

 HAUS DER MUSEEN

Museum of Nature Olten



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# Visitors' Guide to the Permanent Exhibition at the Museum of Nature Olten

## Publication information

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# Olten – naturally diverse

## The nature of the region

With almost 300 items on display, our new permanent exhibition helps you discover the diversity of nature in our region. The exhibition is arranged in two sections – focusing on geology and biology – that both reflect the main theme of diversity.



## Welcome

Toulouse, Switzerland's most famous cat, bids you a warm welcome! But – why a cat? Cats are headstrong creatures, in charge of their own lives: they build bridges between our domesticated world and the world of wild animals. You are about to leave the town behind you as you take up our invitation to immerse yourself in the nature of our region.



## Toulouse – the King of Olten

(2000 – 2017)

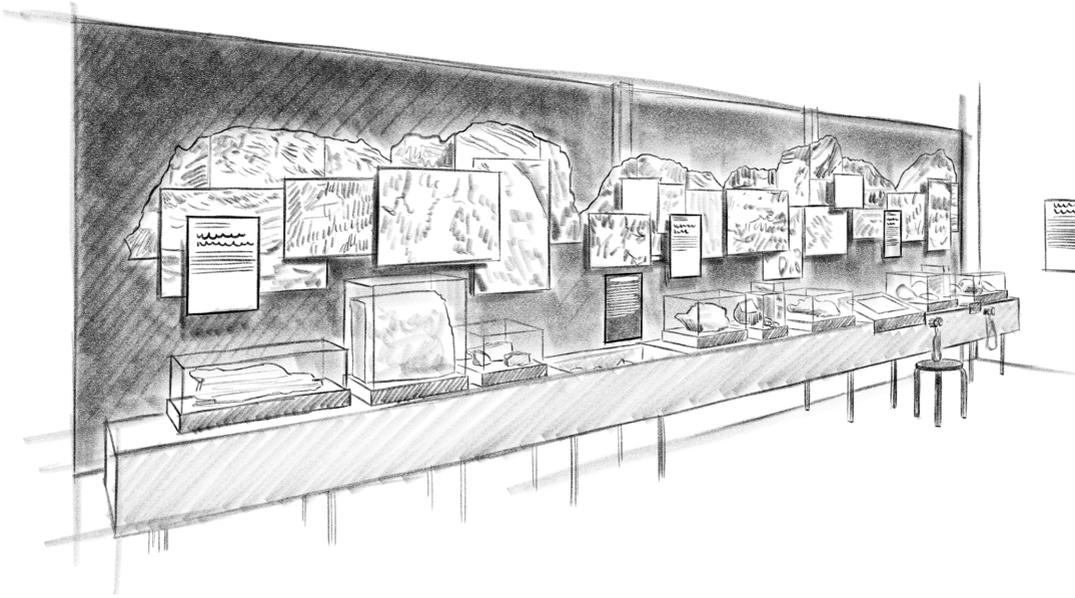
Many tales are woven around Toulouse, the legendary tomcat of Olten's old town. He was called Toulouse because people would shout «You rascal» at him – which in local Swiss German is «Du Luuser!» And he takes the title of King of Olten from the book of the same name by Alex Capus. The town plan shows the settings for the stories about Toulouse.



## Olten – geology

Nowadays, our region consists of two land areas: the Jura and the Mittelland (or Swiss Midlands) – but for millions of years, it was covered by an awe-inspiring sea. The main influences on the region's appearance were the formation of the Alps and the advance of the glaciers in the Quaternary Period. Fossils of exotic animals and plants bear witness to these early chapters of natural history.





## Stones and crystals

Stones tell stories. They are fragments of huge rock formations, which in turn result from changes on the earth. Some of these stones were formed at the same time as the mountains. Glaciers and rivers then transported them into the Mittelland. Others originated from former gravel islands and sand-banks in rivers. However, most of the Jurassic rock formations consist of petrified seabed.

There are also some glittering treasures to be found in the Jura – crystals! They often grow in cavities that are filled with liquid.

Triassic – Jurassic – Cretaceous  
252 – 66 million years ago  
**Rock formations of the  
Mesozoic Era**

The Jurassic rock formations were laid down over a period of about 150 million years due to the alternating action of sedimentation, evaporation and the more recent intrusion of the sea. There are no deposits from the Cretaceous Period in the canton of Solothurn (geological hiatus).

Paleogene – Neogene  
66 – 2.6 million years ago  
**Rocks from the  
Tertiary Period**

Most of Switzerland consisted of dry land during this period. Only on two occasions when the sea penetrated the Mittelland as a narrow inlet: but for this reason, the sedimentary rock formations dating from this period originated both in the sea and on land.

Quaternary  
2.6 million years ago  
until today  
**Rocks from the  
Quaternary Period**

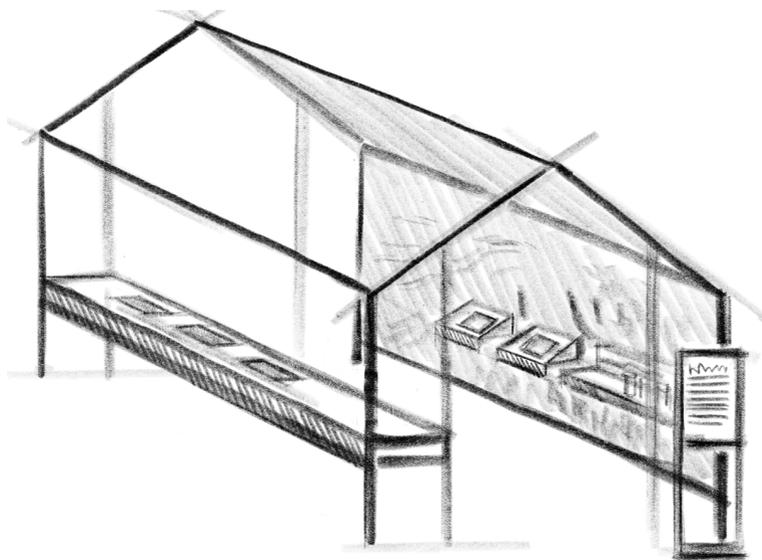
When the glaciers came to visit us, they brought stones and blocks from the Alps with them. These include types of rock that are not present in the Jura and the Mittelland, such as granite and quartzite.

All the rocks on display are debris from the Rhone Glacier dating from the last ice age, taken from the Gunzgen gravel pit (20,000 – 30,000 years before the present day).

## **Jurassic minerals**

Every mineral has its own color, hardness and crystalline form. Well over two dozen Jurassic minerals are known. The separation of mineral solutions and their crystallization also began with the deposition of the rocks involved in the process, which is still continuing today.

Most of the well-crystallized minerals are found in the limestones of the Jurassic Period, and less frequently in marls and clays. The deposits are scattered throughout the entire Jura mountain range.



## Time travel

Traces left behind by geological processes can be seen everywhere. Our landscapes are shaped by these processes. Rockslides, landslides or floods happen quickly enough to be visible. But the movements of the rock slabs that make up the earth's crust take place much more slowly, and their implications are much more important. The erosion caused by the movements of a glacier is another example.

Do you fancy a journey into the depths, to discover some fascinating destinations for excursions in the region – or to travel into the past? Then step inside!

## Movements of the earth and geological processes

As time goes on, the same geological processes take place repeatedly. Layers of rock are formed (sedimentation). These layers turn into mountains (folding). Then they are worn away again (erosion). All three processes are still taking place today. Here, these processes are assigned to the periods in the earth's history on which they had a particularly formative influence. The fossils on the tables reveal who was living in the region at the time.

## Geological excursion destinations

Our canton has a wealth of places with fascinating geology. Learn where petrified remains can be found, or where our groundwater comes from. You can also discover where iron, gravel, gypsum and other raw materials have been extracted, or where you can explore a cave.

## Drill cores

Typical samples such as these are obtained during deep-drilling operations or when tunnels are being built. These examples come from NAGRA (the Swiss National Cooperative for the Disposal of Radioactive Waste). As well as rocks that are present above ground level and seismic surveys, drill cores are among the most important sources of data for geological profiles.

## A look into the depths

Bedrock is usually covered by soil, so it cannot be seen. And if any rock is visible on the surface, it will often be only the uppermost layer. The cross-section shows how the geology continues underneath Olten. You can also see the Hauenstein Base Tunnel (on the Olten – Basel railway line). The «Journey through Depth and Time» takes you even further down.

Triassic – Jurassic – Cretaceous  
**252 – 66 million  
years ago**  
150 million years ago –  
land submerged!

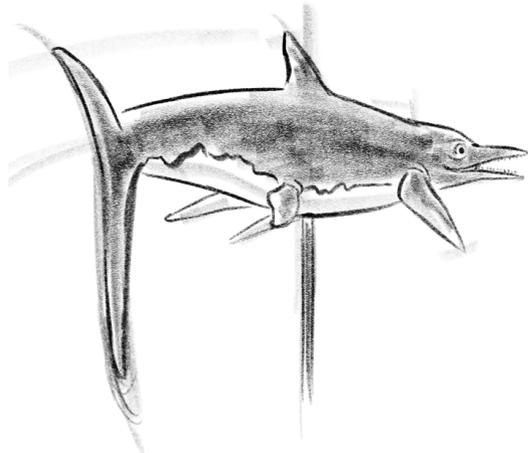
The era between 252 and 66 million years ago is divided into the Triassic, Jurassic and Cretaceous Periods. During that time, Switzerland slowly migrated northwards from the tropics into the subtropics. At one point, there was a shallow sea here with coral reefs; at another time there was deeper sea, and then the coast reappeared.

The sea was home to fish, bivalves, ammonites, belemnites, crinoids (or sea lilies) and starfish ... as well as some dreaded predators: the ichthyosaurs. On the coast, there were also terrestrial dinosaurs, turtles and crocodiles.

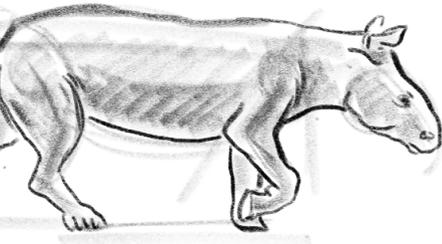
## The last 252 million years

The earth has been around far longer than we have! Remains dating back over the last 252 million years can be found in the canton of Solothurn. For a very long time, Switzerland was covered by a sea. It was often much warmer than it is today, but sometimes large areas of the land were also covered by glaciers.

Fossils from three geological periods provide evidence of the creatures that lived here before us. Most of them were found on the surface. Who knows what still remains to be discovered in the depths of the earth?



Quaternary  
**2.6 million years ago until today**  
550 meters  
under the ice



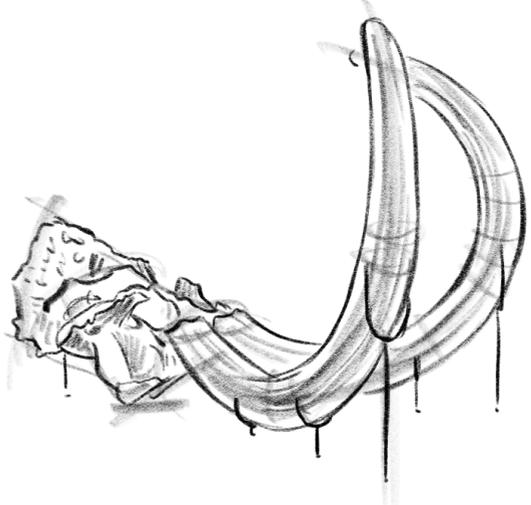
Paleogene – Neogene  
**66 – 2.6 million years ago**  
Subtropical  
wildlife park

The period between 66 million and 2.6 million years ago is known as the Paleogene and the Neogene. This was when the folding of the Alps took place; only at certain times did a narrow inlet of the sea reach as far as the Mittelland. But there was dry land here for most of the period. Switzerland shifted northwards from the subtropics until it reached its present-day position.

There were extensive flood plains on the land where many evergreen trees grew, including camphor trees and palms. Animals that are now extinct used to roam among the trees – examples include the anthracotherium (or «coal beast») and prehistoric rhinoceroses.

During the last 2.6 million years, the Ice Age (or Quaternary Period), the glaciers advanced as far as the Mittelland on at least 15 occasions. But between these movements, they always retreated back into the mountains. On one occasion, the Rhone Glacier even advanced across the Jura as far as Basel!

Marmots were already living in the Mittelland at that time, as well as species that are now extinct such as cave bears, mammoths, woolly rhinoceroses, wild horses and giant deer (megaloceros). Grass was the dominant feature of their habitat. Forest was only present in interglacial periods when the climate was milder.

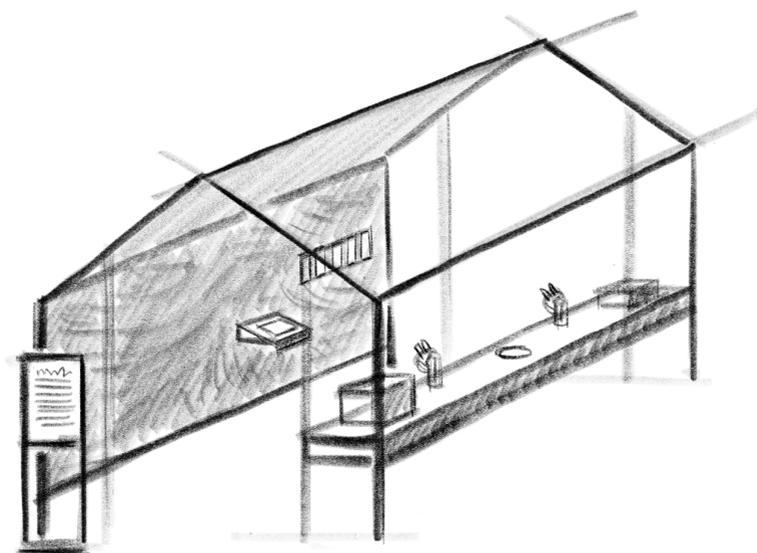




## Olten – biology

We examine the many diverse species that live here today according to the different ways they obtain their nutrition. We show you how they fit into the food chain – in other words, what it means to be a plant, a herbivore or a predator.





## Diverse and rich in species

The canton of Solothurn is made up of a mosaic of extremely varied landscapes. And it is also home to incredible biodiversity.

«Biodiversity» means biological variety, or variety of life. As well as the variety of habitats and species, this also includes the genetic diversity within one species.

Step inside, and explore all three aspects of biodiversity with the help of local examples.



## Diversity of habitats A mosaic of landscapes

Cultivated landscapes, forests, bodies of water and the Jura mountains: these are the elements that shape the character of the canton of Solothurn. These habitats change constantly during the course of the year. And we human beings also contribute to this change by the way we use the habitats.

On this wall, you can discover some intact locations as well as some restored «natural pearls».

## Diversity of species Owlets, tigers and geometer moths

Almost 400 species of moth have been recorded on the edge of the forest in the Ruttiger (Olten). Stepped forest edges have an exceptional abundance of species. Heat, light and humidity change here in a very small area, so particular conditions for habitats are met. The places where each species of moth can be found are determined by the plants on which their caterpillars feed. You can learn more about the «Ruttiger» on the wall behind you.



## Diversity of genes The same – and yet so different

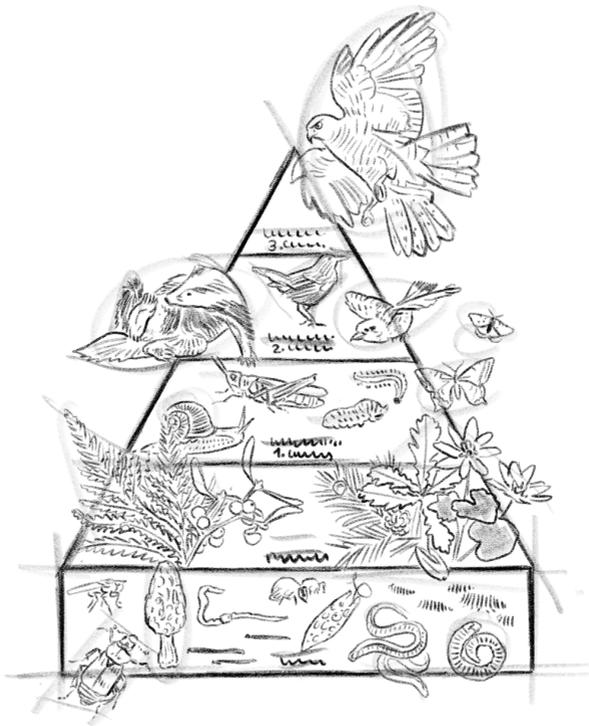


Hereditary factors (genes) determine the appearance of every living being. Each species has stable features, such as the apertural lip on the shell of the grove snail (*Cepaea nemoralis*). This snail's lip always has a dark coloration, and this is an important factor for identifying the species.

On the other hand, the color and banding of the grove snail's shell are variable. Discover this diversity!

## Biodiversity in Switzerland

An estimated 62,000 different species live in Switzerland (excluding microorganisms). About two thirds of them are known. Insects account for more than half of all the known species. Beetles are the most numerous members of this group, whereas butterflies (which include moths) only account for a small percentage.



## The food chain

Most living creatures eat other living creatures, and are eaten themselves. Even dead creatures or parts of them are food for so-called «decomposers». They convert natural waste such as leaves, dead wood or carrion into its base substances.

Plants need these mineral substances, as well as water and carbon dioxide, in order to grow and flourish. They produce their own nutrients. This explains why plants are described as «producers». On the other hand, animals are «consumers» because they feed on plants or other animals.

Producers  
**Nutrition**  
Plants -  
the basis  
of life

The canton of Solothurn is lovely and green! Forty percent of it is covered by forest. All animal life on earth depends on green plants such as these, and on sunlight.

During photosynthesis, plants produce glucose. They store it in the form of starch and other nutrients. Plants release oxygen as a waste product of photosynthesis. This is why they are vital to the survival of animals – and of us human beings.



First order consumers  
**Feeding**  
Vicious  
vegetarians

Rodents, finches, grasshoppers and caterpillars have one thing in common: they feed mainly on plants. But plants have many parts that are quite hard. This is why herbivores have strong and resilient mouthparts.

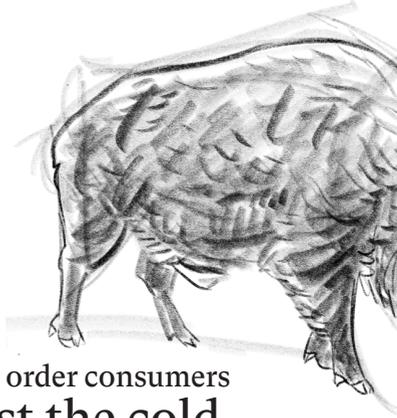
First order consumers

## Digestion

Greens –  
not a light  
fare

The green parts of plants largely consist of cellulose, which is difficult to digest. Only a few animals can make use of it with no outside help.

Many herbivores have enlarged and complex digestive systems with fermentation chambers such as forestomachs or appendixes. Microorganisms that break the cellulose down into digestible nutrients live in these compartments.



Second order consumers

## Resist the cold

Budgeting  
with their  
reserves

The supply of food available in our natural surroundings fluctuates with the seasons. Despite the shortage of food in winter, many species stay active throughout the year. They have adapted.

Some of them lay in reserves during the course of the year. Others have learned that plenty of food – as well as shelter – can always be found in the vicinity of humans.

All of these species keep to the simplest formula for saving energy: reduce your own energy requirement to the minimum.



## Second order consumers Evade the cold Disappear and back again

We never see some animals in winter. Low temperatures and frozen ground prevent them from finding enough prey. Some species do spend the winter here, but they sleep their way through the food shortage in their hideaways. Migratory birds, on the other hand, spend the winter in warmer regions. They only return in spring.



## Third order consumers Hunting At the top

Apex (or top) predators have no natural enemies – they are at the very top of the food chain. They hunt across large areas in order to get enough prey. They owe their success to their well-developed senses and their lethal killing tools.



Decomposers

## Recycling

Waste professionals

The soil is teeming with activity. Countless thousands of tiny, invisible waste recyclers are going about their work here.

Known as decomposers, they specialize in breaking down fallen leaves and dead wood as well as corpses, food waste and even the excrement of the consumers. All of this dead material is broken down into its base substances, which are reused by plants. In this way, decomposers complete the material cycle.



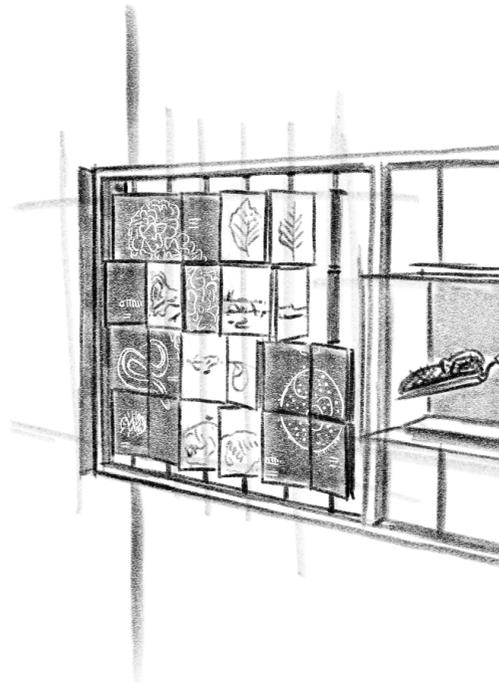
Third order consumers

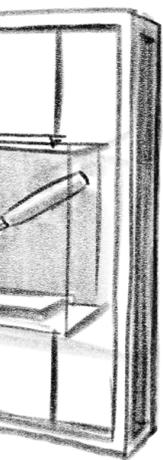
## Fishing

Hunting in the water

All piscivores (or fish-eaters) play the same card, no matter whether they hunt in the water, from the shore or from the air: the surprise attack. But fish are not easy prey. Although they cannot see particularly well, they compensate with better senses of smell and hearing. And thanks to their lateral line organ, they can sense the smallest vibrations.

Besides, fish are slippery. You have to grab them at the first attempt. Predatory fish such as the catfish and the pike rely on their teeth to do this, as does the otter. The osprey in contrast catches its prey with its feet.





## **Haus der Museen**

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hausdermuseen@olten.ch

www.hausdermuseen.ch

## **Opening hours**

Tuesday–Sunday 10–17 h,  
closed on Mondays.

Schools upon reservation from 8 h.

Open on the following holidays:

Easter Monday, Whit Monday, 1.8.

Closed on the following holidays:

24.12., 25.12., 31.12., 1.1.

## **Entrance fee**

Adults CHF 5.-.

Children, adolescents,  
schools free of charge.

Swiss museum pass is valid.

## **Access**

Bus stop (Olten Konradstrasse)  
and parking (Munzingerplatz)  
near the house.

The House of Museums is  
wheelchair-accessible and has  
a restaurant (MAGAZIN).

