

An aerial photograph of a coastal landscape. In the foreground, a sandy beach is covered with dark, layered rock formations (flysch) that have been eroded into various shapes. The ocean is a vibrant turquoise color, with white waves breaking onto the shore. In the background, a steep, forested hillside rises, with a few small buildings visible on a ridge. The sky is a clear, bright blue with a few wispy clouds.

GEOROUTE 4

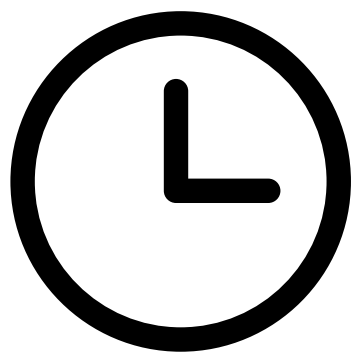
THE BLACK FLYSCH  
IN THE GEOPARK

**LAPARI**

#GEOPARKEA

LAPARI GEOROUTE

PRACTICAL INFORMATION



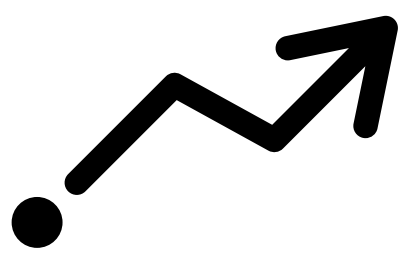
DURATION

**45 min**



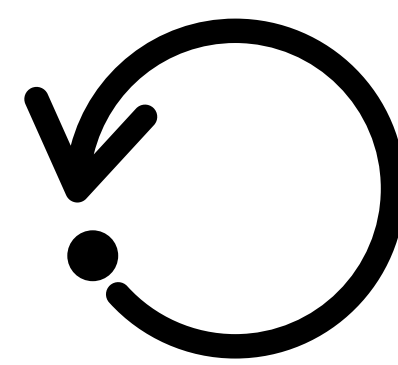
DISTANCE

**2 km**



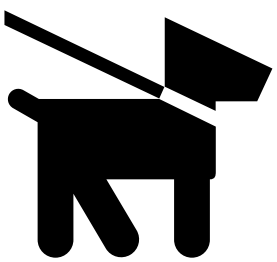
ELEVATION  
DIFFERENCE

**+8 m -8 m**



CIRCULAR

**NO**



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#GEOPARKEA



**((112))**

SOS DEIAK

# LAPARI GEOROUTE

## HOW TO GET THERE?

[View in Google Maps](#)

**Starting point:** Deba beach.

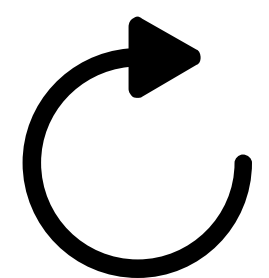
**Nearest town:** Deba.

**Coordinates:** 43°17'51.1"N 2°21'12.7"W

**Access:** You can reach Deba either by public transport or by car. The georoute begins in the middle of the Deba seafront promenade.



LAPARI GEOROUTE  
**LAPARI**



ROTATE  
SCREEN

FIND YOUR WAY ROUND DURING THE ROUTE  
BY CLICKING ON ANY OF THE NUMBERS



## INTRODUCTION

We are going to plunge into a large submarine fan from 105 million years ago to discover the secrets of the **black flysch**, the oldest in the geopark. Be warned! There are earthquakes and great avalanches of water and sand.

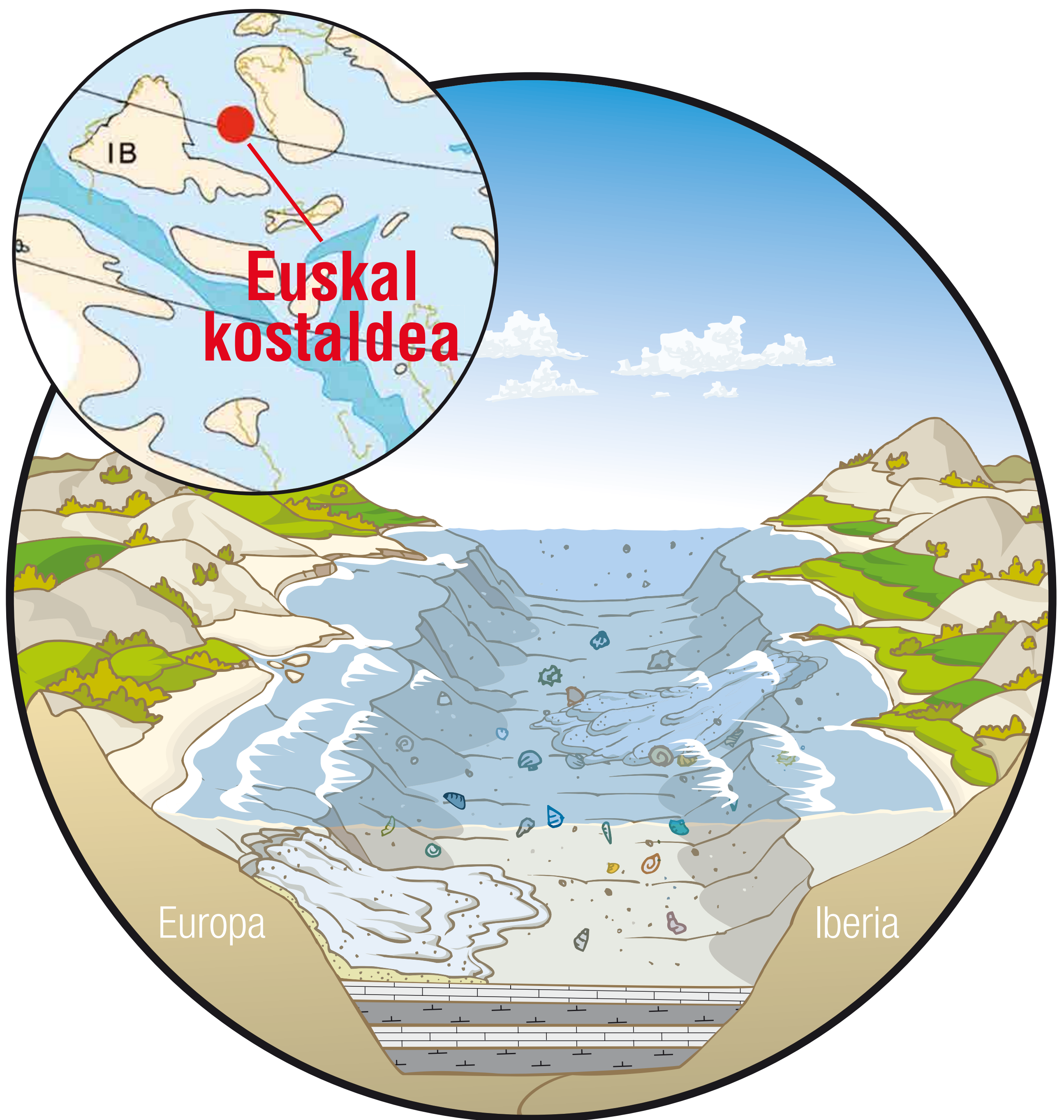


This georoute has 6 points of interest identified with plaques on the route itself. Locate them and read the interesting explanations.



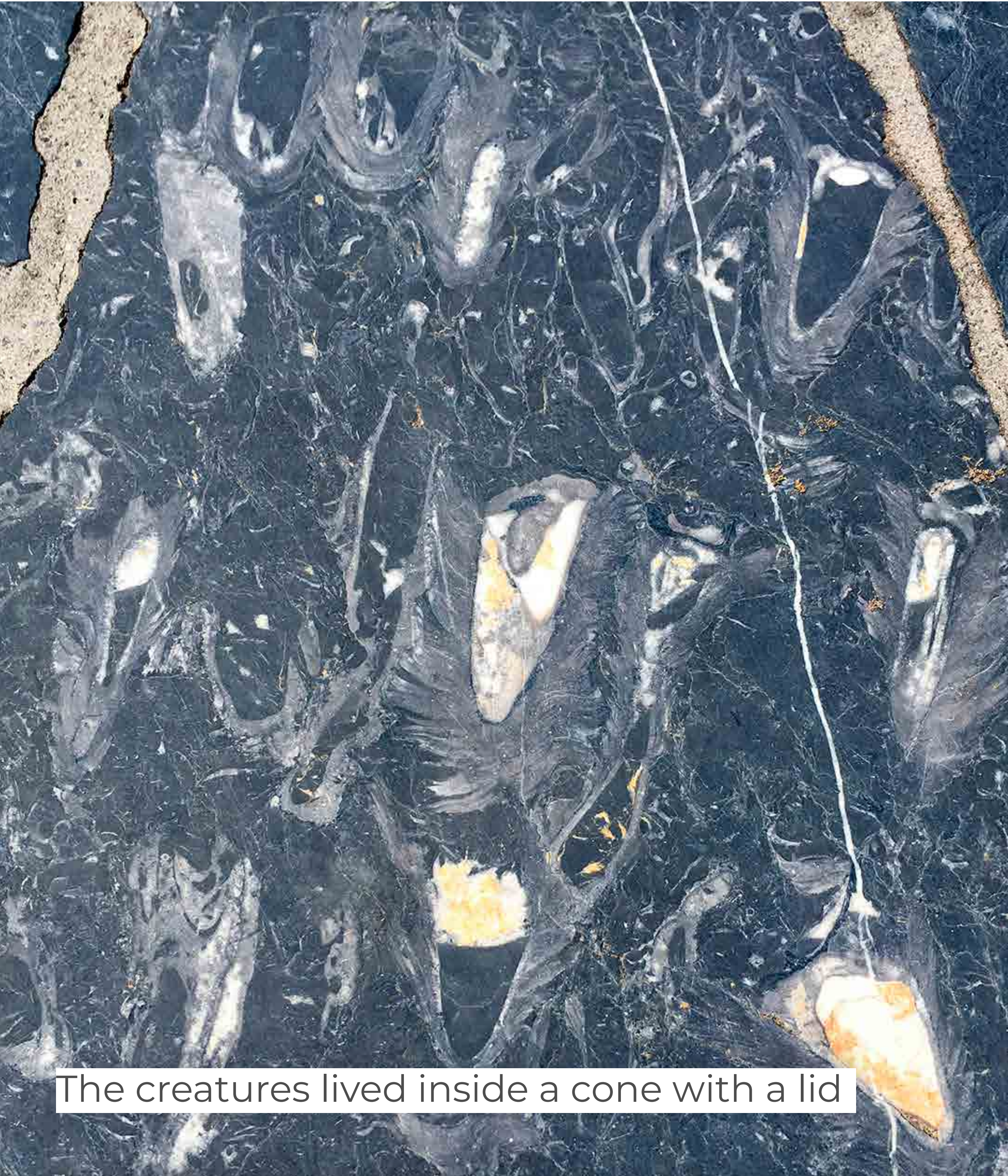
# LI

**TROPICAL FOSSILS  
ON THE WALK?**



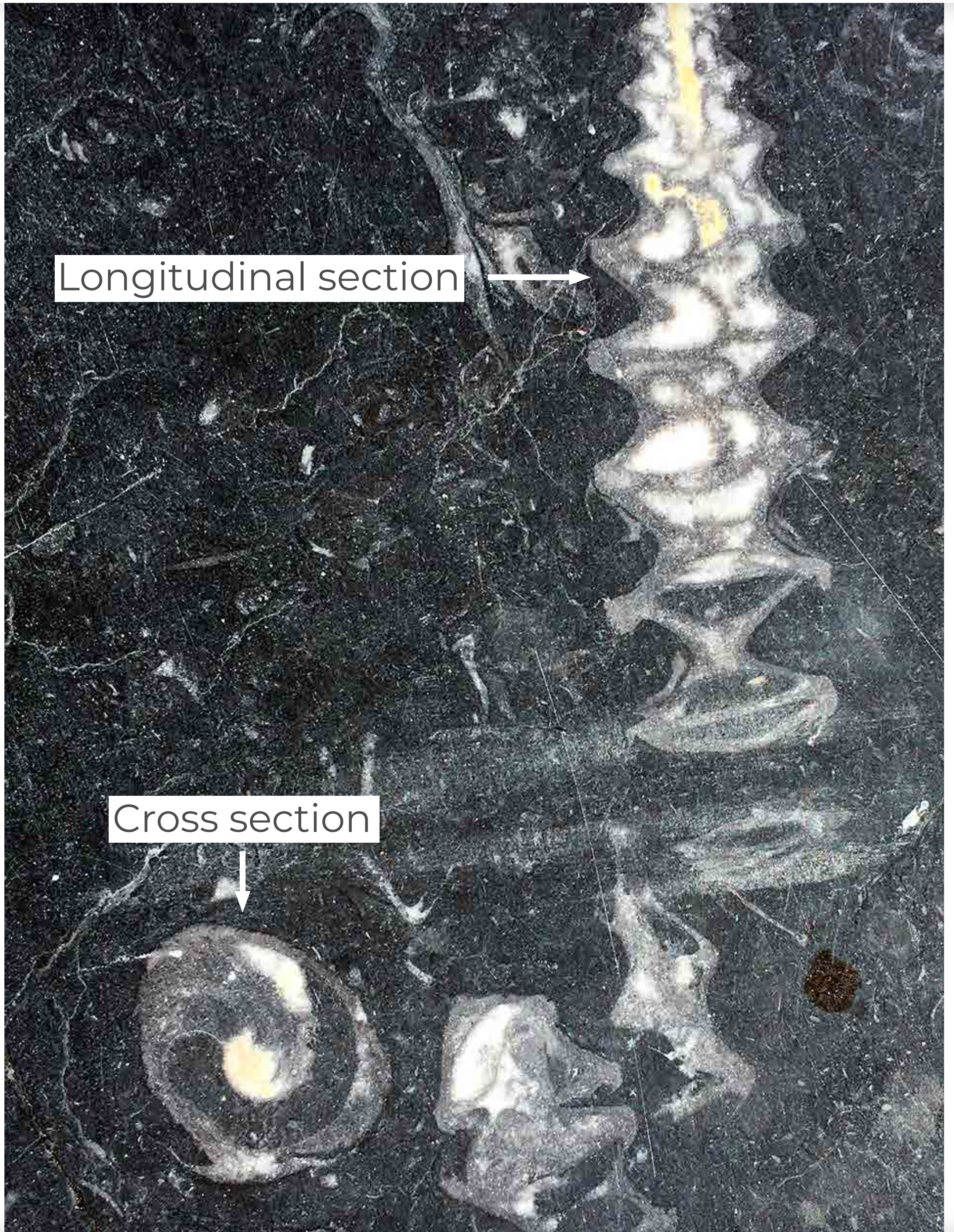
We are going to travel to the Lower Cretaceous, about 105 million years ago. The Basque Country was submerged under a tropical sea where large coral reefs grew.





The creatures lived inside a cone with a lid

Look at the slabs of stone of the promenade. These fossils are called **rudists** and together with corals and other organisms, they built the great reefs of that era.



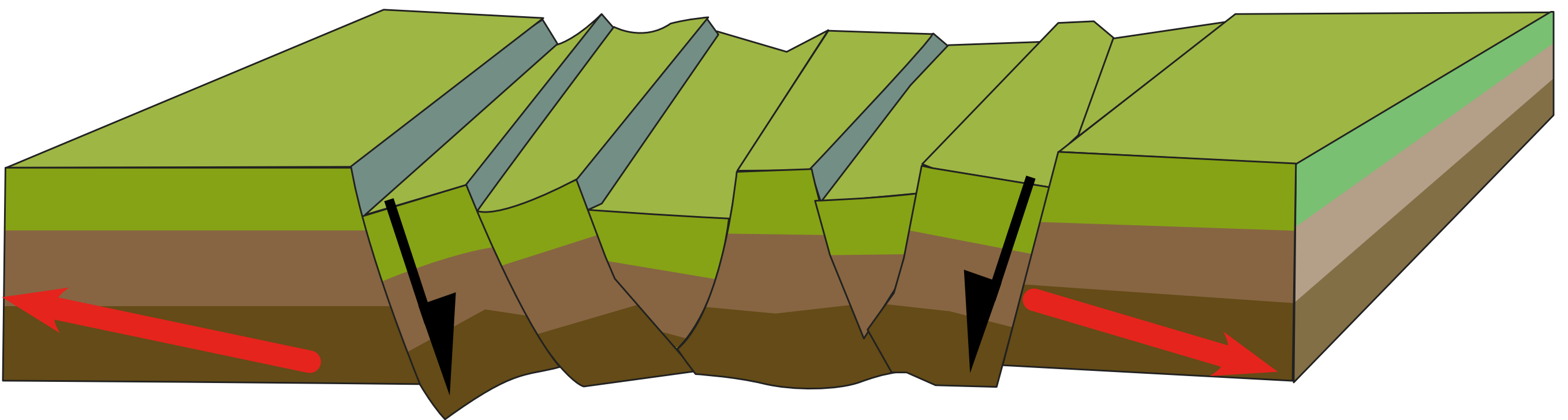
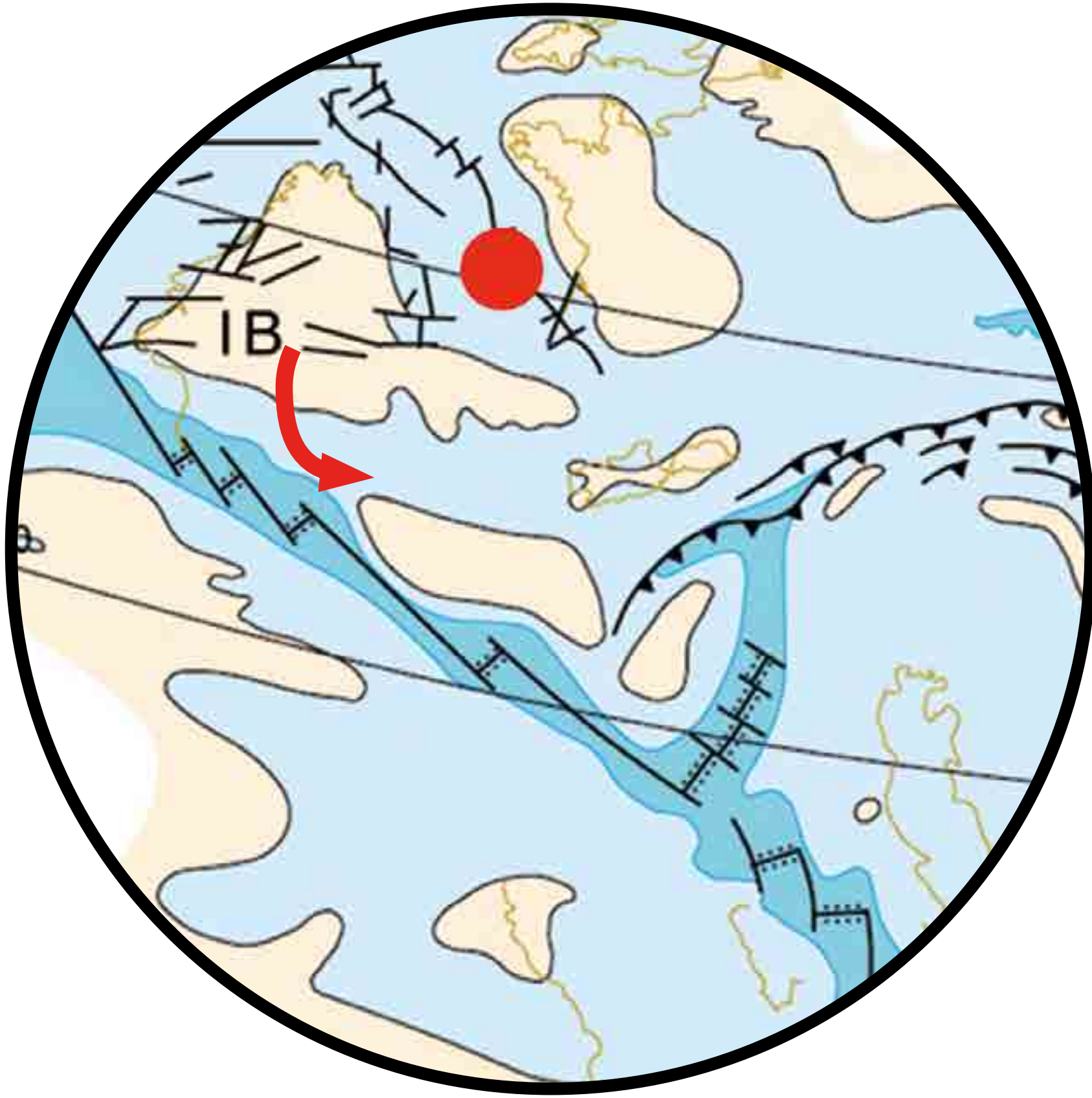
There is a particularly attractive fossil. It is a **gastropod** (snail) with a spiral shape. See if you can find it.

These slabs come from the nearby Markina quarry.



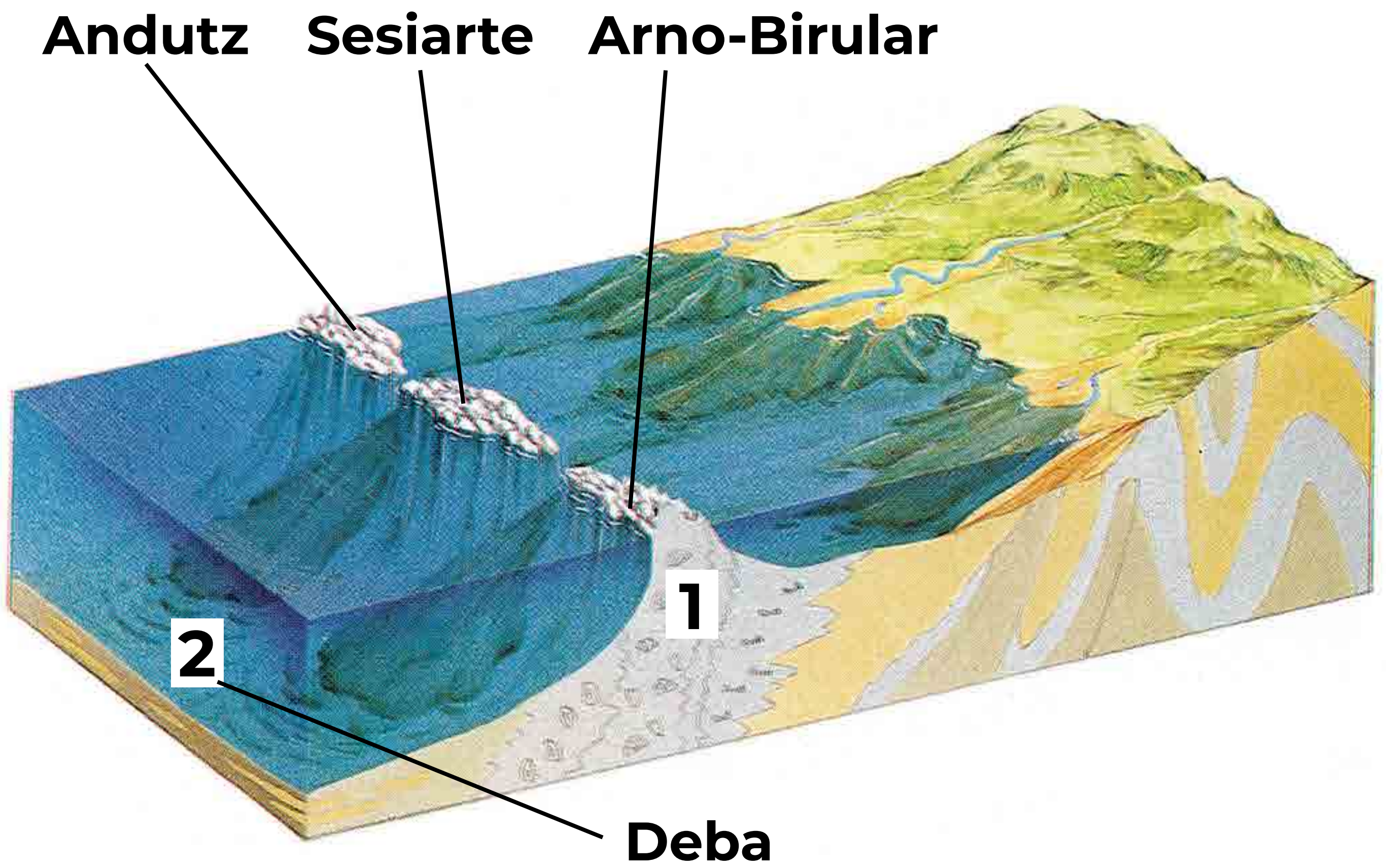
# 12

**THE BAY OF BISCAY  
OPENS UP**



## L2

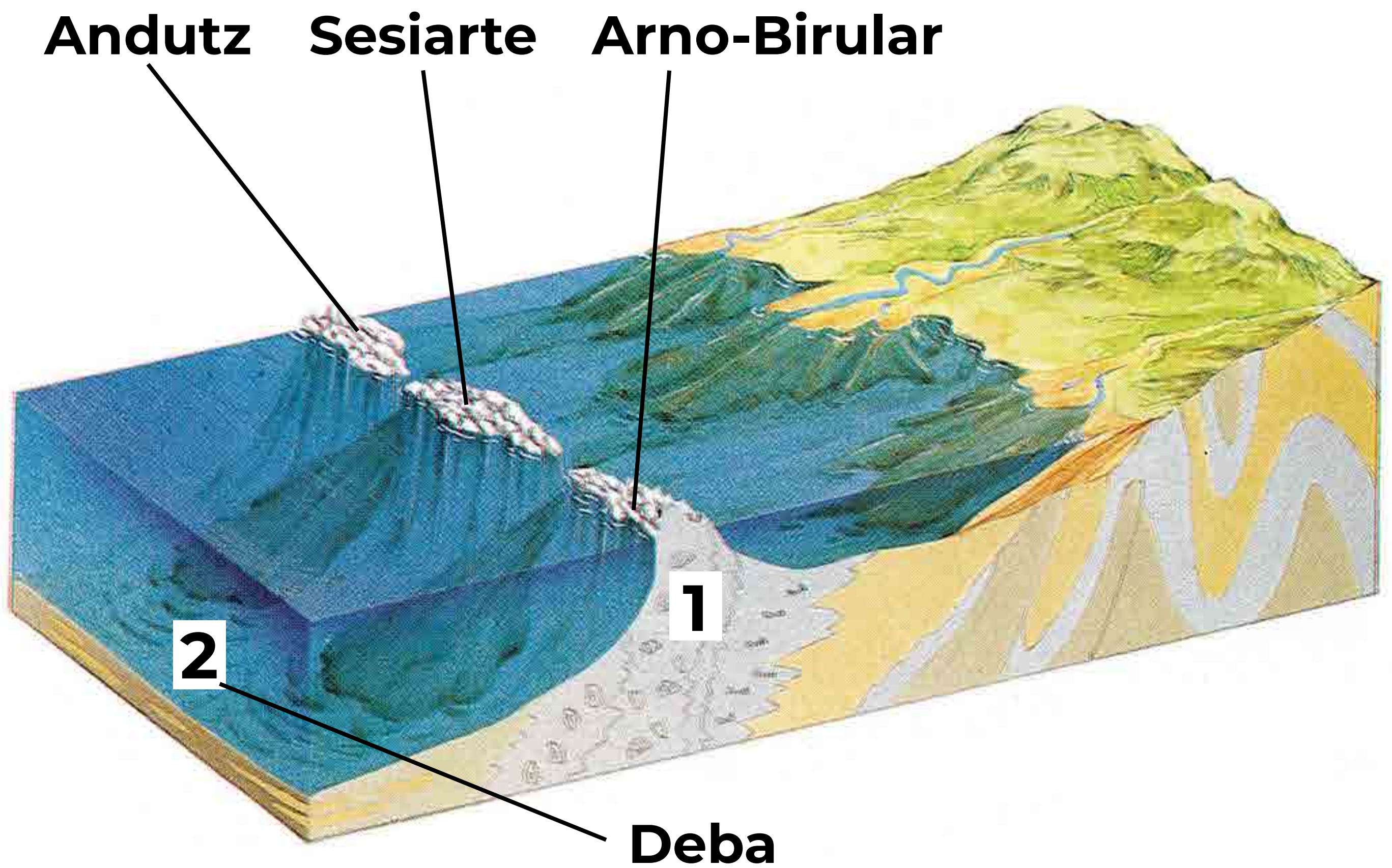
The Iberian Peninsula began to rotate, and the seabed fractured into large blocks.



1. Coral reefs of Mount Arno

2. Black Deba flysch in the deep basin

**1. Great coral reefs formed** in the highest blocks. Today these limestones form mountains such as Arno or Birular inside the geopark.



1. Coral reefs of Mount Arno

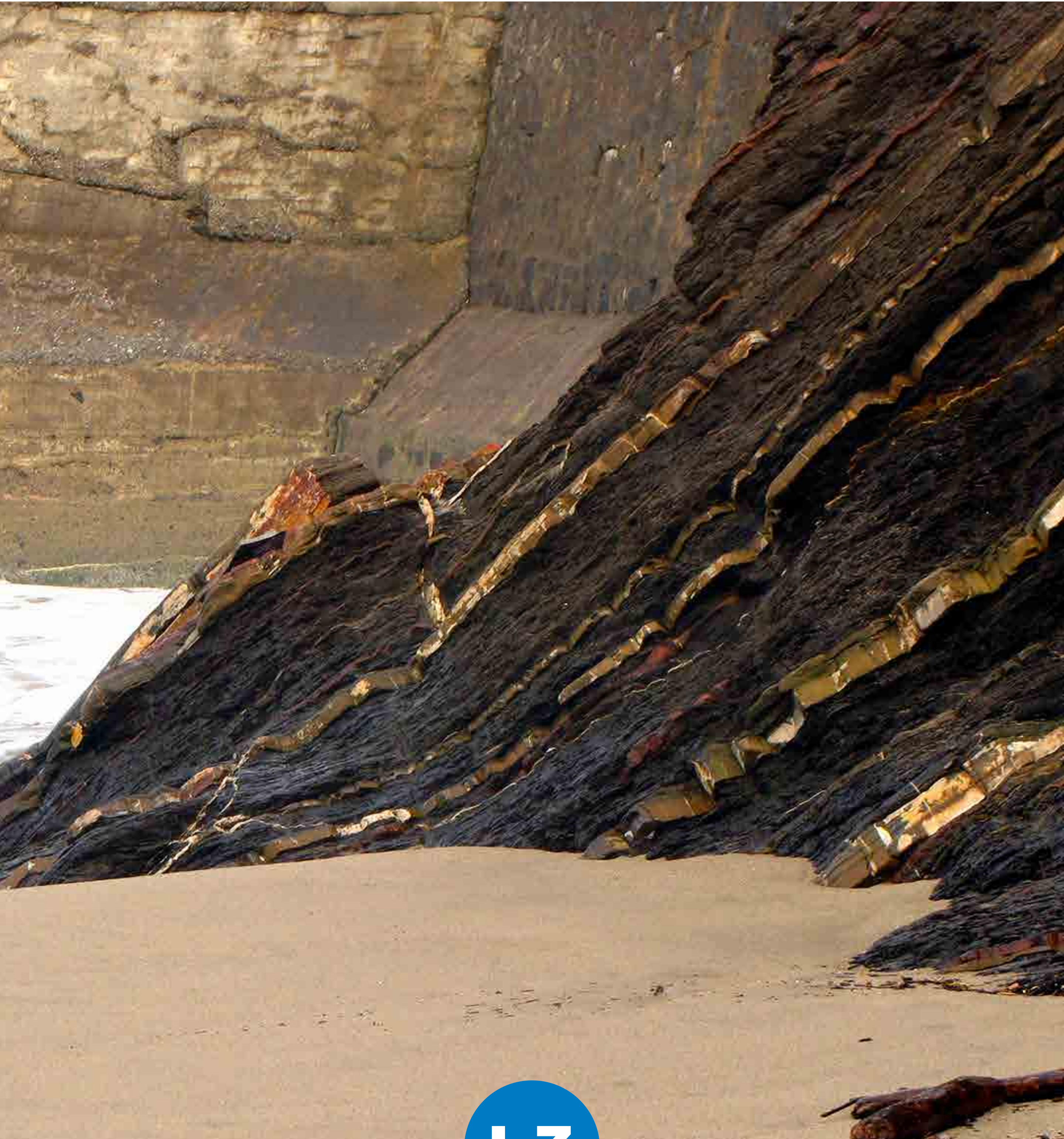
2. Black Deba flysch in the deep basin

**2.** In the deepest areas large underwater fans were formed. That was where **Deba's black flysch** formed, on an unstable seabed in constant movement because of earthquakes.



# LL3

**HOW WAS THE BLACK  
FLYSCH FORMED?**



### L3

Go down the steps at the end of the walk and go up to the rocks. Look at them in detail. Touch them. The black flysch is made up of **two types of rock**: black shales and layers of yellow sandstone. Can you identify them?

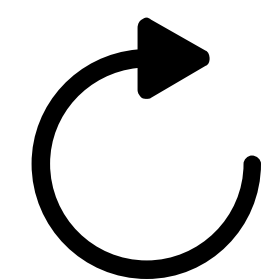
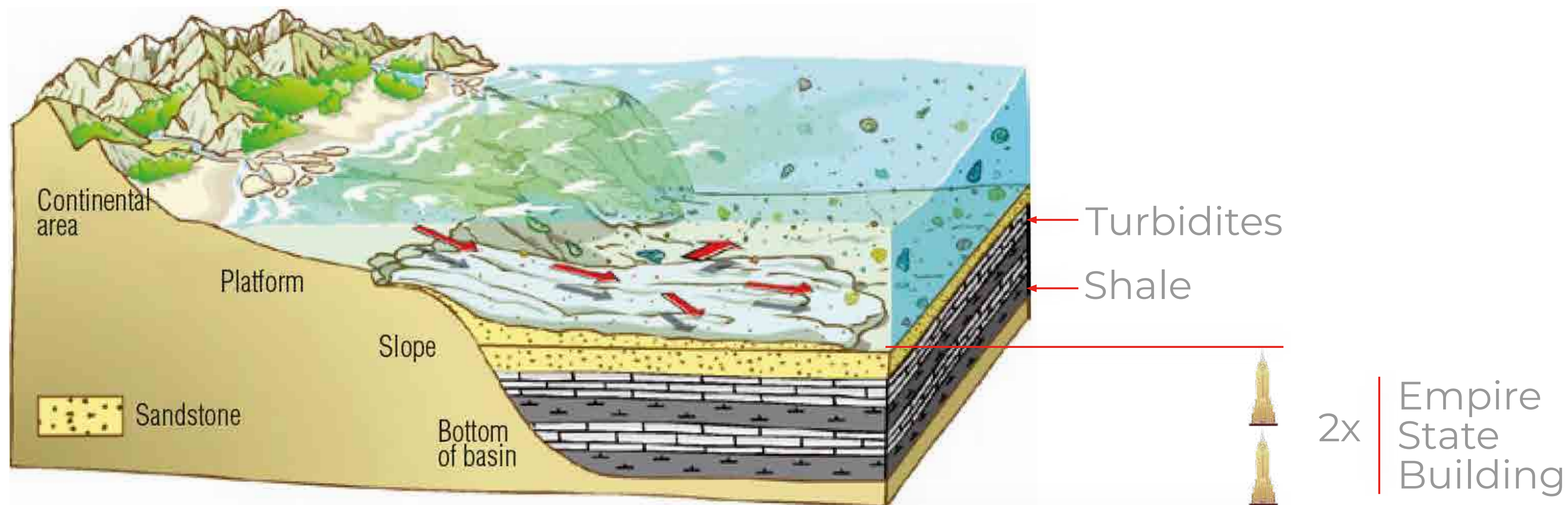




**Shales** are formed by the slow settling of fine sediments and the small shells of marine organisms. The black colour is due to its high content of organic matter.



The sandstone layers are called **turbidites**. They are harder and have a yellowish colour. They were formed by the falling of great avalanches of water and sand from shallower areas.



ROTATE  
SCREEN

## TWO-AND-A-HALF TIMES THE HEIGHT OF THE EMPIRE STATE BUILDING!

Deba's black flysch spans a period of 6 million years and is 1,000 m thick.



## **AND WHAT ABOUT THESE RED “STAINS”?**

Locally, you can find occasional layers and nodules with a wine-red colour. They are concentrations of an iron ore called siderite ( $\text{FeCO}_3$ ).



# L4

**A GREAT EARTHQUAKE  
IN THE FLYSCH?**



L4

In the area of the steps halfway along the beach, **the flysch is chaotic**. The layers disappear and everything seems to be scrambled into rounded blocks of different sizes.  
What happened?

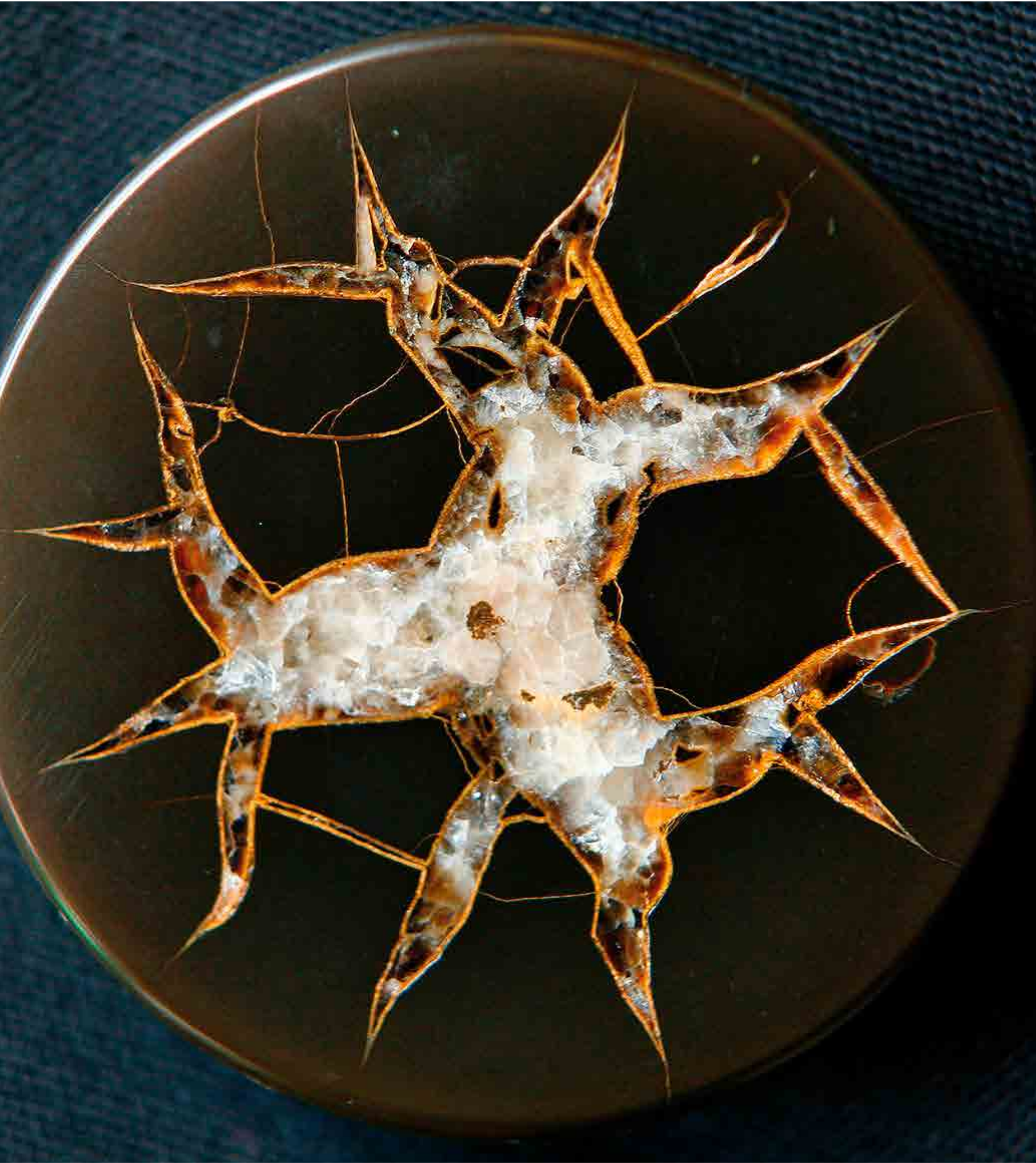


There was **a great landslide** caused by a movement of the seabed, perhaps **an earthquake**. Remember that this was a very unstable environment. The Bay of Biscay was opening up.



Notice that the blocks are folded. They have smooth and rounded edges. That means the sediments had not yet consolidated. These blocks can also be seen at the headland of Aitzaundi, which separates the two beaches.





## **A TREASURE IN THE BLACK FLYSCH**

Septaria are black clay nodules compacted with a very particular internal fracture filled with calcite.

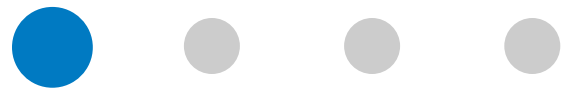


The regulations for the protected biotope strictly prohibit their collection. The geological heritage is for everyone. A number of polished specimens can be seen in the tourist office in Deba.



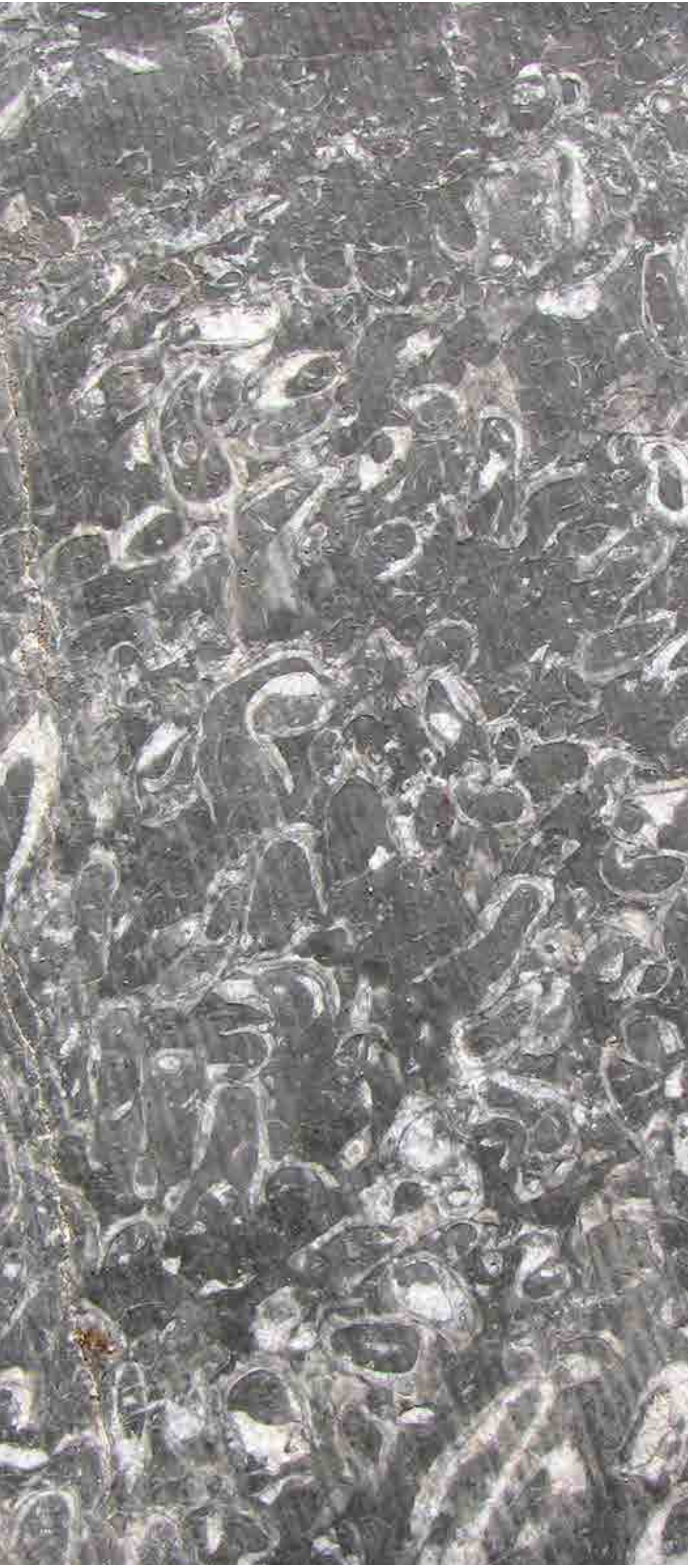
# LL5

**THE CORAL  
BREAKWATER**

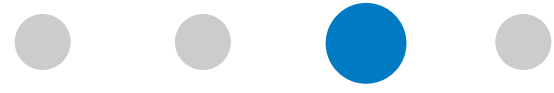


L5

Look at the large blocks that make up the breakwater at the mouth of the Deba River. They are full of fossils, rudists and chondrodontas, which formed the coral reefs of 105 million years ago.



The **rudists** formed large colonies which built up the reefs. They were bivalve organisms. One valve was cone-shaped and the other functioned as a lid which covered the hole where the creature lived.



The **chondrodontas** were large bivalves similar to oysters. They lived buried in the clay seabeds of the Cretaceous era and are recognised by the elongated shape and the large size of the shells.



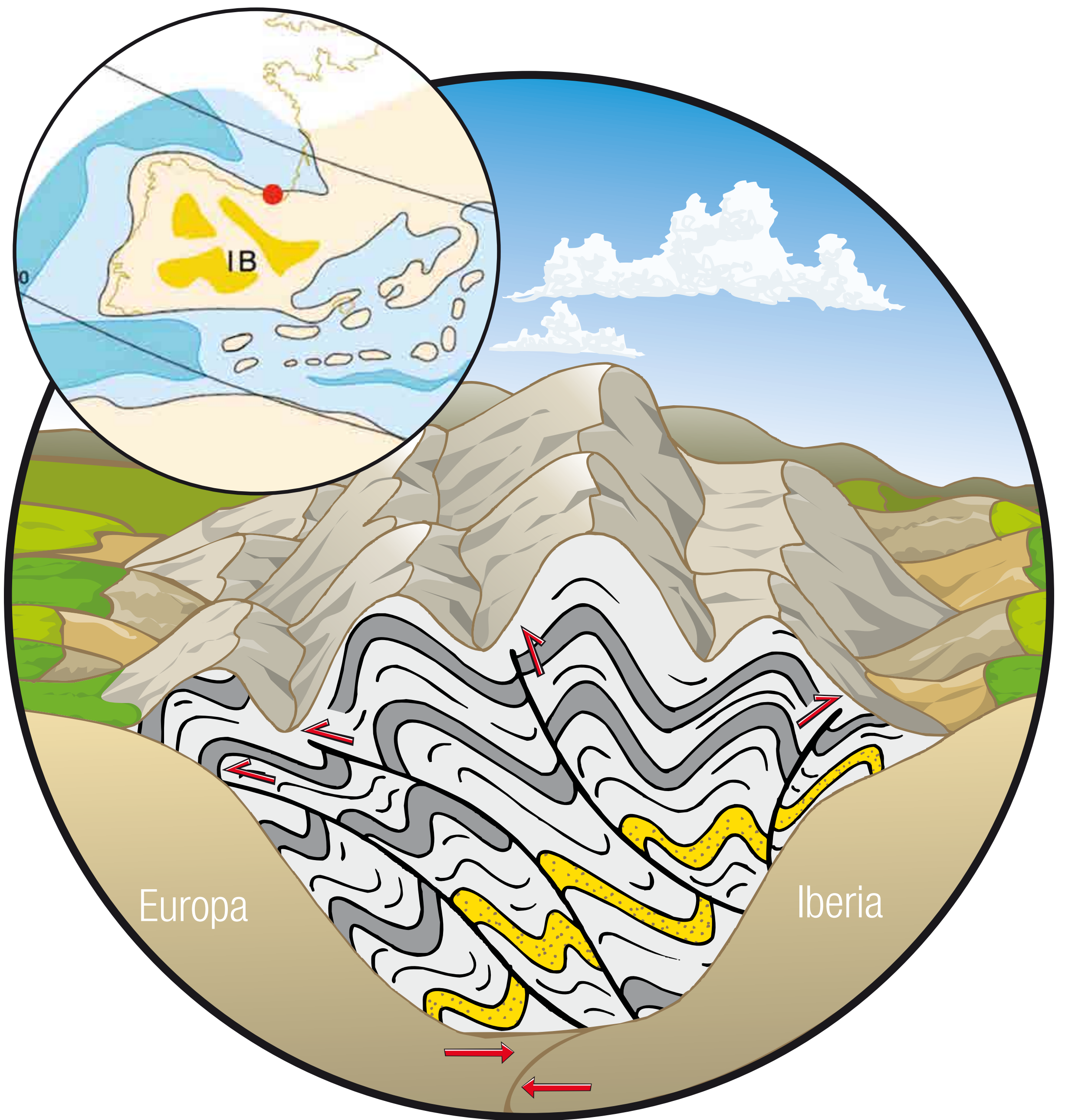
These large blocks were obtained in the nearby **quarry of Lastur**. The mountains within the geopark are formed by hard limestones created in that tropical paradise of Lower Cretaceous corals.



# LL6

**THE GREAT FOLD IN  
THE FLYSCH**





## L6

About 60 million years ago the Iberian peninsula began to collide with the European plate. Over 40 million years the marine sediments were deformed and lifted up to give rise to **the Pyrenees** and the Basque Mountains.



**The overturned fold at the point of Aitzandi** is one of the most spectacular signs of that great collision.

#LAPARIGEOROUTE

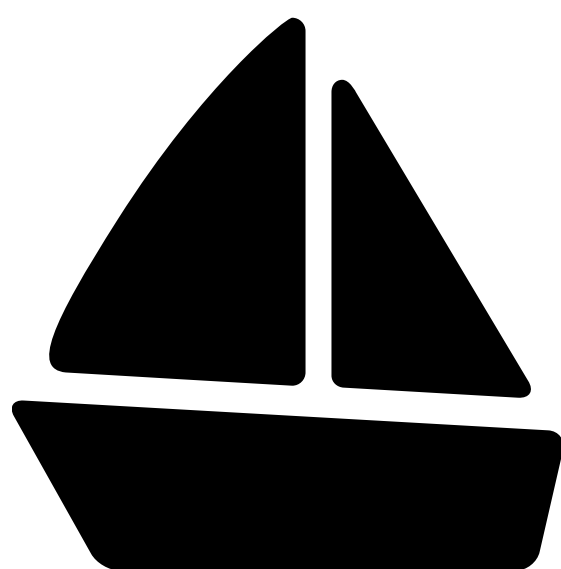
## MORE INFORMATION



**BUY COMPLETE  
GUIDE**



**SEE OTHER  
GEOROUTES**

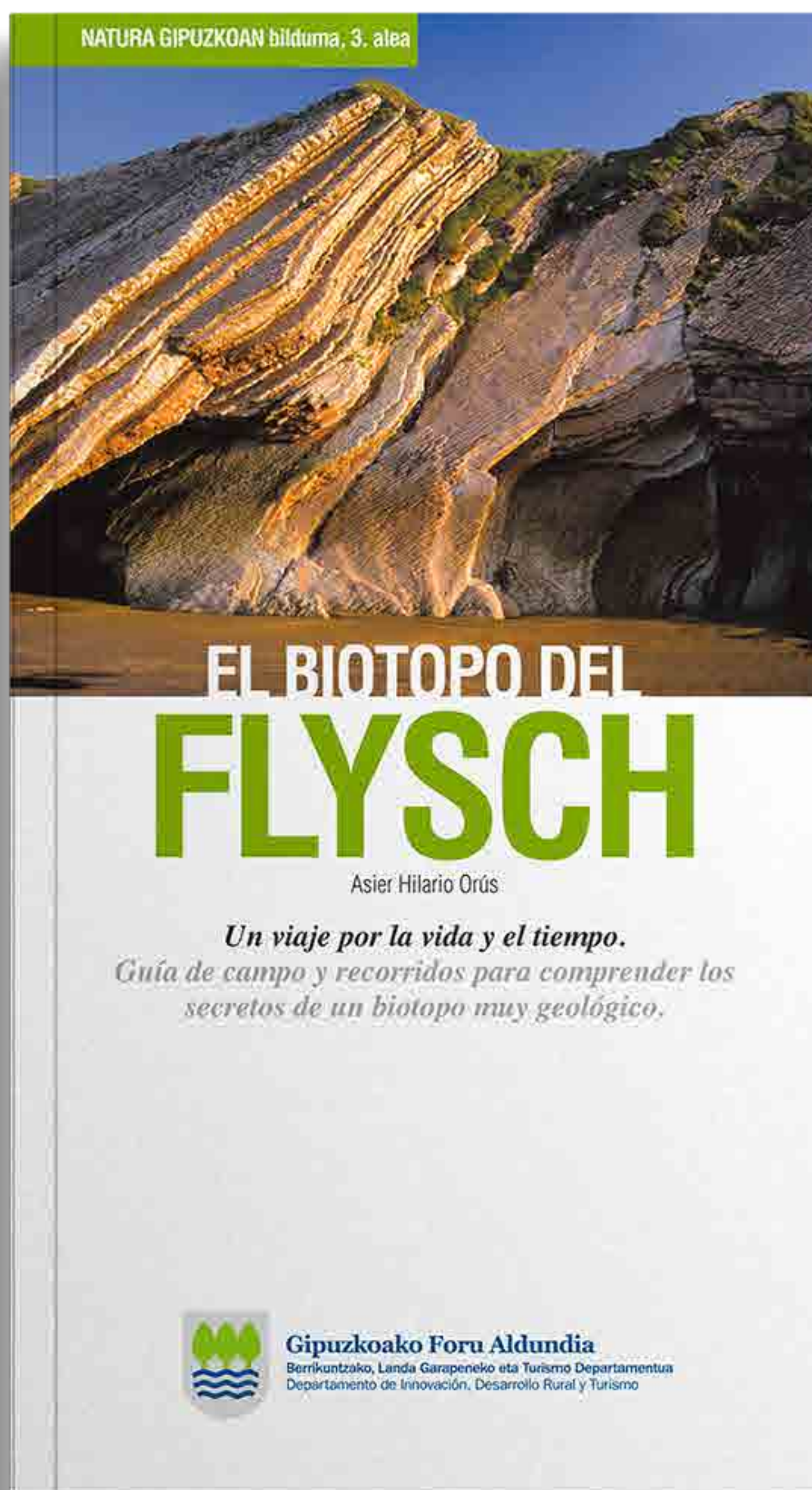


**PROGRAMME OF  
GUIDED EXCURSIONS**

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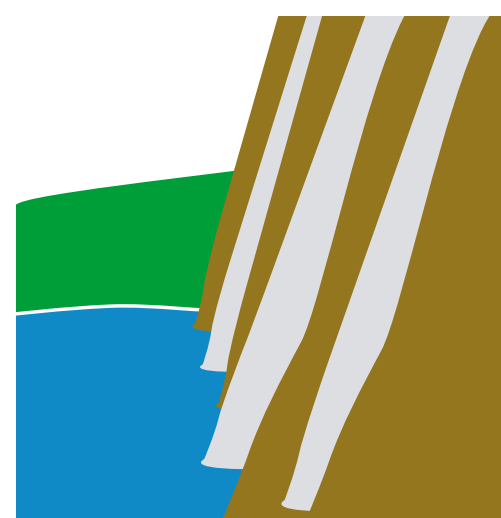


## **BUY COMPLETE GUIDE**

For more complete information about the flysch we have the guide 'The Flysch Biotope' which is on sale at the geopark's tourist offices.

# Geoparkea

Euskal Kostaldea - Costa Vasca



**Gipuzkoako  
Foru Aldundia**  
Diputación Foral  
de Gipuzkoa



**ETORKIZUNA ORAIN**  
Es futuro



**BABESTUTAKO BIOTOPOA**  
BIOTOPO PROTEGIDO

**DEBA ETA  
ZUMAIA**  
ITSASERTZEKO  
BABESTUTAKO  
BIOTOPOA



**EUSKO JAURLARITZA**  
**GOBIERNO VASCO**

INGURUMEN, LURRALDE PLANGINTZA  
ETA ETXEBIZITZA SAILA

DEPARTAMENTO DE MEDIO AMBIENTE,  
PLANIFICACIÓN TERRITORIAL Y VIVIENDA

**EUSKADI**  
**BASQUE COUNTRY**