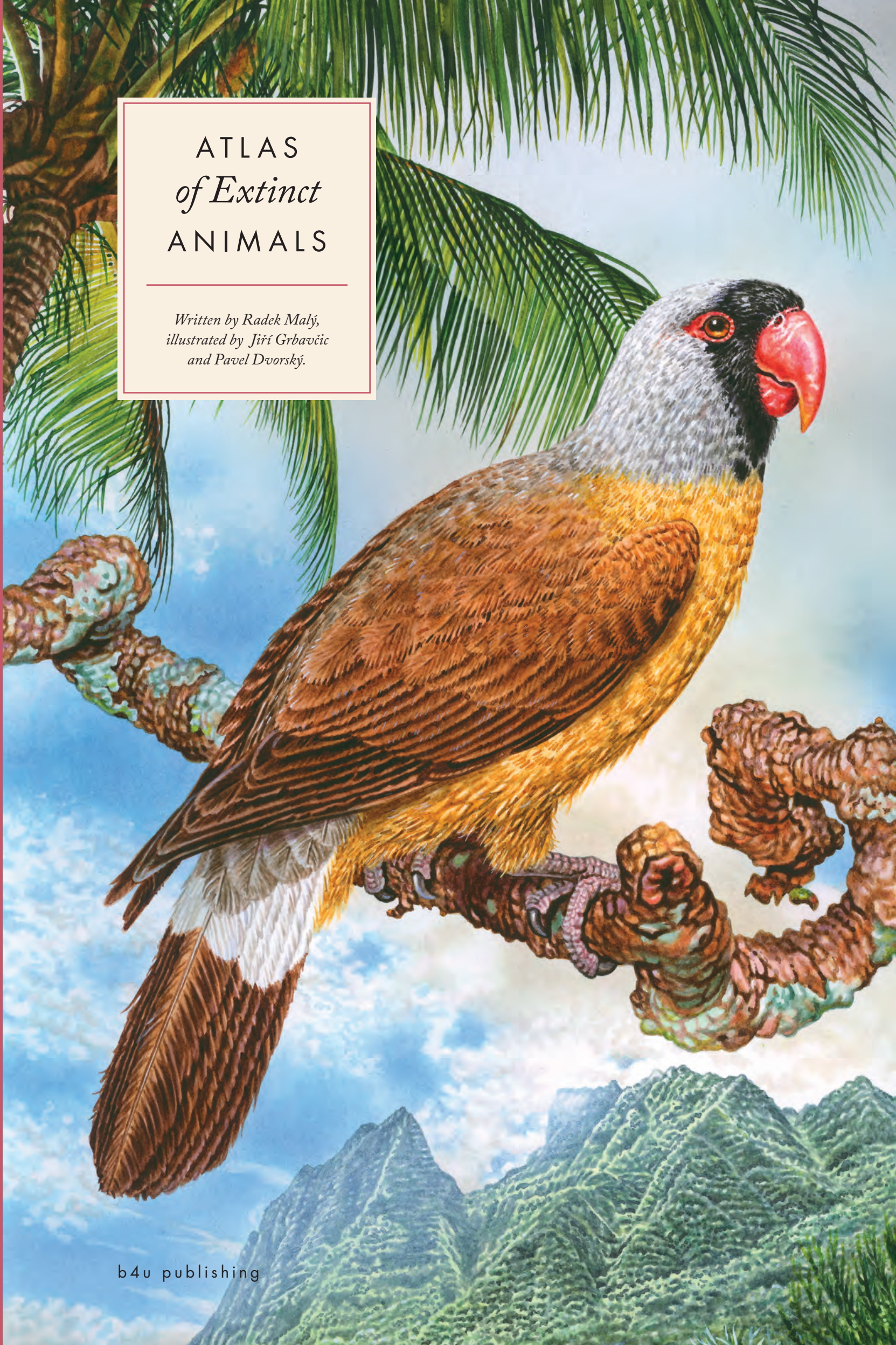




ATLAS *of Extinct* ANIMALS

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illustrated by Jiří Grbačič
and Pavel Dvorský.*



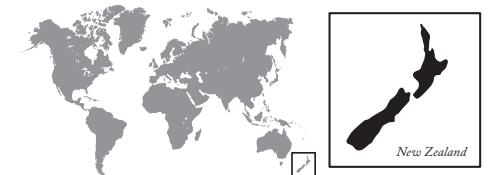


GIANT MOA

Dinornis novaeseelandiae



HABITATION: *New Zealand*
EXTINCTION: 1500 (?)



When the first Europeans settled in New Zealand in the early 19th century, they learned from the native Maori people of a huge bird that had once lived on the island. The Europeans considered this bird to be the stuff of legend, not reality. In 1839, British palaeontologist Sir Richard Owen took possession — via several middlemen — of a 15-centimetre-long, unusually light fragment of bone discovered in New Zealand. Four years later, he announced to the world of science that it was skeletal remains of an enormous bird, which he named *Dinornis novaeseelandiae*. At the time, Owen was labelled a fantasist and dreamer. More years would pass before he was proved right. After the discovery of more bones, Owen was photographed with a reconstructed giant moa skeleton.

The nature of New Zealand evolved for millions of years in isolation from the surrounding world. At first, apart from bats there were no mammals there at all. The place of mammals in the ecosystem was taken by birds, which evolved into many diverse kinds. Moa birds grew to be exceptionally large: the female of the giant moa, the largest species, was three and a half metres high and weighed around 250 kilograms, making it the biggest bird Earth has ever known — a kind of New Zealand giraffe. The male giant moa was considerably smaller, which explains why the two sexes were at first thought to be different species. Today, scientists classify the moa in nine species. All moa were herbivores. They fed on grass and the leaves of shrubs and trees. Like Africa's ostrich and Australia's emu, the moa was a ratite. But unlike the ostrich, the moa lost its wings as well as its ability to fly; there is no sign of wings on moa skeletal remains.

Climate change often played a part in the extinction of prehistoric megafauna. Moa birds, however, were able to adapt to such change. Humankind is solely to blame for their extinction. But this time the culprits were not imperious colonizers from Europe but the native Maori, who settled on the island in the 11th and 12th centuries, having arrived from Polynesia. Until then, the only natural enemy of the moa on the islands of New Zealand had been the massive Haast's eagle. Moa proved powerless against the weapons of the humans. The Maori would decorate themselves in moa feathers, eat moa meat and use moa egg shells as containers. They also changed the natural landscape of the islands by tree-felling and burning the forests. Recent studies have shown that most moa on the islands were exterminated over a very short period (about one hundred years). This incredibly rapid process was set in train by a group of only about 400 colonizers from Polynesia, who took advantage of the easy prey the moa offered to increase their population and form numerous tribes. Later, the Maori and their peculiar culture would come to share the fate of the moa. The warriors of different Maori tribes had never enjoyed friendly relations. The arrival of colonizers from Europe presented them with firearms, which became agents of their mutual mass destruction.

According to unverified reports, in certain remote areas of New Zealand the moa may have lived on into the 19th century. But our only contact with the moa today is through skeletal remains and reconstructions on display in museums. Fortunately, the Maori realized in time that their fratricidal war served only the European settlers; the Maori still live in New Zealand today.



STELLER'S SEA COW

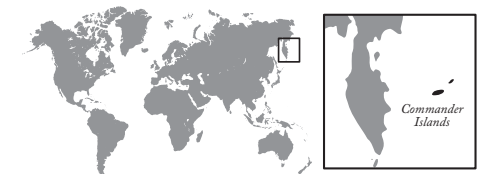
Hydrogamalis gigas

Steller's sea cow



Steller's sea cow — skull

HABITATION: *Commander Islands*
EXTINCTION: 1768



The sea cow—the name humans gave to this fascinating family of sea mammals wasn't exactly a respectful one. Steller's sea cows lived in coastal waters and fed mainly on marine plantlife. They were probably the creatures once thought by superstitious sailors to be the mermaids whose seductive singing lured ships to their destruction on the rocks. This explains why the family these mammals belonged to was known as Sirenia—after the Sirens, fish-tailed singers from ancient mythology. But far from posing a danger to humans, Steller's sea cows proved their salvation from famine. Then, a mere 27 years after discovering them, humans brought about the sea cows' extinction.

Steller's sea cow was the only species of sirenian to inhabit the cold waters of the north. Skeletal remains testify that it was once widespread throughout the north Pacific, although it was probably exterminated in areas inhabited by humans many centuries ago. In modern times, it was discovered by an expedition led by Vitus Bering, a Danish explorer in Russian service. This expedition was shipwrecked in November 1741 off the Commander Islands. The expedition included the German naturalist Georg Wilhelm Steller, whose notes tell us what we know about Steller's sea cow today and who gave it his name. The scurvy-stricken castaways were forced to spend ten months on an island, during which time the sea cow was a welcome and easily attainable source of meat and fat rich in vitamins. With the help of its skin, the sailors succeeded in building the small craft that carried them to the mainland in August 1742. At that time, Steller estimated the number of sea cows in existence to be about 2500.

In some languages, the sea cow is named for its dark skin, which is up to seven centimetres thick and reminiscent of tree bark in structure. This skin protected the sea cow from cold and sharp rocks. An enormous creature, it was eight metres long and weighed up to four tons, making it the largest of all the sirenians. Its podgy body and strikingly small head were supplemented with a forked tail, like that of the whale. Its front limbs were flippers, which it used in swimming and getting food. Steller's sea cows were slow, trusting creatures that lived in herds and fed on marine plantlife.

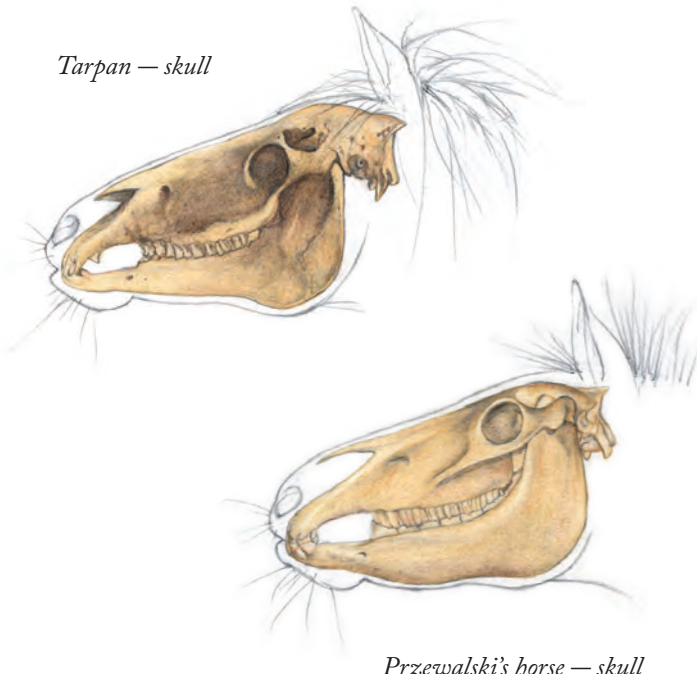
The sea cow's very vulnerability led to its extinction, which came to pass with awful speed. It served as a source of food for passing ships, and it was also hunted for its fur. These hunts must have been terrible to behold. Russian mining engineer Petr Yakovlev was working on the islands in winter 1754, when, having happened to witness harpooners carry out a bloody massacre of sea cows, he initiated efforts to have sea-cow hunting banned by the Kamchatka authorities. These efforts were in vain: the last Steller's sea cow was killed by a certain Ivan Popov in 1768.

Steller's sea cow was formally described by German zoologist Eberhard August Wilhelm von Zimmermann in 1780, from skeletal remains. Today, a handful of museums in the world have sea cow skeletons and scraps of its skin as rarities among their collections. A Steller's sea cow was such easy prey because it would never leave a wounded partner. For this reason, if we want to see one today, we must go to a book.



TARPAN

Equus ferus



HABITATION: *Europe*
EXTINCTION: 1887

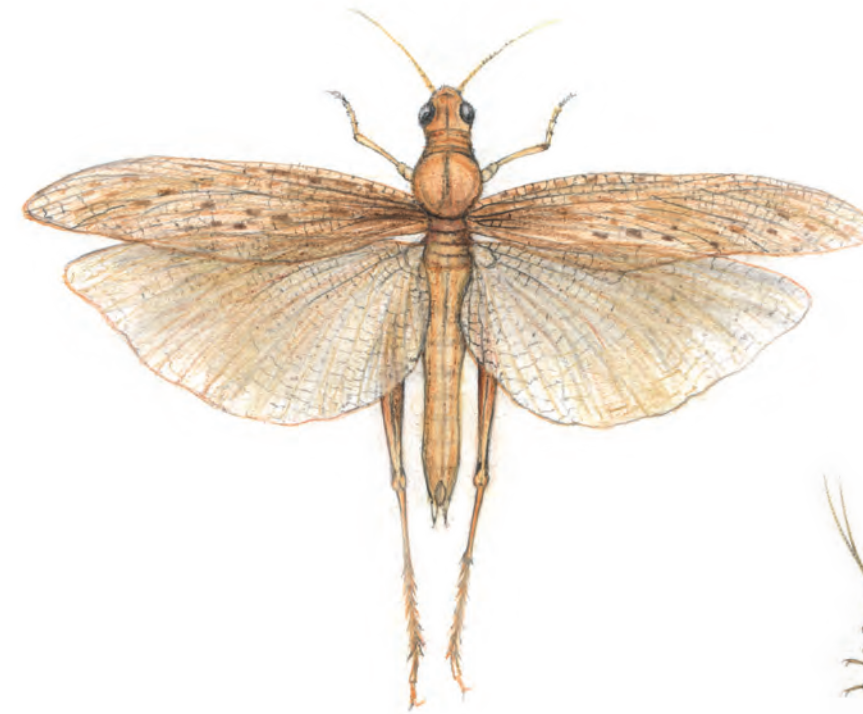
The wild horse once romped about the plains and forests of Europe as well as the prairies of America. Indeed, we find its image painted on the walls of caves. The first written record of the occurrence of wild horses, on the left bank of the River Danube, was made by the Roman author Pliny in the 1st century AD. Seven centuries later, Papal legate Boniface visited Germanic tribes with the intention of converting them to Christianity. In his report to Pope Gregory III, Boniface mentioned the incredible barbarity with which these horses were killed and eaten in great numbers. Unfortunately, this did not mark the end of humans' depletion of the wild horse population. We know little about how the tarpan lived, but we can assume similarities with the way of life of Przewalski's horse, its wild Asian relation on the steppes of Mongolia. The tarpan was up to 130 centimetres tall, and its short mane and tail were black in colour. The name 'tarpan' came from the word used by the Tatars for 'wild horse'; it was not used in specialist literature to refer to the whole species until the 17th century. There has long been a myth that the tarpan was grey. Modern research has proved, however, that the European wild horse was brown. It evolved into two subtypes, the steppe tarpan and the forest tarpan. These wild horses were very shy and fleet of foot, making them difficult to hunt. But hunt them humans did—with the fratricidal aid of domesticated horses. Europeans attempted to domesticate the tarpan, too, but its natural timidity made this impossible.

As the Middle Ages progressed, the tarpan population thinned out to a great degree, until the last herds retreated to Lithuania and north-eastern Russia. Tarpans were not killed only for their meat; they were perceived as a danger to the harvest and also to domesticated horses, which they would seek out and mix with. A herd of European steppe tarpans lived in a reserve in Zamość in the Białowieża Forest until 1806, when the high price of their upkeep forced the prince to capture them and give them away to local farmers. The landscape of Russia underwent radical change in the second half of the 19th century. Areas inhabited by steppe tarpans were converted to agricultural land, bringing wild horses ever closer to humans. And these humans showed no mercy in killing them. So it is that we know with terrible certainty that the last tarpan mare in the wild died in 1879, of injuries sustained in a chase. The very last tarpan, probably a crossbred feral domestic horse, died in the Moscow Zoo in 1887. Only since the advent of DNA analysis have scientists been able to confirm what was long surmised—that the tarpan which survived into the 19th century was not an original autonomous species but a feral domestic horse, or a cross between a wild horse and a domesticated horse. And so the legend or myth of the tarpan remains. Remarkably, we can now encounter wild horses in Europe again. In Milovice in the Czech Republic, for instance, wild horses and oxen graze on the land in an attempt to preserve the original character of the European landscape.



ROCKY MOUNTAIN LOCUST

Melanoplus spretus



Melanoplus spretus



Melanoplus spretus



Migratory locust

HABITATION: *North America*
EXTINCTION: 1902



Some representatives of the insect world, too, have been exterminated by human activities. Chief among these is a species of Caelifera insects with the Latin name *Melanoplus spretus*, generally known as the Rocky Mountain locust. In its day, it was one of the most populous of all animal species — yet by the end of the 19th century, it had disappeared from the natural world.

The Rocky Mountain locust inhabited the vast arid prairie on both sides of the Rocky Mountains, spreading all the way to Canada. It was described scientifically as late as 1866, by the entomologist Benjamin Dann Walsh. Like many other Caelifera insects, this species was between 20 mm and 35 mm in length and herbivorous. Its females laid several hundred eggs just below the level of the earth at the end of the summer.

The Rocky Mountain locust's way of life consisted in the movement of large, spectacular swarms over considerable distances — so it's no wonder that it meant calamity for American agriculture. In 1875, one of its swarms — which became known as 'Albert's swarm' — was recorded in the Guinness Book of Records; it was estimated that it was 2,900 km long and 177 km wide, meaning that its area was comfortably greater than that of California. The number

of locusts in that swarm has been estimated at 3 trillion! Such a concentration of a single animal species has never been witnessed before or since.

Before long, however, this species unexpectedly disappeared from the natural world. Biologists haven't clearly established the cause of its extinction, but it is commonly thought that the natural life cycle of the Rocky Mountain locust was disrupted by changes in ploughing and irrigation technology in agriculture. Farmers destroyed the locusts' eggs in huge numbers, too. It is supposed that when swarming, the locusts inhabited a relatively small area, so making their eradication quite a simple matter. The Rocky Mountain locust was last observed in 1902, in southern Canada.

As no one could have imagined the extinction of such a numerous species, it was neither protected nor collected. Only about 300 specimens were preserved in collections, although a few individual specimens were later found in the Grasshopper Glacier in Montana. Attempts to return this locust to the living world by crossbreeding haven't succeeded. The Rocky Mountain locust was declared officially extinct in 2014.



PASSENGER PIGEON

Ectopistes migratorius

Passenger pigeon



Homing pigeon



Passenger pigeon — head



HABITATION: *North America*
EXTINCTION: 1914

What must it feel like to be one of Earth's most numerous bird species? And what must it be like to be the last individual of your kind, and to be living in a cage? If the passenger pigeon could talk, it would have a lot to say about both situations...

The passenger pigeon inhabited the deciduous forests of North America in flocks. A flight of passenger pigeons was seen in Michigan on 8 April 1873 that lasted over eight hours without interruption. There are records of a sighting in 1866 of a flock one and half kilometres wide and 500 kilometres long. There were so many of these pigeons that it never crossed anyone's mind that one day they might die out. Because of their seemingly inexhaustible numbers, however, they were an easy source of food, and their killing, as moving targets, was a perverse entertainment. So it happens that we get a familiar story with an unhappy ending. And this one took less than a hundred years to play out.

The passenger pigeon laid a single egg, which was cared for by both parents. Before the arrival of humans, it had very few natural enemies. Although passenger pigeons came to be hunted by the indigenous peoples of America for their meat, this hunting had practically no effect on their numbers. Then, in the early 19th century, they became targets for the modern weapons of the growing Caucasian population. A single shot from a double-barrelled shotgun could kill pigeons by the dozen. Their bodies were transported by railway to cities on the east coast, where they were sold for ridiculously low prices. Pigeon-shooting then became a form of entertainment for sportsmen. Pigeon nests in felled trees were easily reached by pigs, which fed on pigeon chicks.

Overhunting, the disturbing of nesting pigeons and deforestation had a dreadful consequence: from the mid-19th century onwards, passenger pigeons struggled to nest,

and their population declined and aged rapidly. The last large flock, numbering a quarter of a million birds, nested in 1896, near the city of Bowling Green in Ohio. Hunters soon learned of this and another—the last—massacre began. The whole colony was practically eliminated within one week; the dead pigeons were loaded onto a train. The train then derailed, probably because it was overloaded. Two hundred thousand unwanted dead pigeons were tipped out into a ditch at the side of the track. Only about 5000 birds escaped the massacre. And without the security of a huge flock, these birds were no longer able to reproduce. But the hunters didn't give up. We know almost all there is to know about the end of the last passenger pigeon in the wild: it fell from the sky on 24 March 1900, the victim of a shot from an air gun fired by fourteen-year-old Press Clay Southworth, a farmer's son.

At this time, a last few pairs of passenger pigeons were kept in captivity at the Cincinnati Zoo. Hope for survival of the species gradually faded—the last two males died in 1910 and 1912. The last ever passenger pigeon, a female called Martha, died on 1 September 1914.

The speed of its disappearance was so shocking that there was a sudden wave of interest in nature conservation in the United States. Some scientists believe that the blame for its extinction doesn't rest solely with humans. Based on DNA analysis, a team of scientists from the USA and Taiwan established that this bird experienced great fluctuations in population much earlier, too, as it probably depended for food on the acorn crop.

Today, an ambitious team of scientists called Revive & Restore is using methods of genetics in an attempt to save or revive certain endangered and extinct animal species and release them into the wild. But would the passenger pigeon really want to return?



PYRENEAN IBEX

Capra pyrenaica pyrenaica

Pyrenean ibex — head



Pyrenean ibex

HABITATION: *Pyrenees*
EXTINCTION: 2000



The Pyrenean ibex was one of four subspecies of Iberian ibex (*Capra pyrenaica*). It set a fascinating precedent for extinct creatures—it became the first extinct animal species to be successfully cloned. Nevertheless, we don't encounter it in the wild.

The Iberian ibex is an elegant, majestic animal. The Pyrenean ibex differed from its relatives mainly by the male's large, thick, lyre-shaped horns; the female was considerably smaller than the male. The species as a whole is superbly adapted to mountain life at high altitudes; its flexible hooves and relatively short legs enable it to perform high jumps from one stone to the next and move lightly about steep slopes, where it grazes on grass and lichens. Herds develop a sophisticated, coordinated, highly effective system that allows them to escape predators. The short coat of the ibex becomes thicker in winter, and their kidneys have developed an ability to store fat for the colder months.

All four subspecies of the ibex once lived in mountainous regions of Portugal and Spain, including the borderlands with France and Andorra. Ibexes were always hunted by humans—despite their amazing ability to live at high altitudes, they were powerless against firearms. Their numbers declined because of competition for their grazing from chamois and domestic cattle as well as intensive hunting and poaching. Plus, they were greatly

harmed by various infectious diseases transmitted by the competitors for their food. The Portuguese ibex subspecies (*Capra pyrenaica lusitana*), which inhabited northern Portugal—principally the Sierra do Geres mountain range—had disappeared in the wild by the turn of the 20th century. Its horns were considerably shorter and much wider than those of the other Iberian ibexes.

All the causes mentioned above were present in the steep decline in numbers of the Pyrenean ibex, too. Although it was declared a protected species in 1918, its numbers failed to rise. By the end of the 1980s, only about forty individuals lived in the wild. As the population continued to fall, zoologists decided to take the surviving animals into captivity. They found only three females, all of which were too old to breed with males of the other subspecies. For this reason, in 1999, tissue samples were taken from the last living female, named Celia, for possible cloning. On 6 January 2000, Celia's body was found under a fallen tree, marking the end of her subspecies.

But was it really the end? In 2003, using a sample from Celia, French and Spanish scientists succeeded in cloning a new individual—although the young ibex lived for only seven minutes before dying from congenital lung defects. But it is said that scientists have since identified what went wrong and are preparing a second round of cloning...

Stories of creatures eradicated by humankind, and the people who did it.

Humanity is currently living through the sixth mass extinction event in Earth's history. As well impacting on the environment and the evolution of the planet, the dying out of animal species may affect us, too — our proud claim to be lords of creation notwithstanding. In this book, award-winning poet Radek Malý sheds light on this alarming fact by telling the stories of selected extinct species and studying the causes of their sad demise. The large-format Encyclopaedia of Extinct Animals is supplemented with beautifully expressive full-page illustrations by gifted artist Jiří Grbavčic and detailed pictures by renowned scientific illustrator Pavel Dvorský. By losing yourself in this book, you will bring back to life all 41 of its heroes. Give the fate of the Blue Planet some serious thought. It is in your hands.

