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ATLAS *of Threatened* SPECIES

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Written by Radek Malý, illustrated by Pavla Dvorská and Pavel Dvorský.

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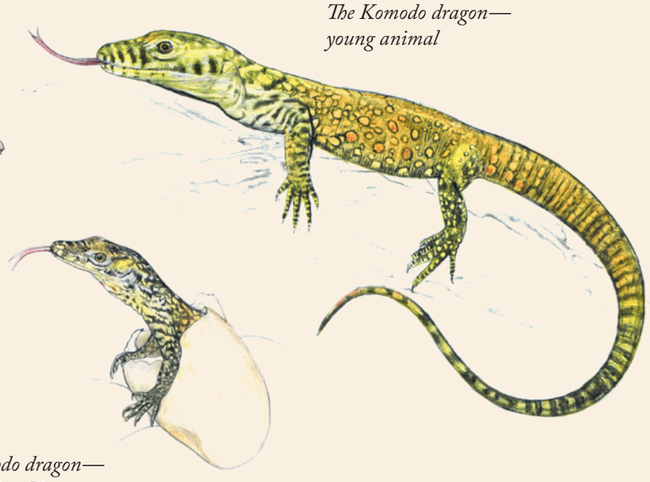
THE KOMODO DRAGON

Varanus komodoensis

Blue tree monitor—one of the smallest monitor lizards



The Komodo dragon—young animal

The Komodo dragon—young animal in egg

OCCURRENCE: *Lesser Sunda Islands*

Practically everyone has heard of Komodo dragons. Allegedly, there is an island inhabited by large reptiles with poisonous breath... In fact, these are not mythical creatures, but real animals of flesh and blood. The largest and mightiest lizards of the contemporary world.

They are named after the Indonesian island of Komodo, but they can also be found in the other four adjacent islands on the Lesser Sunda Islands. The Western world discovered them only in 1912, when the Dutch biologist Peter Ouwens published a paper on a topic based on observations and trophies of Lieutenant Jacques Karel Henri van Steyn van Hensbroek, who had been appointed to examine reports of local dragons two years earlier. For a long time, scientists attributed the large size of Komodo dragons to 'island gigantism', known, for example, from Madagascar or New Zealand. Recent research, however, suggests that they are a relict population of Australian megafauna from the Quaternary, which means that monitor lizards as such appeared about a million years ago. Their much larger relatives once inhabited extensive areas and in Australia, for example, could have been encountered by the first human settlers, who subsequently contributed to their extinction.

The largest specimens of this species can be two to three metres long and weigh over one hundred and fifty kilograms. They feed on various animal food, including carcasses. They sometimes venture to hunt deer or buffalo, and humans have even been attacked in the past. The Komodo dragon is surprisingly a swift hunter and kills its prey using its sharp teeth, taking advantage of its enormous weight. It was long unknown that this lizard has another weapon—the venom contained in its saliva. These animals like swimming, they can even swim from one island to another. They are able to eat food corresponding to eighty per cent of their weight in one sitting, which is impressive, indeed. Moreover, Komodo dragon skin is reinforced by extraordinary scales that function as a sort of natural chain-mail. Due to its considerable predacity, young Komodo dragons actually climb up trees to protect themselves against other members of their own species.

Such fascinating animals could not escape human attention for long. After Ouwens published his paper, trophy hunters invaded the island, causing massive slaughtering. Fortunately, the Dutch administration quickly realised the imminent danger of extinction and adopted the first measures to protect Komodo dragons in 1915. The American expedition of 1926, which brought several trophies and two live Komodo dragons to the USA, inspired the famous film King Kong. It is therefore not surprising that Komodo has become a popular destination for thousands of tourists from all over the world. In order to preserve it, Komodo National Park was established in 1980, but the extent of tourism was so enormous that the unique biotope was jeopardised.

The Indonesian government therefore considered closing the entire island for visitors in 2020. They eventually abandoned the idea, but an entrance fee of one thousand dollars will be charged. This is undoubtedly a reasonable decision as it is estimated that no more than five hundred Komodo dragons are living in the wild today.

TAKAHĒ

Porphyrio hochstetteri

The takahē—young animal

The takahē—fossil skull

Weasel—predator

OCCURRENCE: *New Zealand*

Birds of New Zealand are not only remarkable but also endangered. The takahē holds a special record among New Zealand fauna: it was considered extinct for an incredible fifty years.

The takahē, which is the Maori name for this bird, is the largest member of the rail family—being up to sixty centimetres long. Much like other New Zealand birds, it has lost the ability to fly. Its body is covered with dark plumage with a blue-green gleam. It has conspicuous red-coloured legs and a powerful beak. It inhabits alpine grassland with tufts of grass, which form the main component of its diet.

Fossil records prove that it once inhabited both the North and South Islands of New Zealand. Based on fossil findings from 1848, it was presumed to be another extinct species like the moa. Two years later, a group of sealers hunted and subsequently ate a quick running, flightless bird on the South Island. They kept its skin, based on which the bird was identified as a new living bird species. Several more specimens were hunted later, but findings were scarce. It was thus considered an extinct species as of 1898. The causes of extinction were obvious: competition for food due to imported cervids and the introduction of predators, such as stoats.

The takahē was rediscovered by the New Zealand doctor and adventurer Geoffrey Orbell. In 1948, an expedition led by him discovered a small population of this species in the New Zealand Alps on the southern tip of the South Island. A challenging rescue program could begin—in particular, the population had to be protected from external influences. Individuals bred in fenced territories were then gradually released on small islands without alien mammals. In the 1980s, there were no more than a hundred of these birds, but thanks to rescue measures, the number is progressively increasing. The steps have been successful to such an extent that a second wild population of takahē was established in the Kahurangi National Park in the north of the South Island in 2018. Today, there are more than three hundred takahē in total.

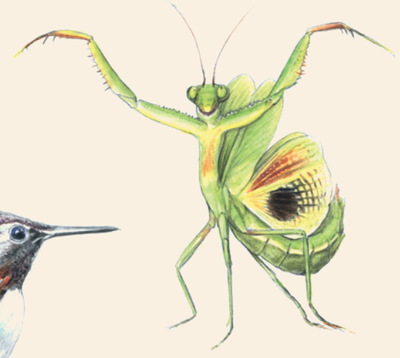
You can currently take a closer look at two specimens of this species in the urban sanctuary Zealandia on the edge of Wellington. They serve as living proof that the efforts of rescuers make a difference. For that matter, New Zealand has undertaken to eliminate non-native predators on the largest islands by 2050. If this plan succeeds, unique local animals have a chance to survive.

THE WHITE-TAILED SABREWING

Campylopterus ensipennis

The giant hummingbird

The bee hummingbird



Mantis religiosa—predator

OCCURRENCE: *Tobago and Venezuela*

Thanks to their brightly coloured feathers, hummingbirds are nicknamed flying jewels. In many ways, they are record holders of the bird kingdom, so it would be a shame if their numbers in nature decreased. This is despite the fact that due to their variability we do not even know exactly how many species there are.

Hummingbirds form a separate family that currently exclusively inhabits the American continent. According, however, to recent discoveries hummingbirds actually once inhabited the Old World—as evidenced by the adaptation of some local plants to pollination by hummingbirds and unique palaeontological findings. The uniqueness of hummingbirds lies mainly in their special flight mechanisms, as they are the only birds that only use the strength of their muscles and wing movements to fly. All other birds rely heavily on gliding. Hummingbird wings run on a similar principle as state-of-the-art helicopters but are still much more powerful. They can fly backwards, sideways or hover in place for a long period of time. They are persistent and extremely fast pilots that actually take the place of butterflies in many ways—and it is not surprising that even predatory mantises sometimes feed on them.

There are currently approximately 330 recognized hummingbird species. The position of the smallest bird in the world is occupied by the bee hummingbird from Cuba, which is about five centimetres long, while the giant hummingbird measures about twenty centimetres. An organism as perfect as the body of a hummingbird requires a very fast metabolism driven by a heart whose rate can reach as high as 1 260 beats per minute. Their way of life is perfectly adapted to the collection of nectar from flowers, which, however, also poses a potential threat to them. Hummingbirds are dependent on specific species of plants, as well as these plants being dependent on them. Nectar does not provide, however, all the necessary nutrients, so hummingbirds occasionally feed on insects. Unlike insect pollinators, hummingbirds are able to distinguish the red colour, so it is red flowers they are attracted to.

Those that inhabit the Caribbean islands are especially among the endangered species of hummingbirds. The loss of native plant species poses a risk, especially to dietary-specialized species from mountain forests. In addition, island bird species are generally known to be more vulnerable. Among the most endangered species are the white-tailed sabrewing inhabiting the Caribbean island of Tobago, but also a small piece of land in Venezuela. This species of hummingbird reaches a size of about thirteen centimetres. The greatest threat to the existence of this species was the devastating hurricane Flora which severely decimated its population in 1963.

Only recently have scientists figured out why male hummingbirds have longer and sharper beaks. It is not because of dietary specialization. They use the beaks as a weapon in bloody fights for females during mating rituals. At that moment, these tiny birds turn into aggressive attackers, with whom even a Medieval knight would not want to meet in a tournament…

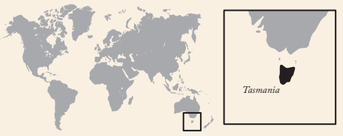
THE TASMANIAN DEVIL

Sarcophilus harrisii

The Tasmanian devil—skull

The Tasmanian devil—young animal

The Tasmanian devil—head



OCCURRENCE: *Tasmania*

The English and scientific name of this animal (free translation 'meat lover') and its well-known nickname 'Tasmanian Devil' are frightening. We now know, however, that the creature's actual behaviour does not correspond to its bad reputation. If we add the fact that its numbers are currently declining due to illness, a quite different, much sadder story, emerges before us.

After the extermination of the Thylacine, no larger predatory marsupial exists. The Tasmanian devil used to be found in Australia, but was exterminated by the dingo and the natives prior to the arrival of European settlers. Therefore, today it only lives on the more remote island of Tasmania. It is an animal that resembles a smaller strong dog. The Tasmanian devil typically has a black coat with a white stripe on its chest, a large head allowing it to generate strong bites, and a longer tail, where it stores fat reserves. It has an excellent sense of hearing and smell thanks to sensitive tactile whiskers. When it gets angry, its earlobes turn red.

When the Tasmanian devil digs its burrows, its pouch opens backwards so that no dirt finds its way in. The Tasmanian devil is a solitary creature active at dusk and at night, but when it comes to food, a group of them can gather around one carcass. Dead animals comprise their main source of food. They can eat the found carcass very quickly and completely. No leftovers.

This speed, as well as the extraordinary noise of their eating, during which they open their jaws menacingly, can terrify the observer—but the Tasmanian devil is not a threat to man. The devils do not only, however, stick to eating carrion, they diversify their diet by eating smaller mammals they catch, and even at times prey on sheep.

Tasmanian devils are good swimmers and the young can climb trees, but the adults are no longer able due to their stout bodies.

Before the arrival of man to Tasmania, the Tasmanian devil was at the top of the food chain. The first settlers hunted it for meat and later colonists systematically killed it because they were worried about their herds of cattle. Killing them with traps and poisons almost eradicated the entire species. Only after the extermination of the Thylacine did people realize their mistake, and as of 1941, the Tasmanian devil has been protected by law. This led to the gradual strengthening of the population before another disaster struck. In 1995, the devils developed facial cancer for the first time, a contagious disease caused by mutated cells. The affected individual dies of starvation because it cannot eat due to the disease. People have tried to help, but it is not easy, for example, by trying to isolate the uninfected population from the others.

If the Tasmanian devil disappears from nature, it would be a great tragedy. The introduced foxes to Tasmania, with whom the Tasmanian devil have competed so far, would probably multiply, and following the Thylacine, this remarkable island would lose yet another of its symbols.

THE GARDEN DORMOUSE

Eliomys quercinus

The garden dormouse—hibernation

The hazel dormouse

The common European viper—predator

OCCURRENCE: *Europe*

You do not have to visit jungles and remote islands to hear about reports on the alarming decline of interesting animals species. A number of these cases can also be found on the old continent, as we call Europe. A typical representative of these animals is, for example, the elegant and shy rodent called the garden dormouse.

In fact, shyness is a typical feature of all dormice, small rodents related to squirrels, of which twenty-eight species of them have been described, almost all of which inhabit the territory of Eurasia. Their anatomy is well adapted to climbing in trees and bushes. Dormice lead a hidden night life, feed on berries and nuts, but also would not say no to insects. The behaviour of species living in the north is atypical considering they are rodents—they hibernate for a long time in the winter. They spend it curled up in their nests padded with leaves, grass and moss. How fortunate for us and dormice that the era of ancient Rome is over—at that time, hibernating dormice were stored in special clay pots in cellars as a source of fresh meat!

The colouration of the garden dormouse in particular is quite striking due to dark eye markings. The tail ends with a white tassel. This dormouse can be up to twenty-six centimetres long, with the tail constituting almost half of the length. Its diet is mainly animal-based and, in addition to invertebrates, consists of chicks and eggs. It prefers rocky areas, walls and vineyards, that is the same territory as the common European viper. This is probably the reason why it is much more resistant to viper poison than other rodents. Like other dormice, it loses nearly half of its total weight during the winter sleep.

The population of garden dormice, limited to the European territory, has been decreasing considerably in recent decades. The environment, inhabited by this animal, has reduced by roughly half over the last thirty years, and is already considered extinct in some countries. The rate of its decline in the wild is higher than with any other rodent. What is concerning, however, is that the actual threat is unknown. It is probably the loss of its habitat in connection with its natural shyness. In the Czech Republic, for example, it is currently the rarest mammal.

The rareness of the garden dormouse is no match, however, for its relative the *Dryomys niethammeri*. This species occupies a small territory in the mountains of central Pakistan and was only finally described in 1996. Only three specimens have been documented, however, and we know virtually nothing about its lifestyle...

THE MEDITERRANEAN MONK SEAL

Monachus monachus

The Mediterranean monk seal

The southern elephant seal

The leopard seal

OCCURRENCE: *Mediterranean*

These pinnipeds used to be common in the waters of the Mediterranean and Black Sea. In ancient times, people had a high opinion of them—they appeared on coins or in Homer's description of sea beaches in the Odyssey. Yet, there are probably only a few hundred Mediterranean monk seals still remaining on islands inaccessible to people.

Pinnipeds are perfectly adapted to life in the water. Unlike cetaceans, they have never left the shore, which is why evolution provided them with features for both smooth swimming underwater and rather clumsy movement on land. They are great swimmers due to their aerodynamic body shape and also excellent divers due to closable body orifices. They are also feared hunters—using their whiskers, seals can track down flounders hiding on the seabed. While sea lions have most likely evolved from animals related to dogs, seals have relatives among mustelids. For the sake of completeness, they are also closely related to equally extraordinary walruses.

The Mediterranean monk seal grows up to three metres in length and weighs over three hundred kilograms. Like all pinnipeds, they have a thick layer of fat to protect them against cold and an extremely thick fur coat. It excels over other seals in its ability to move efficiently on land using its massive claws on its fore flippers. These seals prefer to stay close to shore and do not dive to great depths. Their hair is dark brown with a white spot on their bellies. Their Latin name is derived from the Russian term for monks, whose robes have similar colouration as seals. They used to inhabit a vast territory stretching from the Black Sea to the coast of Madeira.

This species is currently, however, the most endangered of approximately thirty species of pinnipeds. Like its relatives, it has always been killed by hunters for fat and hides and by fishermen, who saw seals as competition. In the twentieth century, it has been brutally affected by the development of mass tourism, careless fishing and unregulated shooting. Due to intensive fishing, European waters cannot meet the food requirements of the seals, but the damage caused by tourism is much worse. Seals as shy animals have begun to hide in caves and have gradually disappeared from the coast. Despite the efforts of rescuers, it is estimated that only the last few hundred individuals survive in small colonies on remote Greek islands, the location of which scientists keep strictly confidential.

It seems that the Mediterranean monk seal has not learned to live with humans. Or perhaps humans have not learned to live with seals?

THE NORTHERN SPORTIVE LEMUR

Lepilemur septentrionalis

The golden bamboo lemur

The ring-tailed lemur

The red-tailed sportive lemur

OCCURRENCE: *Madagascar*

For a good reason, Madagascar, the fourth largest island in the world, is nicknamed 'the Eighth Continent'. Unique animal and plant species can be found there. This distinctive biodiversity is a result of Madagascar's geographic isolation. Undoubtedly, the most famous inhabitants of Madagascar are lemurs—*strepsirrhini*, whose ancestors probably found their way to the island aboard primitive natural rafts.

The lemurs thus had no natural enemy on the island. They have therefore adapted to various environments and include both species that move on the ground, as well as climbing and jumping species. Human have become their enemy - despite the fact that for most indigenous tribes, lemurs are taboo, that is, untouchable. The people of Madagascar have respect for these mostly nocturnal creatures and believe that the souls of their ancestors reside in them. They used to hunt lemurs only during the famine, which is currently still the case. Despite federal laws, certain renowned restaurants still unfortunately feature lemur meat on their menu. This is no longer an emergency, but a cruel extravagance. Loss of the natural environment, deforestation and the stress of expanding human civilization, however, pose a much greater threat.

Practically all of the forty-five or so lemur species are currently endangered, but some of them actually hang by a thread. Among them is the northern sportive lemur, which now inhabits what is left of deciduous forests in the northern part of the island. It is a dark-coloured nocturnal tree animal which is about thirty centimetres in length and weighs about seven kilograms. It jumps through the trees and, like all nocturnal lemurs, has large dark eyes. It is an herbivore, but not a very picky one which, of course, cannot be said of its other endangered diurnal relative, the greater bamboo lemur. This species, which has long been believed to be extinct, feeds almost exclusively on bamboo. It inhabits a very limited area of two national parks, but suitable habitats are continuing to decline due to logging and the construction of roads dividing the individual populations. The number of both the northern sportive lemur and the greater bamboo lemur in the wild reaches only a few hundred.

It came as a huge and sad surprise to scientists, that there has been an unexpected decrease in the numbers of the most famous of all of Madagascar's lemurs, the ring-tailed lemur which has a characteristic striped tail. This popular zoo inmate was relatively common twenty years ago and was even the most abundant lemur species ever. It is characterized by great adaptability, thanks to which it was able to inhabit different habitats. According to research from 2017, however, these semi-apes are currently bred more in captivity than in the wild. Over the last seventeen years, their numbers in Madagascar appear to have decreased by 95 percent! And if the ring-tailed lemur is unable to cope with the changes in the environment, it is highly unlikely that other lemur species will be able to handle it any better.

True stories of critically endangered species.

We are born into a world, which is moving at a dizzying pace. While at the beginning of the twentieth century only two billion people roamed the Earth, now one hundred years later we have an unbelievable 7.6 billion. We are born, we live, we die and we loot our planet. We pollute it, mine it, cut down forests and transform them into arable land. We pump out supplies of groundwater as well as mineral raw materials. We fish sea animals on a large scale and beat our chests with pride at our accomplishments. Entire lines of threatened species, however, are dying in front of our eyes. Do we want to continue like this? In this narrative book, which maps out the fates of examples of threatened species, the writer Radek Malý attempts to make people, the supposed lords of the creation, think about their further steps. Will we continue to just take? Or will we begin to give and protect? The ambitiously conceived atlas is accompanied by remarkable full-page illustrations by the renowned book illustrator Pavel Dvorský supplemented by scientific illustrations by his wife Pavla Dvorská. We hope you enjoy reading the stories of our 41 main heroes, whose further existence is only in your hands…

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