

Treasures & Biodiversity

A journey through the collections
of the Nantes museum
before its metamorphosis



**Please leave this document
at the end of the exhibition**

Discovering the World

From the 18th century onwards, voyages of scientific exploration crisscrossed the world's oceans. Naturalists set sail to study the peoples, fauna and flora of distant lands.

They created inventories and collected thousands of objects that they brought back to Europe – and to Nantes!

Since its doors first opened in 1810, Nantes' Natural History Museum has continued to add to its animal, vegetable and mineral collections and communicate its spirit of openness to the world.

Today, it's your turn to explore! Set off in discovery of fruits, seeds, and exotic birds... a samurai's armour and a Zulu shield... seashells from Polynesia and insects from French Guiana. Your adventure even includes a piece of the Moon, fallen from the sky.

1.

An invaluable exotic herbarium

It contains almost 5,000 plants from Africa and Brazil collected by Antoine Fée (1789-1874), including numerous different types – i.e. specimens enabling description of new species.

2.

A tropical teaching collection

In 1900, Nantes' Business School opened a colonial section and developed a collection of jars, plaster fruits and fibres with a view to training its students to recognise tropical products.

3.

Carpotheque or Seminotheque?

These are collections of fruits (*karpos*) and seeds (*semen*) dating from the early 19th century, amassed and then bequeathed to the Museum by Louis Bourgault Ducoudray (shipowner, 1804-1877).

4.

Asian mammals

- a.** Large Indian Civet
- b.** Sri Lankan spotted Chevrotain

5.

Comparative anatomy of mammals' skulls

The osteological collections (complete skeletons and skulls of vertebrates) enable us to contrast the anatomical characteristics of series of species and so compare their shapes and structures.

6.

An extensive collection of birds from all over the world

In the early 19th century, most collections came from expeditions to distant shores. Hence, the Museum's first catalogue refers to a collection of birds "almost all foreign to our climes".

7.

Zulu shield

(South Africa, 19th century)
Known as isihlangu, such shields were for the exclusive use of chiefs and great warriors. They are made of zebra or cow hide and strengthened by a wooden staff sewn onto the inner surface.

8.

A prestigious collection acquired in 1833

One of the Museum first ornithological collections was created by Simon Portier (Naval Commissary, 1781-1849), with a number of specimens coming from the *Voyage of the Uranie*, undertaken by Order of the King between 1817 and 1820.

9.

Ornithological discoveries in Southeast Asia

Commissioned by the Ministry of Public Instruction, Alfred Marche (naturalist, 1844 - 1898) explored the Philippines between 1879 and 1888. He brought back major natural history collections including previously unknown species.

10.

Voyage of scientific exploration around the world

Between 1824 and 1826, naval surgeon François Busseuil was responsible for making natural history observations aboard the ship *La Thétis*. Upon his return to Nantes, he bequeathed 18th- and 19th-century Oceanian objects to the Museum.

11.

A little-known pioneer of Egyptology, Frédéric Cailliaud

From the expeditions he led between 1815 and 1822, he brought back numerous antiquities dating from between 700 BC and 500 AD. A part of his collection is conserved at the Museum, whose curator he later became.

12.

Samurai's armour

(Japan 17th century)

This armour was bequeathed to the Museum in 1949 by the family of Paul Balagny (1863-1948). As a soldier, he served in Asia (including a posting at the troops of Indochina's topographical office) between 1886 and 1891.

13.

A frigate captain fascinated by the natural sciences

Charles Noury (1809-1869) sailed to Polynesia in 1846, staying on Tahiti and the Marquesas Islands. While there, he observed the local fauna and collected a great many seashells. Following his return, he wrote a Polynesian bestiary.

14.

Neptune's Cup

This sponge lives on sandy seabeds, where it feeds on plankton. A victim of overfishing, it was thought to have become extinct until recent observations off the coasts of Singapore (2011) and Cambodia (2018).

15.

Naturalist correspondents in French Guiana

Between 1856 and 1886, the Bar brothers made their home on an island on the River Maroni in order to study its fauna and flora, collecting plants, insects and birds, many of which they sent to Nantes Natural History Museum.

16.

An insect collection rediscovered in 2022

These insects were collected by François Dubuisson (1763–1836), the Museum's first curator. They come from collections made during naturalist voyages undertaken in the 18th and 19th centuries.

17.

Extraordinary mineralogical diversity

Almost 6,000 mineral species have been identified on Earth and the Museum conserves a great many of them. Such diversity, symbolic of our planet's complexity, fascinates scientists and mineral enthusiasts alike.

18.

Stones fallen from the sky

The Museum adds to this collection on a regular basis, focusing on emblematic samples that tell us how planets were formed, all the way back to the origins of our solar system...

19.

Atacama – The expedition is back

In April 2017, six high-school students from Nantes Metropolis set off on an expedition to the Chilean desert of Atacama accompanied by scientists. They were looking for meteorites.

Looking around us

Naturalist collections are composed of rocks and minerals, fossils, animals and vegetable.

Not all the specimens in the Museum come from the ends of the earth. Since the 19th century, its curators have encouraged and promoted regional collections in order to study local diversity.

Today, these collections are sources of new knowledge that help us understand natural history. And they constitute an invaluable scientific heritage for the future.

Nothing beats observation! I'll leave you to get a better understanding of our regions' earth, sea and skies, with herbariums, fungi, sea urchins and seashells, mammals' footprints, birdsong and feathers...

1.

Mapping Loire-Inférieure

This 1832 map illustrates the mineralogical collection amassed in the *département* by François Dubuisson. It contains over 2,000 samples, organised by municipality.

2.

The bronze founder's hiding- place in Pornichet

In 1886, during construction of a housing estate, tools dating from the Bronze Age (2,700 to 800 BC) were discovered, buried under a metre of dune sand at Sainte-Marguerite beach in Pornichet.

3.

The Corniche Angevine's carboniferous flora

In the 19th century, mining activity unearthed these fossil plants, witnesses of the flora that grew between Mouzeil (44) and Chalonnes (49) more than 300 million years ago.

4.

Armour-piercing Molluscs and Sea Urchins

In the 1850s, Frédéric Cailliaud, who was the Museum's curator at the time, studied lithophagous molluscs and sea urchins "that eat stone", in order to try and determine the origin of this phenomenon.

5.

The West of France's herbarium

This herbarium is mostly composed of samples from Loire-Atlantique and Vendée, classified by family in accordance with James Lloyd's *Flore de l'Ouest de la France* (1854), a work intended for use by naturalists in the field.

6.

When botany was taught at school

242 plants were collected in Vendée by the schoolteacher Jean-Louis Guittot (1863-1942). Each one has a label with its name, date and place of collection and the collector's name.

7.

Slice of Sequoia

This slice comes from a tree that was chopped down in Nantes in 2005. Native to California, sequoias are among the world's oldest trees and can be up to 3,500 years old. This one was only a 100!

8.

A "lichenier", wassat? A lichen herbarium

Lichens are symbiotic partnerships between fungi and algae and have conquered the most extreme environments. Depending on species, they are pressed flat or conserved on their supports (bark, dead wood, rock, etc.)

9.

A marine herbarium issued in 50 copies

The 19th century saw growing interest in the study of seaweeds. In order to create a seaweed herbarium, you use the gel (= mucilage) present on their surface. This substance glues the plants to their paper backing as it dries.

10.

Fungi; neither animal nor plant!

Fungi, long often ineptly classified in botany, are difficult to conserve. They are therefore depicted by sculptures and illustrations.

11.

Skinning for research purposes

The collections of bird skins (in this case, owls) facilitate comparisons between species and provide a basis for taxonomic (definition of new species), morphological (size and colouring) and other studies.

12.

***“L’Âge des Perdrix”,* studied by Louis Bureau**

Between 1911 and 1913, he published two studies enabling determination of a partridge’s age based on its feathers. These works were long used by the National Office of Hunting and Wildlife (ONCFS).

13.

Cowpat eaters

These insects, called dung beetles, play an essential ecological role. By breaking down cattle excrement, which they lay their eggs in and feed on, they help fertilise grazing land.

14.

Fish from elsewhere

- a. Wels Catfish
- b. Carp
- c. Roach

15.

Bees, precious pollen gatherers

Since 2021, the Museum has been inventorying wild bees in Nantes' home gardens. Fostering the presence of these pollinators helps improve such gardens' contents.

16.

DNA sampling of the Museum's specimens

Taking samples from our old collections enables study of certain species' genetic lineages, and better understanding and preservation of current populations.

17.

Anatomical casts

Numerous anatomical casts have been made in the context of a close collaboration between Oniris (National Veterinary School of Nantes) and the Museum, including this newborn lion cub that died at *Planète Sauvage* Animal Park.

18.

The Short-Toed Snake Eagle, breeding in Brittany again

In 2018, over a century after the last documented nesting, the short-toed snake eagle has once again nested in Brittany... Difficult to trace its history without the Museum's archives and collections.

19.

The Pannecé deposit's phosphates

Discovered in the Ancenis municipality (44) circa 1970, these phosphorus-rich minerals crystallised in cracks in the rock. Studied by Nantes' Institute of Gemmology and conserved at the Museum, they are unique in France.

20.

A historical herpetological collection

This collection and the publications relating to it enabled the authors of the *Atlas des Amphibiens et Reptiles de Loire-Atlantique* to trace the history of their presence across the region since the early 19th century.

21.

Inventory of France's decapods

When the crustacean collection was inventoried in 1993, all the data on decapods (= 5 pairs of legs!) were fed into the national inventory of natural heritage.

Bearing witness to biodiversity

Current biodiversity results from a long, slow evolution of the living world, marked by extinction crises succeeded by ecosystem renewals.

The Museum's fossils enable us to trace this history of living things. Here, you'll be able to take a close-up look at trilobites, animals that peopled the seas 500 million years ago when life was exclusively marine. And admire a cordaite, an arborescent plant from the Carboniferous Period, which was characterised by the first giant trees. Discover a dinosaur's footprint found on the Vendean coast, or a giant shark's tooth...

Today, due to human activities, a new crisis is underway and the Museum's collection can also bear witness to it. Examples include the mink, the bustard and the curlew, all present in Loire-Atlantique in the 19th century but now disappeared from our region.

Or, at global level, the decline of butterfly populations and the threat to coral reefs.

And don't forget, the history of living things and the earth is recorded in everything that surrounds you.

Over 500 million years of the history of life forms

No species is immortal and the history of the Earth is punctuated by numerous biodiversity crises including five mass extinctions.

1.

Anomalocaris

Between 535 and 505 million years ago

Recreation by Thierry Boisgard

This strange-looking “shrimp”, discovered in the Burgess Shale in Canada, used to wander the seas in the Cambrian Period. The sharp bony plates in its mouth show that it must have been a great predator.

2.

Cordaites

Between 320 and 250 million years ago

This arborescent plant, similar to present-day conifers and ginkgos, could be up to 40 metres tall. They grew abundantly in the Carboniferous Period’s hot and humid areas and probably disappeared during the 3rd extinction.

3.

Trilobita

Between 540 and 250 million years ago

Trilobites were a group of marine arthropods composed of some 20,000 species, ranging from 1 mm to 70 cm in length. The last of them disappeared during the extinction crisis that marked the end of the Palaeozoic Period.

4.

Grallator variabilis

200 million years ago

This dinosaur's footprint was preserved in the sediment along with the ripples of waves left by the tide. *Grallator* is only known by its footprints, as no remains of this particular dinosaur have ever been found.

5.

Microraptor gui

Between 125 and 113 million years ago

Recreation by Mostfa Mohammed

Discovered in China in the early 21st century, it is one of the smallest known dinosaurs. It was covered with feathers and probably flew by gliding rather than beating its wings like present-day birds.

6.

Ammonoidea

Between 400 and 65 million years ago

Ammonites came in a wide variety of shapes and sizes, between a few millimetres to 2 metres in length. When properly identified, their fossils are used to date the geological layers they are found in.

7.

Diplomystus + *Knightia*

Between 55 and 48 million years ago

The **Green River** geological formation is an outstanding preservation site: fine sediment and an easily accessible unspoilt, oxygen-low environment. These fossils enable us to trace the evolution of bony fish similar to present-day sardines and herrings.

8.

Tripneustes + *Solaster*

Between 23 and 16 million years ago

20 million years ago, the Rhone basin was occupied by a large marine gulf scattered with islands and shoals. Sedimentary rocks, known as *molasses*, formed there and preserved these sea urchins, starfish and other marine fossils

9.

Sharks' teeth

Between 16 and 11 million years ago

Estos dientes se hallaron en el lugar
They were found where the Faluns Sea once covered Brittany, Anjou and Touraine some 15 million years ago. They are often the only remains to be found of these animals, whose cartilaginous skeletons leave few traces.

10.

Otodus megalodon

Between 16 and 7 million years ago

The Megalodon shark could measure up to 18 metres in length, and the size of its teeth is just as impressive. Its disappearance is probably related to the global cooling at the end of the Pliocene Period, which led to depletion of the creatures it preyed on, around 3 million years ago.

11.

Ursus spelaeus

Between 126,000 and 25,000 years ago

Cave bears lived in the forests of Europe and Asia. The extensive cold spells that marked the last Wurm glaciation, around 25,000 years ago, led to a decrease in wooded areas and their mainly plant-based food supply.

12.

Mammuthus primigenus

Between 116,000 and 5,000 years ago

Widespread in the steppes of northern Asia and Europe, the woolly mammoth became extinct around 5,000 years ago, a victim of global warming after the last Ice Age. The increase in temperature led to rising sea levels and destruction of its habitat.

On the way to a sixth extinction?

Today, a great many species are in rapid decline, and human activities are very much to blame.

1.

Aepyornis

Extinct over 4,000 years ago

The elephant bird was over 3 metres tall. There are many reasons for its disappearance, including hunting, egg collection, diseases transmitted by human-raised poultry and development of agriculture.

2.

Bos primigenius

Extinct 400 years ago

Native to India and ancestor of domestic cattle, aurochs made their way to Europe about 300,000 years ago. Endangered by intensive hunting and extension of farmland, they no longer existed in Eastern Europe from the 13th century onwards, and finally became extinct in 1627.

3.

Passenger pigeon

Extinct 100 years ago

Widespread in North America up until the end of the 19th century, this bird was hunted for its meat and regarded as an agricultural pest. Overhunting led to its disappearance in less than 50 years.

4.

Davison's Ibis

In critical danger of extinction

Its decline is due to destruction of its habitat caused by forest clearing and wetland drainage. A protection programme, initiated in Cambodia by the WWF in 2009, saw its population increase from 310 to 792 individuals in 2022.

5.

The decline of common birds

Intensive farming is its main cause. There are also fewer sparrows in urban areas for various reasons, including competition with pigeons and air pollution.

6.

European Mink

In critical danger of extinction

The **European mink (a)** is France's most endangered mammal. Its disappearance in Loire-Atlantique since 1990 is largely due to the decline in wetlands and competition with the **American mink (b)**, which was introduced for its fur and escaped into the wild in Brittany, in 1970.

7.

Land snails, endemic and insular

Extinct or critically endangered

Most of the biodiversity on islands is made up of endemic species (which are found nowhere else). They are naturally more vulnerable to any changes in their environment and to the introduction of other species.

8.

Great Bustard

Vulnerable – Disappeared from many European countries

In the 19th century, this bird was a common sight in the Loire estuary. The destruction of its habitat, due to urbanisation, intensification of agriculture and hunting, led to its disappearance in France in the early 20th century.

9.

Pike

Vulnerable – Protected in the Loire estuary

Pike reproduce in secondary arms and water meadows. In the estuary, the channel dug between St Nazaire and Nantes caused its spawning grounds to dry out. A spawning-ground restoration programme has been launched upstream of Nantes.

10.

European eel

In critical danger of extinction

Numbers of elvers and eels have fallen by almost 90% in France since the early 1980s. There are many reasons for their decline, including intensive fishing, deterioration of watercourse quality, predation and obstacles to migration.

11.

Butterflies

Biodiversity in danger

Butterflies are excellent pollinators, complementing the work done by bees by transporting pollen over greater distances. Across the world, the rise in temperature is impacting their lifecycle and fertility. Their populations are particularly affected in Europe, where, among other things, urbanisation, development of tourism, changes in farming methods and forest fires are destroying their habitats.

13.

Corals

Biodiversity in danger

Coral reefs harbour some 25% of our planet's marine life. They also provide coastal protection as well as food and economic resources for over 330 million people. Today, around a quarter of these reefs have already suffered irreversible damage and two thirds are seriously threatened by destructive fishing practices and ocean warming.

12.

Slender-billed Curlew

Critically endangered

In the 19th century, during its migration between Russia and North Africa, it stopped off on the banks of the Loire estuary. Today, its global population is estimated at fewer than 50 individuals, although we do not know the exact causes of its decline.

