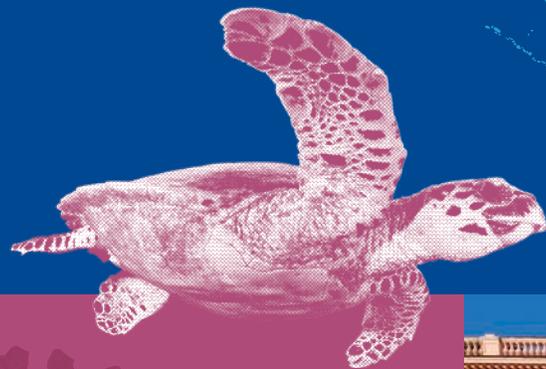


EDUCATOR'S GUIDE

iCUBA!



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Essential Questions

What is Cuba?

More than four thousand islands—an **archipelago**—make up this nation in the northern Caribbean Sea, just 150 kilometers (94 miles) from the tip of Florida. Cuba is remarkably varied in its geography, with remote forests, deep caves, broad wetlands, and dazzling reefs. Cuba's history is tumultuous. Humans first arrived around 6,000 years ago. Four centuries of foreign control, from Spanish colonization starting in the 15th century to U.S. influence in the 20th, ended in 1959 with a popular revolution led by Fidel Castro. Nationalization of businesses and private property precipitated a trade embargo with the U.S., and closer ties to the Soviet Union. While economic hardships worsened after the collapse of the Soviet Union in 1991, income inequality is lower in Cuba than in any other Latin American country, partly a result of investments by the socialist government on universal health care and education. Yet scarcity and curtailed civil liberties affect many aspects of Cuban life. In the 21st century, Cuba and the U.S. are rekindling diplomatic relationships, and Cuba is assessing the risks and rewards of further integrating into the global economy.



Number of islands: 4,000+
Population: 11 million
Politics: one-party, socialist state
Average life expectancy: 79 years
Literacy rate: 99%

Who are the Cuban people?

Cuba is home to about 11 million people. They trace their ancestry to indigenous people, Spanish colonists, slaves from Africa, as well as immigrants from the Philippines, China, Europe, the Canary Islands, Jamaica, and Haiti. Cuban traditions—including dance, music, and visual arts—reflect this multicultural heritage. While Roman Catholicism predominates, many religions coexist in Cuba. Many people follow orisha religion, a spiritual practice with West African roots that is sometimes called Santería. As a result of recent economic changes, more Cubans are now self-employed. They sell fresh fruits and vegetables from food carts, run small restaurants, and rent rooms in their houses for tourists.



During the hard times of the 1990s many Cubans began renting rooms to tourists. It also became legal to open a private restaurant, or paladar, often in one's home.

What makes Cuba's biodiversity unique?

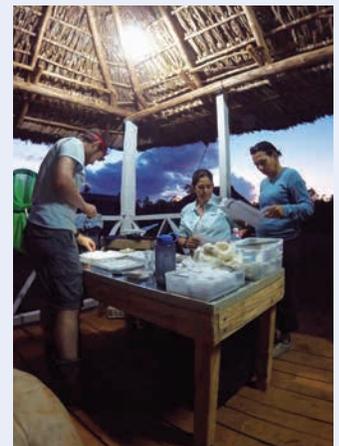
Cuba is home to the Caribbean's healthiest coral reefs, its largest and most important wetlands, and its largest rainforest. It's honeycombed with limestone caves and "hot caves"—domed chambers with small entrances where large numbers of bats raise temperatures up to 104°F (40°C). The country's remarkable range of **ecosystems**—as well as its **isolation** from the mainland—offer lots of opportunities for species to **evolve** and adapt in different ways. Many species, such as the bee hummingbird, are **endemic**: found only there. Some trend toward miniaturization, like *Eleutherodactylus iberia* (pictured), one of the smallest frogs in the world, and others toward gigantism, like Cuba's giant owl, now extinct. Cuba is a winter stopover for hundreds of thousands of birds, including ospreys and warblers. Sharks, spiny lobsters, and other Cuban reef dwellers often migrate to feed in Florida or even farther north.



About 30% of Cuba's vertebrate animals are found nowhere else. They include this tiny frog, *Eleutherodactylus iberia*.

How are Cubans conserving their country's biodiversity?

Although history and conservation efforts have prevented much of the environmental degradation seen on other Caribbean islands, Cuba's environments are changing. **Habitat fragmentation and loss** pose growing risks. So does human-induced climate change, which is bringing warming temperatures, sea level rise, and changes in disease patterns. Island species are also particularly vulnerable to the threat of **invasive species**, which often out-compete native species for resources and may drive them to extinction. Well aware of these challenges, Cubans continue to take strong measures to protect their natural heritage. Cuba's scientists are working with colleagues around the world to study, catalogue, and protect the country's flora and fauna. The government has also created protected areas, including Humboldt National Park, the Gardens of the Queen marine reserve, and the Zapata Biosphere Reserve.



Cuban and American scientists doing fieldwork in Humboldt National Park.

Map of the Exhibition

Cuba's biology and geology make this island archipelago unique, and the nation has played a significant role in world history, politics, and culture.

Use these guided explorations to investigate Cuba's people, landscapes, and biodiversity—and come away with new perspectives on this intriguing island nation.

CUBA: AN INTRODUCTION

- 1a. "Voices of Cuba" photographs and quotes
- 1b. Cuba wall map
- 1c. "Understanding Cuba" theater

SOCIETY

Economy

- 2a. Old American car
- 2b. Bicitaxi
- 2c. Guarapo stand
- 2d. Tobacco shed
- 2e. Fruit and vegetable cart

Culture

- 3a. Thrones for the orishas
- 3b. Carnival costume
- 3c. Café tables
- 3d. "Artists at Work" interactive

BIODIVERSITY

- 4a. Caves
- 4b. Humboldt National Park (forests)
- 4c. Gardens of the Queen Marine Reserve (coral reefs)
- 4d. Zapata Biosphere Reserve (wetlands)

CUBA TOMORROW

- 5a. Photos and quotes



Teaching in the Exhibition

CUBA: AN INTRODUCTION

This section focuses on Cuba's people and its history.

1a. "Voices of Cuba" photographs and quotes: This gallery gives students a glimpse of Cubans today: young and old, urban and rural, concerned and hopeful.



1b. Cuba wall map: Use this map to orient students to Cuba's location, geography, types of environments, and basic statistics.

1c. "Understanding Cuba" theater: This 10-minute video gives an overview of Cuba's history, including Spanish colonialism, slavery and the sugar industry, José Martí and the independence movement, the popular revolution led by Fidel Castro, relations with the Soviet Union, and new ties with the United States.

SOCIETY

The boulevard in the center of the gallery and the three sections to the right offer glimpses of Cuba's vibrant culture and changing economy.

As students explore these stops, have them consider and discuss how Cuba's history has shaped the diversity and daily life of its people, and how Cubans have adapted and responded to historical events.



Economy

2a. Old American car: Cars like this one on display rumble along Cuba's roads. Cuban restrictions on car imports and the decades-long U.S. trade embargo created shortages, and people have responded creatively.

2b. Bicitaxi: Part bicycle, part taxicab, these vehicles are an example of the small-scale businesses that Cubans have opened in recent years.

2c. Guarapo stand: The iced drink sold at this stand is freshly pressed from the stems of the sugarcane plant, Cuba's most important crop since the 1500s. The sugar industry has transformed the island's landscape, economy, and society.

2d. Tobacco shed: Native people of the Caribbean introduced Europeans to this fragrant plant. Spanish colonists eventually grew it for export, bringing slaves from Africa to work the crop. Despite the known health risks of smoking, cigars remain a Cuban tradition and leading export.



2e. Fruit and vegetable cart: The collapse of the Soviet Union and the ongoing U.S. embargo drastically reduced Cuba's food supply during the 1990s. In response, Cubans launched an urban agriculture movement, and continue to sell their wares in carts all over Havana and other cities.

Culture

3a. Thrones for the orishas: A wide variety of religious traditions coexist in Cuba, reflecting the diversity of its people. In the Afro-Cuban religious faith that is often called Santería, practitioners seek guidance from deities called orishas, for whom they sometimes create elaborate altars or "thrones."

3b. Carnival costume: One of the country's most elaborate festivals, known as the Carnival of Santiago de Cuba, happens each summer.

3c. Café tables: These four tables provide glimpses of various Cuban traditions: drinking coffee, cooking popular dishes, and playing dominos and baseball.

3d. "Artists at Work" interactive: This exhibit features work by Cuban artists—musicians and dancers, designers and photographers—and offers a view of this dynamic and blossoming aspect of Cuban life.



Cuba's Carnival celebrations blend European and African traditions, and reflect the influence of Chinese immigrants, neighboring Caribbean cultures, and global tourism.



BIODIVERSITY

The four rooms on the left as you enter the boulevard showcase Cuba's remarkable range of ecosystems and native species.

As students explore these areas, have them consider what makes island ecosystems unique and important to conserve.

4a. Caves: Hidden from view and shielded from the elements, caves throughout Cuba preserve evidence of the past. Here, students can investigate Cuba's:

- **geologic history:** The "Formation of Cuba" interactive explores Cuba from its beginnings 40 million years ago up to the present day.

- **extinct animals and gigantism:** Fossils reveal that very large animals, including giant owls and sloths, once populated Cuba.

- **prehistory:** Humans arrived in Cuba as early as 6,000 years ago, leaving their traces in the form of petroglyphs, ceramics, and stone tools.

- **cave animals:** Animals that live in Cuba's many caves include bats, fish, snakes, and shrimp.

4b. Humboldt National Park (forests): Located in the mountains of eastern Cuba, the 273-square-mile reserve is a refuge for rare and spectacular species, many found nowhere else on Earth. In this section, students can investigate how organisms evolve and adapt to island habitats. These processes include:

- **endemism:** Over time, isolated from their mainland relatives, species that populate islands can evolve to become distinct species found nowhere else.

- **miniaturization and gigantism:** Species on islands tend to evolve smaller body sizes when food resources are constrained, or evolve to become bigger when there's less pressure from predators.

- **adaptive radiation:** Anoles, the live tree-dwelling lizards on exhibit, are examples of an evolutionary process called



The Cuban knight anole (left) lives in the crowns of trees, where it dines on fruits and animals such as tarantulas, geckos, and even birds. The smaller Cuban brown anole (right) lives where tree trunks meet the ground and preys on small insects.



Sloths were present in Cuba by 18 million years ago and eventually diversified into several species. The largest was *Megalocnus rodens*.

adaptive radiation. When a species first arrives on an island with few or no predators, members of that species flourish. As they increase in number, they compete for resources and over time find different niches to occupy. This process can give rise to new species.

4c. Gardens of the Queen Marine Reserve (coral reefs):

Along southern Cuba lies an 840-square-mile marine reserve, the largest in the Caribbean. Students can explore an immersive diorama of the reef to investigate:

- **biodiversity and conservation:** Limits on tourism and fishing have helped make this one of the healthiest coral reefs in the Caribbean. Silvery fish zip past banks of coral studded with colorful starfish, sea fans, and sponges. Crabs, scallops, and sea urchins inhabit groves of elkhorn coral, a key reef builder. Hawksbill turtles nest on the beaches. Protecting the reef from a growing tourist industry will require careful management.

- **dispersal and migration:** Many organisms, like tiny coral larvae, connect with other marine life in the Caribbean. Some reef dwellers, such as sharks and spiny lobsters, migrate, often feeding in Florida or even farther north.



In 2015, satellite data showed that a longfin mako shark traveled between Cuba and the coasts of Virginia.

4d. Zapata Biosphere Reserve (wetlands): Covering 1.5 million acres (2,316 square miles), these are the largest wetlands in the Caribbean. Students can explore a walk-through diorama to investigate:

- **biodiversity and conservation:** This wetlands ecosystem includes marshes, mangroves, and forests. These habitats support a complex web of life that includes crocodiles, fish, frogs, snails, birds, and countless plants and insects.



Due to overhunting and habitat loss, the Cuban crocodile is now critically endangered.

- **migration:** Many birds spend the winter in Cuba, or stop over when migrating between North and South America. Maps and tools on display show how scientists track the migration patterns of birds like the osprey.

CUBA TOMORROW

5a. Photos and quotes: Before leaving the exhibition, students can explore Cubans' thoughts about the future of their country. Have students choose a quote or reflection that resonates with them, and discuss why.

COME PREPARED CHECKLIST

- Plan your visit.** For information about reservations, transportation, and lunchrooms, visit amnh.org/fieldtrips
- Read the Essential Questions** to see how themes in the exhibition connect to your curriculum.
- Review the Teaching in the Exhibition section** for an advance look at what your class will encounter.
- Download activities and student worksheets** at amnh.org/cuba/educators. They are designed for use before, during, and after your visit.
- Decide how your class will explore the exhibition:**
 - You and your chaperones can facilitate the visit using the Teaching in the Exhibition section.
 - Students can use the worksheets and/or maps to explore the exhibition on their own or in small groups.

NEXT GENERATION SCIENCE STANDARDS

A Framework for K–12 Science Education

Scientific & Engineering Practices • 1. Asking Questions • 6. Constructing Explanations • 8. Obtaining, Evaluating, and Communicating Information

Crosscutting Concepts • 1. Patterns • 2. Cause and Effect: Mechanism and Explanation • 7. Stability and Change

Disciplinary Core Ideas • LS2.A: Interdependent Relationships in Ecosystems • LS2.C: Ecosystem Dynamics, Functioning, and Resilience • LS3.B: Variation of Traits • LS4.A: Evidence of Common Ancestry and Diversity • LS4.B: Natural Selection • LS4.C: Adaptation • LS4.D: Biodiversity and Humans

National Curriculum Standards for Social Studies

Standard 6: Power, Authority, and Governance

Standard 7: Production, Distribution, and Consumption

Standard 9: Global Connections

Classroom and Museum visit activities, available online at amnh.org/cuba/educators, are correlated to **Common Core State Standards**.

GLOSSARY

adaptive radiation: the diversification of a single species into many new species, particularly when a change in the environment makes new resources available, creates new challenges, or opens new niches

archipelago: a group of islands

biodiversity: short for biological diversity, this is the rich variety of life on Earth

ecosystem: all the living things in a given area (plants, animals, and other organisms), along with the components of their environment (things like air, water, and soil), interacting as a system

endemic: natural to and found only in a specific place or region

evolution: the process through which a population accumulates genetic changes over time that are passed on from ancestors to subsequent generations, or descent with modification.

habitat fragmentation: the division of continuous habitats into smaller, more isolated remnants

habitat loss: the loss of natural habitat, generally through human activities such as agriculture and urban development, that together with fragmentation can threaten the survival of wildlife

invasive species: an organism that has been introduced to an ecosystem and spreads, sometimes negatively affecting native species

isolation: when a geographical area or a population is separated from others by physiological, behavioral, or geographic barriers



The world's smallest bird, the bee hummingbird lives only in Cuba.



Introduced in the 1870s to protect sugarcane crops from rats, the mongoose now threatens Cuba's wildlife.

CREDITS

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