones in garbage piles indicate?

**This indicated that over time, the islanders were less and less capable of going out to sea to hunt for porpoise. This was another indication that they were missing the necessary palm trees needed to make seaworthy canoes.**

6. Why weren't the people on Easter Island able to grow their own food to survive?

**Without the forest (tree roots) to hold onto the soil, the effect of the wind, rain and sunlight eroded the topsoil which would have been necessary to grow crops.**

7. Why did the Easter Islanders stop producing giant Moai statues?

**As they destroyed their environment, they lost the materials and the orderly society required to build any more statues. They fell into chaos and starvation.**

8. Imagine that you could help the people of Easter Island prevent the destruction of their civilization before it happened. What three pieces of advice would you give them to help them avoid the collapse of their society and make them live more sustainably?

**1) Make a quota system for the amount of trees that are allowed to be cut down.**

**2) Replant trees which are cut down.**

**3) Don't make as many statues.**

**4) Eradicate the rats.**

**5) Diversify food sources so that there isn't pressure on only a few types of animals.**

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