The Giant Sea Mammal That Went Extinct in Less Than Three Decades

The quick disappearance of the 30-foot animal helped to usher in the modern science of human-caused extinctions.

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The Pleistocene, the geologic era immediately preceding our own, was an age of giants. North America was home to mastodons and saber-tooth cats; mammoths and wooly rhinos roamed Eurasia; giant lizards and bear-sized wombats strode across the Australian outback. Most of these giants died at the by the end of the last Ice Age, some 14,000 years ago. Whether this wave of extinctions was caused by climate change, overhunting by humans, or some combination of both remains a subject of intense debate among scientists. Complicating the picture, though, is the fact that a few Pleistocene giants survived the Quaternary extinction event and nearly made it intact to the present. Most of these survivor species found refuge on islands. Giant sloths were still living on Cuba 6,000 years ago, long after their relatives on the mainland had died out. The last wooly mammoths died out just 4,000 years ago. They lived in a small herd on Wrangel Island north of the Bering Strait between the Chukchi and East Siberian Seas. Two-thousand years ago, gorilla-sized lemurs were still living on Madagascar. A thousand years ago, 12-foot-tall moa birds were still foraging in the forests of New Zealand. Unlike the other long-lived megafauna, Steller's sea cows, one of the last of the Pleistocene survivors to die out, found their refuge in a remote scrape of the ocean instead of on land. The sea cows were relatives of the manatee and dugong. Unlike those two species, they were adapted to living in frigid Arctic waters. They were also much larger, growing to be as long as 30 feet from tail to snout, versus 10 for a manatee. Before the Ice Age, they seem to have been ubiquitous along the edge of the Pacific, living everywhere from Japan to the Baja Peninsula. By the 18th century, when they were first made known to Western science, the sea cows were confined to waters surrounding two tiny Arctic Islands in the Commander Chain, in between the Aleutians and the Kamchatka Peninsula.

The sea cows were first described by the German naturalist Georg Steller in the 18th century. Steller was part of an expedition organized led by the Danish explorer Vitus Bering. Financed by the Imperial Russian government, its mission was to chart the waters between Siberia and North America, and find a workable route between the two if possible.

The expedition set sail from Kamchatka in June of 1741. A few weeks later, they had reached Alaska. Bering allowed Steller a single day to search for new species. In that brief time, his only visit to the North American continent, Steller managed to name several species of bird, including Steller's Jay, ubiquitous in the hills behind my Berkeley apartment. By the beginning of winter, the two ships that made up the expedition had become separated, two landing parties had vanished, and so many sailors on Bering's flagship had scurvy that they could barely man the sails.

In November, the *St. Peter* ran aground on an uninhabited island. Many of members of the expedition thought that it was attached to the Siberian mainland and that they would eventually be able to walk to safety, but they were soon proven wrong. A short time after reaching land, the ship broke apart in a storm, and the captain died of scurvy. Steller, who knew how to combat the Vitamin C–deficiency by foraging for herbs, was one of the few crew members still in good health.

Steller quickly realized that the landmass they were on was an island, and one that likely had never been visited by human beings before. Everywhere he went, he was followed by foxes, which showed no fear but eagerly stole any implements or food they could grab in their jaws. One day, walking along the beach searching for firewood, he saw a huge, black shape moving slowly about in the shallows like an overturned boat. Every few minutes a snout would for a moment and draw breath with a noise like a horse's snort. This was the sea cow, seen by the human eyes for the first time in thousands of years. Steller was shocked to realize that this creature was a type of manatee, thousands of miles from its nearest relatives in the tropics. He describes the sea cows as gentle giants, whose only real defense against being harpooned was their incredibly thick hides. He also notes that they seem to have been unusually loyal to one another, which proved to be more of a liability than an asset when the Russians began hunting them for food. They had, in his words, "an uncommon love for one another, which even extended so far that, when one of them was hooked, all the others were intent upon saving him." When the Russians harpooned one of the Sea Cows, others would come to its defense, making a circle around their wounded comrade. When they killed a female, they were astonished to see its mate visit the beach where its body lay day after day, "as if he would inform himself about her condition."

Weighing close to 10 tons, a single sea cow could feed the surviving crew of the *St. Peter* for a month. Steller writes that its meat was delicious—far superior to the sea otter they had grown accustomed to eating. He compares the sea cows' fat to the best Holland butter, and says that it tasted of almond oil when boiled down. While still marooned on what would come to be called Bering Island, Steller already envisioned a future in which the fur trade would flourish in this desolate spot, with Russian hunters amply provisioned by

what he thought was a nearly inexhaustible supply of sea cow meat. The waters around the island were also teeming with sea otters, whose pelts could be sold at a tremendous mark-up to the Chinese market.

Steller shared the belief of most 18th-century naturalists that the sea was inexhaustible, and extinction impossible. He would swiftly be proven wrong. Archaeologists now estimate that it took about a hundred years for the giant moa birds to go extinct after the Maori landed on New Zealand. Steller's sea cows survived just 27. The last sea cow seen in the wild was spotted by fur hunters in 1768.

The apparent disappearance of Steller's sea cow helped persuade European biologists that extinction was possible (at the time, the dodo was thought to be still alive, or imaginary). In 1812, the German scientist Georg Heinrich von Langsdorff listed it among the beings "lost from the animal kingdom," along with the mammoth and the "carnivorous elephant of Ohio."

According to the environmental historian Ryan Tucker Jones, the disappearance of the sea cow helped to usher in the modern science of extinction. It may also by the key for understanding how vanished ecosystems functioned, and how the overhunting of one species can lead to the extinction of another. Recently, a team of marine ecologists led by James Estes of the University of California, Santa Cruz have argued that Steller's sea cows provide a possible "Rosetta Stone" for how megafauna extinctions might have played out in prehistory.

Drawing on old archival data and using mathematical simulations to model community interactions, Estes and his co-authors argue that the sea cows weren't hunted to extinction. Rather, their disappearance was a byproduct of the overexploitation of sea otters of Russian and Aleut hunters.

Sea cows were obligate algivores. That means they ate seaweed—mostly kelp—and nothing else. Sea otters also thrive in kelp forests, but their main source of food are sea urchins, which also eat kelp.

When sea otters are absent, the urchins go wild. With no predators to limit their numbers, the urchins spread across the ocean floor like a wave of algae-munching tribbles, creating kelp-free dead zones wherever they go. Estes and his colleagues estimate that the decline in the number of sea otters around the Commander Islands happened so swiftly that it could have rippled through the ecosystem in just three decades, leaving the sea cows with nothing to eat and nowhere to go. In other words, the sea cows weren't murdered; they were collateral victims in a separate crime.

The swift demise of the sea cows is a reminder that the giants of the Ice Age didn't live alone. They were parts of complex ecologies that have now vanished, intricate webs connecting herbivores to plant communities, and predators to prey. Trophic cascades, in which the elimination of one species leads to a chain reaction that reshapes a whole habitat, have been implicated

in the disappearance of a few animals besides the sea cow. Haast's Eagle—the largest to have ever existed—vanished from New Zealand along with its prey, the giant moa. The decline of the California condor has likewise been linked to the loss of the megafauna carcasses it fed on before the end of the last Ice Age. These are two examples, but there may have been more.

Paleo-ecologists have spent decades trying to reconstruct and unravel these relationships, but we still don't understand all the ways the world in which we live in is impoverished by their disappearance. It's clear that certain species—like the otter in the Commander Islands, or the mammoth in the now-vanished grasslands of the Arctic (the so-called "mammoth steppe")—played a crucial role in maintaining the balance of their respective ecosystem. But just how bad the damage from losing one of these keystone species could be is still uncertain.

Thanks to Steller, the demise of the sea cow was one of the very few megafauna extinctions for which we have eyewitness testimony. His own fate was rather tragic in its way as well.

He wrote up his notes from the voyage in a thick Latin volume titled *On the Beast of the Sea*, but he never made it home to see it published. He died of fever outside the Siberian town of Tyumen. After he was buried, grave robbers broke into his tomb to steal his fine red cloak. Wolves ate his eyes. He lives on in the names of his eponymous Jay, a species of sea duck, a sea eagle, a sea lion, and of course, the long-vanished sea cow. They are known to us now only in the form of a handful of skeletons and in the words of Steller's description in which they appear forever the same: placid, loyal, and delicious.