


MINERAL EXPLORERS

Colombia



Colombia | SYNOPSIS

Every day, millions of dollars worth of emeralds are traded on the streets of Bogotá—Colombia's thriving capital city. But few ever venture to the source of these elusive gems, located deep in the valleys of the Andes Mountains. Thomas leads viewers over treacherous mountain roads and past gun-toting locals to explore Colombia's gorgeous but rugged countryside, the lives of its people and the amazing world of emeralds. Then, it's back to the big city to visit the world's largest emerald district!



MINERAL
EXPLORERS
Educator's Guide

DISCOVER COLOMBIA

GEOGRAPHY

The Country

A history of violence, political unrest, and illegal drug production has created a misleading portrait of a wonderful country with much to offer. Colombia varies from flat coastal areas, with extensive coastlines on the Pacific Ocean and Caribbean Sea, to the emerald-rich Andes Mountains. This tropical climate is responsible for producing a world renowned coffee. Colombia is also known as the second largest flower producer in the world.

Population:

46,245,297 (31st in the world)

Capital City:

Bogotá (pop. 6 million)

Language:

Spanish

Government:

Republic with the president having the most power

Agriculture:

Coffee, cut flowers, bananas, rice, tobacco, corn, sugarcane, cocoa, oilseed, vegetables, shrimp, forestry

Industry:

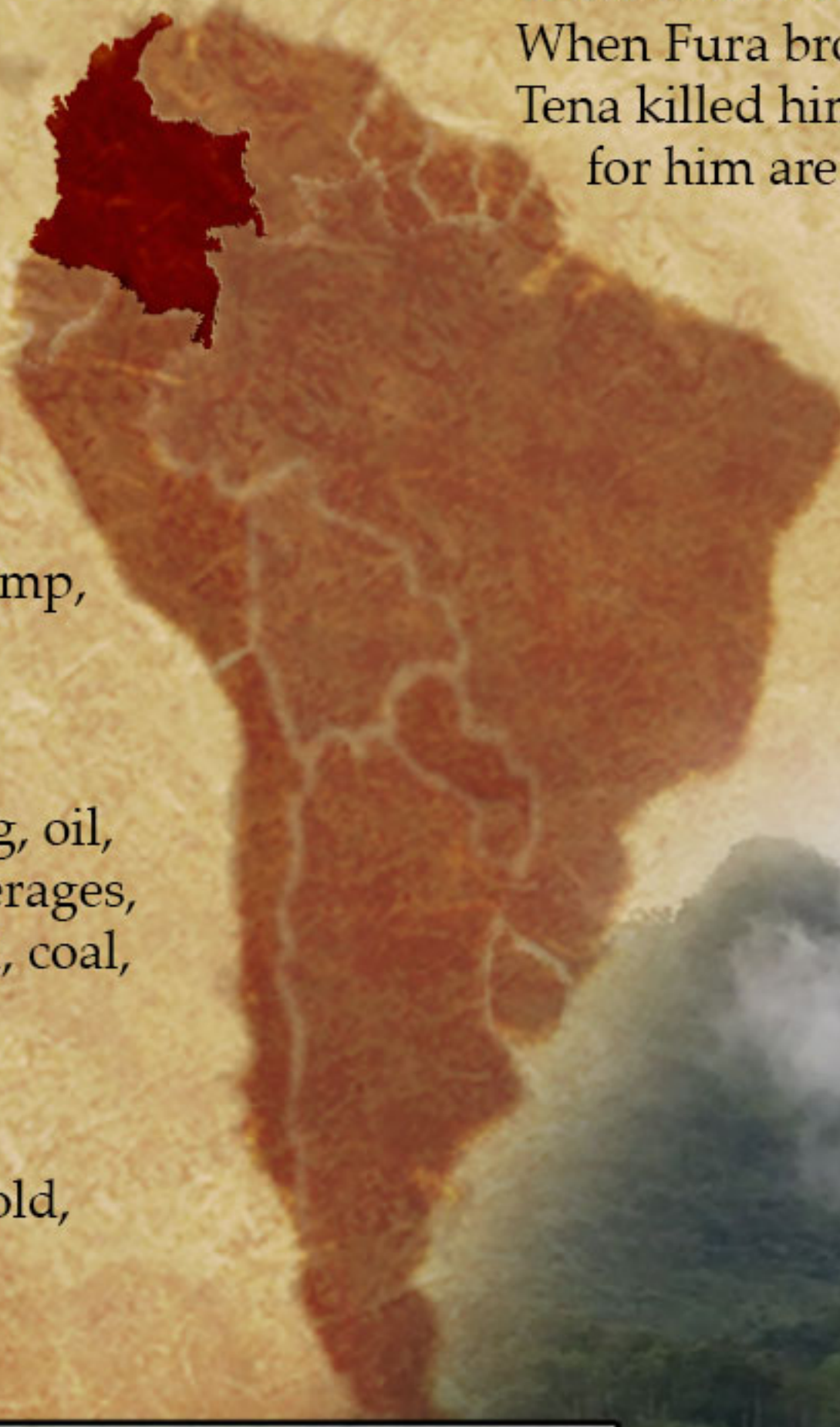
Textiles, food processing, oil, clothing, footwear, beverages, chemicals, cement, gold, coal, emeralds

Minerals:

Coal, iron ore, nickel, gold, copper, emeralds

The Fura and Tena Legend

As the Mineral Explorers travel to Cosquez, the Fura-Tena peaks mark entry to the emerald region. According to one legend, this is where God created the first humans: Fura, a woman, and Tena, a man. Their only order was to remain faithful to one another. When Fura broke this sacred sacrament, Tena killed himself and the tears Fura cried for him are the emeralds we find today.



Fura-Tena Peaks

CAN YOU DIG IT?

Colombia is twice the size of Texas and has more species of birds than Europe and North America combined.



DISCOVER COLOMBIA

HISTORY

The Emerald Wars



The Emerald Center of the World

With its large quantity of high-quality emeralds, Colombia rules the trade! The country boasts over 200 mining locations and produces over 60 percent of the emeralds on the world market. The emerald presence was ritualized and traded by natives long before the Spanish arrived in the 16th century, and the gem has remained in high demand ever since. If history remains true, emerald deposits will continue to be discovered and placed on the world market at a high cost.

Bogotá, Colombia:
The Emerald Capital of the World

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| 1000 | Colombian Indian tribes mine and trade emeralds with Mayans, Incas, and Aztecs. |
| 1519 | Hernán Cortés receives emeralds from Montezuma during the conquest of Tenochtitlan. |
| 1539 | Spanish conquistadors conquer the Chibcha tribe, who led the Spanish to emerald mines. The Spanish are unsuccessful against the Muzo tribe. |
| 1559 | Driven by their thirst for the emeralds, the Spanish ally with Muzo enemies and use hunting dogs to defeat the Muzo. Emerald deposits are claimed by the Spanish, and the natives are forced into labor until freed by the Spanish crown in 1593. |
| 1568 | The Muzo Mine begins production and emeralds are traded to Turkey, Persia, and India in exchange for gold. |
| 1646 | Shortly after its discovery, the Cosquez mine caves in, killing about 300. The mine closes for two centuries. |
| 1820 | Colombia gains its independence. Emerald mines are placed under private contracts with ten percent of the profits going to the government. |
| 1946 | Government turns all responsibility of mining to the national bank. Due to little enforcement, illegal mining and black markets thrive. |
| 1970-1990 | The mines are privatized. The Colombian drug cartel becomes involved when Pablo Escobar uses the emerald market as a means to conceal cocaine industry profits. Violence ensues as emerald "Barons" seek to retain control over emerald mines and profits. Over 3,000 are killed during the Emerald War. |
| 1991 | The emerald "Barons" sign a Peace Treaty with the drug cartel, but the rivalry and black market remain today. |



DISCOVER MINERALS

EMERALDS

Mineral Profile

Emerald (Beryl)



Scientific Formula: $\text{Be}_2\text{Al}_3[\text{Si}_6\text{O}_{18}]$
(beryllium, aluminum, oxygen, and silicon)

Color: Due to the levels of iron, chromium, and vanadium, color can range from emerald-green to blue-green to yellow-green

Luster: Vitreous or glassy

Habit: Usually prismatic

Mohs Hardness: 7.5-8

Streak: White



Formation

In Colombia, emeralds are found in veins of white calcite that run through black limestone. The emerald crystals usually occur attached to the wall of the vein and are surrounded by calcite, or they may be embedded within the calcite itself.

Mineral Family

Emerald is actually the name for a specific green variety of the mineral beryl. Beryl crystals share the same chemical equations and properties, but the differences in color occur due to interactions between various elements, impurities and temperature change during the crystal formation. Chemically pure beryl is colorless, but impurities such as iron, manganese, and, in the case of emerald, vanadium and chromium, cause beryl colors to vary.

DID YOU KNOW?

Some beryl crystal discoveries measure over 30 feet tall, and weigh 25 tons!

Aquamarine

Iron
impurity



Red Beryl

Manganese
impurity



Heliodor

Iron
impurity



From Discovery to Exhibition

Extraction

Unlike other beryls, emeralds typically form where the Earth's plates are shifting. It is usual for emeralds to be found broken, rehealed, blemished, and only a few centimeters in size. Making matters more difficult for miners, emerald-rich calcite veins can change directions or vanish from one inch to the next. In spite of this, the appeal of striking it rich along with few other options for work, have led many to a life of mining in the Andes Mountains.

Historically, tunneling has been the chosen mining method throughout the history of the Coscuez and Muzo Mines. As machinery became readily available, bulldozers and dynamite proved that open cut mining was a more efficient method. As calcite veins are revealed, the crevices are checked by picks and then by hand if emeralds are found.

Guaqueros

Guaqueros are individual, local miners with dreams of finding a life-changing emerald. In Muzo, guaqueros gather downstream from the mine and filter through tailings washed downhill by the river. Though it may seem unproductive, they scavenge enough emeralds to support themselves and occasionally find a big one!



Emerald in Matrix

The Emerald Market

After discovery, emeralds are cleaned and taken to be sold or traded to collectors. When shopping, buyers consider the following factors:

- Color:** Colombian standard: The deeper the bluish-green color, the better.
- Clarity:** Clear crystals are highly valued, but if too clear the authenticity of the crystal can be questioned because emeralds usually form with various inclusions, making the crystal cloudy.
- Cut:** The cut gives an emerald its brilliance, or sparkle. Evenly cut facets, with the right symmetry, can maximize the depth and beauty of an emerald's color. Due to size and impurities, cutting emeralds can be risky.

In Matrix: Collectors often want crystals in their natural rock formation (matrix). It is best if emeralds have maintained their natural termination without being damaged during the mining process.

The Hooker Emerald originated in Colombia, then was taken to Europe by Spanish conquistadors, and eventually was worn by one of the last sultans of the Ottoman Empire. Today it can be viewed at the Smithsonian Institution in Washington, D.C.

