The Lesson of Easter Island

Easter Island is one of the most remote spots on the globe, located in the Pacific Ocean 3,750 km (2,325 mi) from South America and 2,250 km (1,395 mi) from the nearest inhabited island. When the first European explorers reached the island (today called Rapa Nui) in 1722, they found a barren landscape populated by fewer than 2,000 people, who lived in caves and eked out a marginal existence from a few meager crops. Explorers also observed that the desolate island featured hundreds of gigantic statues of carved stone, evidence that a sophisticated civilization had once inhabited the island.

We know today that at an earlier time the island had indeed been lushly forested, with all the appeal of a South Pacific paradise, and had supported a prosperous society with a population of 6,000 to 20,000. Tragically, however, this once-flourishing society overused its resources, cutting down all its trees, which in turn brought starvation and conflict to its people and destroyed its own civilization. Today Easter Island stands as a parable and a warning for what can happen when a population grows too large and consumes too much of the limited resources that support it.

How do we know what we do about Easter Island’s history? Since the time of its discovery, historians and anthropologists have wondered how people without wheels or ropes, on an island without trees, managed to move statues 10 m (33 ft) high weighing 90 metric tons (99 tons) as far as 10 km (6.2 mi) from the quarries where they were chiseled to the coastal sites where they were erected. The explanation, scientists have discovered, lay in the fact that the island did not always lack trees, and its people were not always without rope.

To solve the mystery of Easter Island’s past, scientists excavated samples of sediments from the bottom of three of the island’s volcanic crater lakes. These researchers, who included John Flenley of the University of Hull in Great Britain, drilled cores deep into the mud of the lakes and examined preserved ancient grains of pollen in the sediments. Because pollen grains vary from one plant species to another, scientists, by identifying specific pollen grains, can reconstruct, layer by layer, the history of vegetation within a region through time. By analyzing pollen grains, Flenley and other researchers found that when Polynesian people arrived (possibly by A.D. 300, or A.D. 690 at the latest), the island was covered with palm trees. By examining the palm pollen under scanning electron microscopes, the researchers determined that the now-vanished palms were related to the Chilean wine palm, a tall and thick-trunked tree. Archaeologists located ancient palm nut casings in caves and rock niches, and a geologist found carbon-lined channels in the soil that matched root channels typical of the Chilean wine.
palm. Furthermore, scientists deciphering the island people’s script on stone tablets discerned characters etched in the form of palm trees.

Pollen analysis showed that trees other than palms had been common. The island had supported at least a scrubby forest and perhaps a dense rainforest, scientists inferred. However, pollen analysis also revealed that starting around A.D. 750 tree populations had declined and ferns and grasses had become more common. By A.D. 950, the trees were largely gone, and around A.D. 1400 overall pollen values plummeted to extremely low levels, indicating severe lack of vegetation. The same sequence of events occurred about two centuries later at the other two lake sites, which were higher and more remote from village areas. Researchers first hypothesized that the pattern of deforestation was due to climate change, but evidence instead supported the hypothesis that the people had gradually denuded their own island. Furthermore, researchers came across old nut casings scarred with teeth marks of rats, suggesting that the rodents, which were most likely transported from Polynesia, had prevented new palms from sprouting.

The palms and other trees would have been used for fuel wood, as building material for houses and canoes, and presumably to move the stone statues. Several anthropologists in recent years have experimentally tested hypotheses about ways the islanders might have moved monoliths down from the quarries, by hiring groups of men to recreate the feat. Some methods have actually worked. All involve using numerous tree trunks as rollers or sleds, as well as great quantities of rope, the only likely source of which would have been the fibrous inner bark of the hauhau tree, a species that today is near extinction.

With the trees gone, soil would have eroded away more easily—a phenomenon confirmed in the bottom of Easter Island lakes, where large quantities of sediment had accumulated. Faster runoff of rainwater would have meant less fresh water available for drinking. Runoff and erosion would have degraded the islanders’ agricultural land, lowering yields of crops, such as bananas, sugar cane, and sweet potatoes. Reduced agricultural production would have led to starvation and subsequent population decline.

Archaeological evidence supports the scenario of environmental degradation and civilization decline. Food remains, which can be aged by radiocarbon dating (Chapter 4), shifted over the years. Besides their crops, early islanders feasted on the bounty of the sea, including fish, sharks, turtles, octopus, shellfish, and seabird eggs. Analysis of islanders’ diets in the later years, however, indicated that little seafood was consumed. Evidently, with the trees gone the islanders could no longer build the great double-canoes their proud Polynesian ancestors had used for centuries to fish and travel among islands. Indeed, the Europeans who arrived at Easter Island in the 1700s observed only a few old small canoes and flimsy rafts made of reeds. As resources declined, the islanders’ main domesticated food animal, the chicken, became more valuable; archaeologists found that later islanders had kept their chickens in stone fortresses with entrances designed to prevent theft. The once prosperous and peaceful civilization fell into clan warfare, as revealed by unearthed skeletons and skulls with head wounds and by artifacts of weapons made of obsidian, a hard volcanic rock.

Is the story of Easter Island as unique and isolated as the island itself, or does it hold lessons for our world today? Like the Easter Islanders, we are all stranded together on an island with limited resources. The Earth may be vastly richer in resources than was Easter Island, but Earth’s human population is much greater. It is clear that although the Easter Islanders could see that they were depleting their resources, they could not seem to stop. Whether we can learn from the history of Easter Island and act more wisely to conserve the resources on our island, Earth, is entirely up to us.