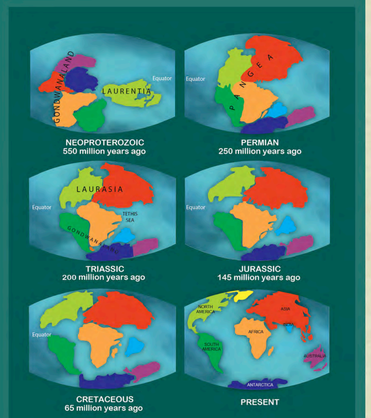
Learn about the geological history of the coast!
Visit our interpretive panels!

THE SINGING ROCKS

The Bell Stone

HOW WAS OUR COAST FORMED?

The continents we know today were not always as they are now. They are continuously on the move. Sometimes smaller continents join together to form a larger one. At other times, a large continent breaks into smaller ones.



About 200 million years ago, all the landmasses formed a single large continent called Pangaea. However, this continent broke up into smaller continents. One of these was Gondwana, which also broke into fragments, including modernday South America and Africa.

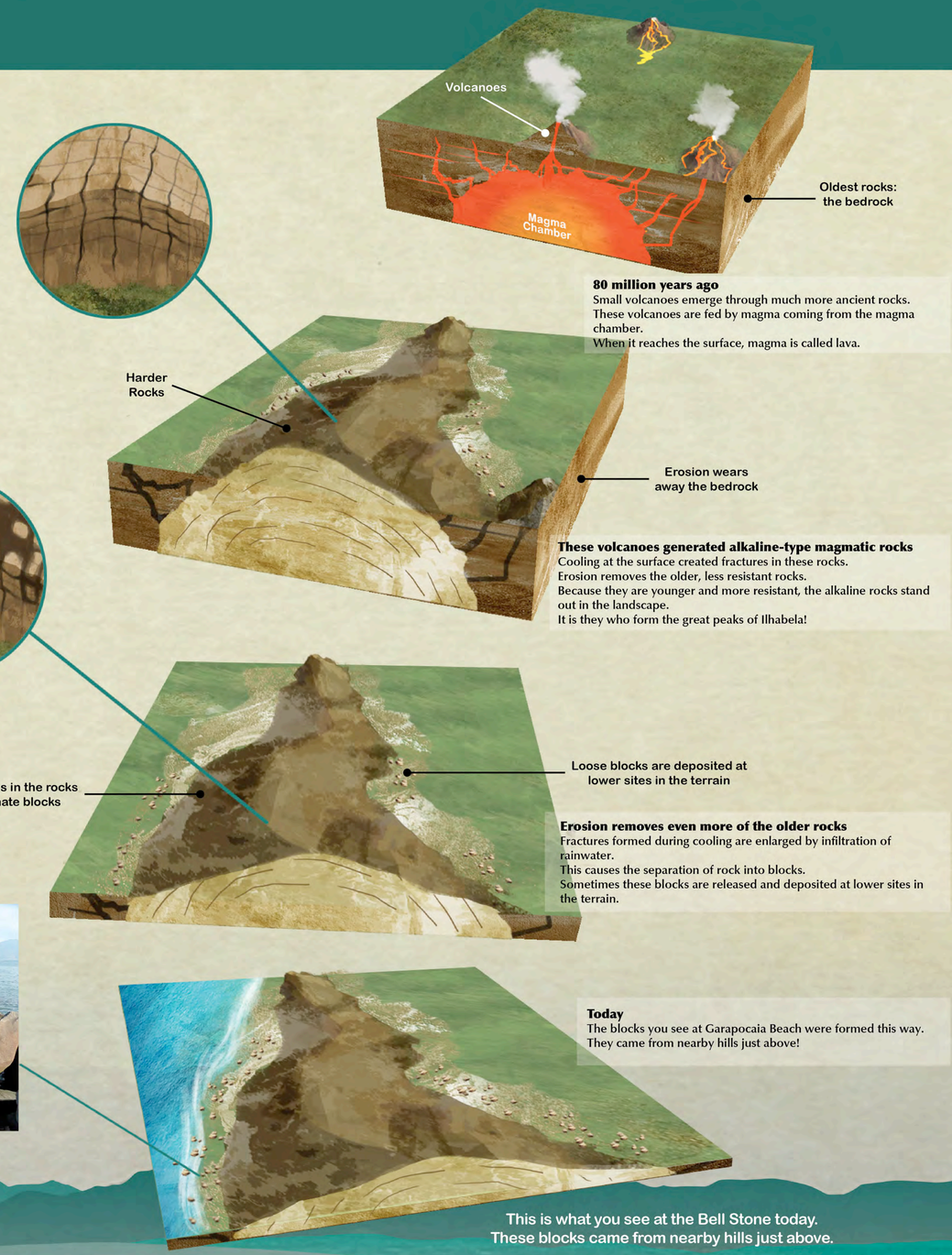
On the newly formed coast of South America, the Serra do Mar arose, and the coastal plains and beaches were built. That's the way our coastline was formed!

WHERE DO THE BLOCKS ALONG THE BEACH COME FROM?

Observe the blocks of different sizes and shapes on Garapocaia Beach. Where did they come from and why are they loose? To answer this question it is necessary to go back in time about 80 million years ago - yes, 80 million!

At this time, there were small volcanoes in the region, just where the three highest points of Ilhabela stand today. The rocks that make up these peaks were generated by the cooling of magma (molten rock), which reaches the surface and is then called lava. Cooling generated cracks in the rock - called fractures, separating the rock into blocks. Over time, the action of rainwater along the fractures loosened these blocks, which then rolled down to the beach, where they are today.

Here's how it happened!



80 million years ago
Small volcanoes emerge through much more ancient rocks.
These volcanoes are fed by magma coming from the magma chamber.
When it reaches the surface, magma is called lava.

These volcanoes generated alkaline-type magmatic rocks
Cooling at the surface created fractures in these rocks.
Erosion removes the older, less resistant rocks.
Because they are younger and more resistant, the alkaline rocks stand out in the landscape.
It is they who form the great peaks of Ilhabela!

Erosion removes even more of the older rocks
Fractures formed during cooling are enlarged by infiltration of rainwater.
This causes the separation of rock into blocks.
Sometimes these blocks are released and deposited at lower sites in the terrain.

Today
The blocks you see at Garapocaia Beach were formed this way.
They came from nearby hills just above!

The blocks as they are today.

This is what you see at the Bell Stone today.
These blocks came from nearby hills just above.

Did you know?

Why does the Bell Stone toll?

The majority of the blocks that make up the Bell Stone are a type of rock most appropriately called phonolite. This term that comes from the Greek phonos (sound) + lithos (stone) because of the metallic sound it emits when struck. Worldwide, several sites made up of other types of rock also emit the same sound as phonolite. Little is known about the causes of this phenomenon. Some studies suggest that it is due to the fine-grained nature of the rock; others say that it is due to a particular arrangement of the blocks. The fact is that the sound that comes from the stones has attracted people ever since the beginning of human history. Musical instruments called "lithophones", in which stone fragments of various sizes emit different sounds, have been found at various archaeological sites in Africa and Asia.

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