

# Kids' Guide To Jamaica's Natural Environment



Compiled by Tina Williams.  
ENACT Programme. 2004.

## What is the environment?

Everything that surrounds us is part of the environment. It consists of living things like plants and animals, but also beaches and mountains, the air we breathe, the sunlight that provides warmth, and the water that we use in our homes, schools, and businesses. This part of our environment is known as the **natural** environment. However, man-made or **built** things are also a part of our environment.



Natural environments were not created by mankind and have the capacity to exist independent of human influences. Examples include:

- Cockpit Country
- Kingston Harbour
- The Amazon
- Hellshire Hills
- Caribbean Sea
- Dunn's River Falls

Built environments originate in or out of the actions of human beings, and their sustained functioning is dependent on human influence. Examples include:

- Urban Settlements
- Cities
- Roadways and Railways
- Markets
- Hospitals
- Universities and Colleges

## People and the Environment – Human impacts



*Air pollution from burning*

Humans like ourselves may have lived on Earth for more than 300,000 years. For a long time people thought the Earth was so huge that it could easily absorb human wastes and pollution. And they thought that Earth's natural resources would never be used up.

In prehistoric times, people killed animals for food and built fires to cook food and keep themselves warm. They cut down trees for fuel, and their fires released pollution into the air. But there were so few people that their

activities had little impact on the environment.

In modern times, the world's population has been growing very fast. In 1850 there were around a billion people in the world. In 1950 there were around 2.5 billion, and in 2001, there were more than six billion. Their activities have put a strain on the environment.

People are becoming more aware that human activities can seriously damage the planet and the animals and plants on it. Sometimes this damage can be reversed or slowed down. But it is often permanent. On the following pages you'll learn about the damage, and about some things that can be done to help clean up and protect our planet.

## Our Ecological Resources



Ecological or environmental resources play an important role in our everyday lives. We harvest products from them, including seafood, game, firewood, timber, drinking water, and pharmaceutical products. They also provide ecological services such as water filtration, flood control, and air purification. Each resource also provides some type of aesthetic and/or recreational benefit.

## The Agricultural Lands We Farm

Agricultural lands—fields, pastures, and orchards—are managed to produce food and fiber for people. These are also called agro-ecosystems. There is no such thing as an untouched agro-ecosystem. Human societies all over the world place



very high value on agricultural lands because of the products and services that we get from agro-ecosystems. We get crops and livestock, and a variety of plants and animals to eat. Agricultural lands also play a role as a source of income and employment for many people in Jamaica, the Caribbean and in many countries around the world. They also provide for recreational activities, provide food, and serve as an important habitat for some wildlife species.

## The Air We Breathe

Air is one of the most essential components necessary to sustain life. Of all the components essential to life, air is likely the one most taken for granted. Every day, we each breathe about 20,000 liters of air and the pollutants the air carries - pollutants that



Sometimes people with asthma, like me, feel bad when the air is very dirty.

can cause respiratory and circulatory problems, headaches, fatigue, eye irritation, and increased risk of cancer and neurological damage.

Air pollution can occur both outdoors as well as indoors. In many of the world's poverty-stricken countries, the highest exposure to air pollution occurs indoors, primarily because large percentages of the population are dependent on fuel such as wood, charcoal, straw, animal waste. When burned, these products emit substances which are harmful to human health, increasing the risk of serious disorders like bronchitis and asthma, and increasing the risk of cancers.

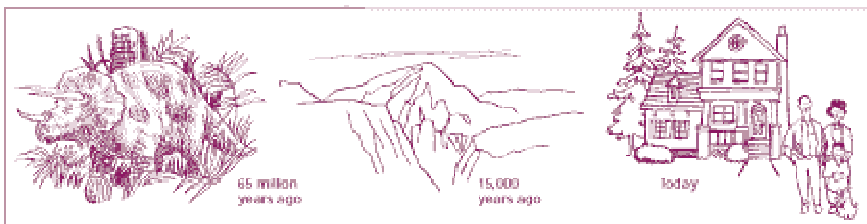


It is estimated that 2.7 to 3.0 million people in the world die every year from complications related to air pollution. About 90% of these occur in developing countries like Jamaica and the rest of the Caribbean.

## Global Warming

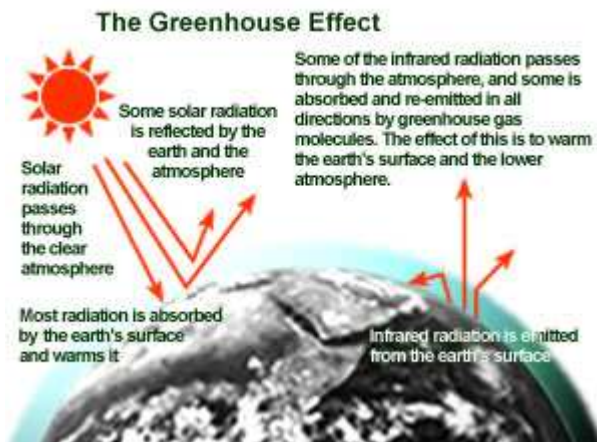
Global Warming refers to an average increase in the Earth's temperature, which in turn causes changes in climate. A warmer Earth may lead to changes in rainfall patterns, a rise in sea level, and a wide range of impacts on plants, wildlife, and humans. When scientists talk about the issue of climate change, their concern is about global warming caused by human activities. The Earth has warmed by about 1°F over the past 100 years. Some people believe that the Earth could be getting warmer on its own, but many of the world's leading climate scientists think that things people do are helping to make the Earth warmer.

The **greenhouse effect** is the rise in temperature that the Earth experiences because certain gases in the atmosphere (water vapor, carbon dioxide, nitrous oxide, and methane, for example) trap energy from the sun. Without these gases, heat would escape back into space and Earth's average temperature would be about 60°F colder. Because of how they warm our world, these gases are referred to as greenhouse gases.



Climate can change too, but in the past it has taken a very long time to do so.

Greenhouses are used to grow plants. Greenhouses work by trapping heat from the sun. The glass panels of the greenhouse let in light but keep heat from escaping. This causes the greenhouse to heat up, much like the inside of a car parked in sunlight, and keeps the plants warm enough to live in the winter.



The Earth's atmosphere is all around us. It is the air that we breathe. Greenhouse gases in the atmosphere behave much like the glass panes in a greenhouse. Sunlight enters the Earth's atmosphere, passing through the blanket of greenhouse gases. As it reaches the Earth's surface, land, water, and biosphere absorb the sunlight's energy. Once absorbed, this energy is sent back into the atmosphere. Some of the energy passes back into space, but much of it

remains trapped in the atmosphere by the greenhouse gases, causing our world to heat up.

### What Might Happen?

Scientists do not now exactly what will happen in the future, but using special computer programmes they have been able to find out how the climate may change in the years ahead. And the computer programmes tell us that the Earth may continue to get warmer.

Together, the melting glaciers, rising seas, and computer models provide some good clues. They tell us that the Earth's temperature will probably continue to rise as long as we continue increasing the amount of greenhouse gases in the atmosphere.



We need energy to do things like drive a car, fly a plane, or make things in factories. But we need to use energy wisely if we want to help slow global warming.

It may seem hard to believe that people can actually change the Earth's climate. But scientists think that the things people do that send greenhouse gases into the air



are making our planet warmer. Once, all climate changes occurred naturally. However, during the Industrial Revolution, we began altering our climate and environment through agricultural and industrial practices. The Industrial Revolution was a time when people began using machines to make life easier. It started more than 200 years ago and changed the way humans live. Before the Industrial Revolution,



human activity released very few gases into the atmosphere, but now through population growth, fossil fuel burning, and deforestation, we are affecting the mixture of gases in the atmosphere.

Since the Industrial Revolution, the need for energy to run machines has steadily increased. Some energy, like the energy you need to do your homework, comes from the food you eat. But other energy, like the energy that makes cars run and much of the energy used to light and heat our homes, comes from fuels like coal and oil – fossil fuels. Burning these fuels releases greenhouse gases.

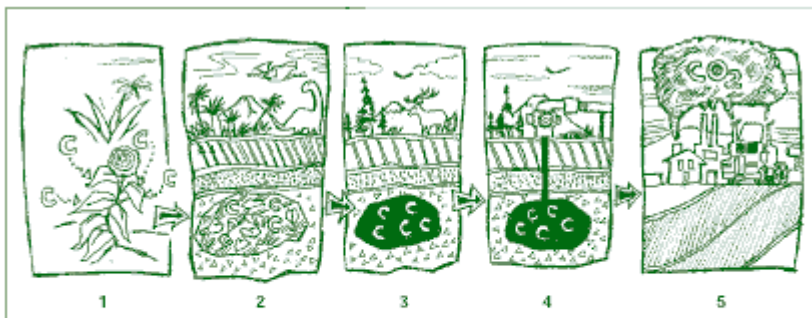
### **When Do You Send Greenhouse Gases into the Air?**

You send greenhouse gases into the air whenever you ...

- Watch TV
- Use the Air Conditioner
- Turn on a Light
- Use a Hair Dryer
- Ride in a Car
- Play a Video Game
- Listen to a Stereo
- Wash or Dry Clothes
- Use a Dish Washer
- Microwave a Meal

To perform many of these functions, you need to use electricity. Electricity comes from power plants. Most power plants use coal and oil to make electricity. Burning coal and oil produces greenhouse gases.

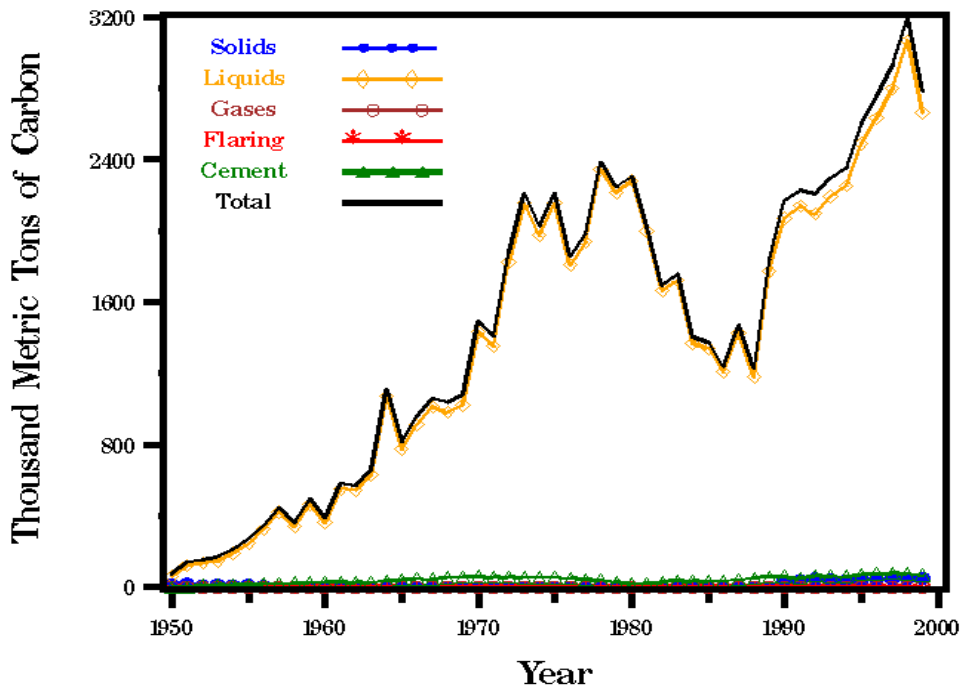
Other things we do send greenhouse gases into the air too. The trash that we send to landfills produces a greenhouse gas called methane. Methane is also produced by the animals we raise for dairy and meat products and when we take coal out of the ground. Whenever we drive or ride in a car, we are adding greenhouse gases to the atmosphere. And, when factories make the things that we buy and use everyday, they too are sending greenhouse gases into the air.



- (1) Plants remove carbon dioxide from the air.
- (2) When the plants died, they were buried in the earth.
- (3) After millions of years, their remains turned into coal and oil.
- (4) People mine the earth for coal and oil, which are called "fossil fuels."
- (5) When people burn fossil fuels, they send carbon dioxide and other greenhouse gases into the air.

## We Are Contributing to Global Warming Here In Jamaica Too

Here in Jamaica, we have been increasingly consuming more fossil fuels for energy in our homes, cars etc. As a result Jamaica has been experiencing an increase in the levels of carbon dioxide emissions (see diagram) and are increasingly contributing to global warming and the greenhouse effect.



## Forests

Forests provide wood fiber, recreation areas, hunting grounds, wildlife habitat, and regulation of the water cycle. Generally speaking, a forest is a large area, thickly covered with trees. Forests are distinguished by their species of trees and plants, density, and soil type.



Forests produce tremendous amounts of energy, nutrients, and oxygen, and affect regional weather and global climates. Forests benefit humans and wildlife species, providing wood fiber, outdoor recreation, wildlife habitat, and regulating the water cycle.

Forests are important components of watersheds. A **watershed** is defined as an area of land that water flows through on its way to a particular stream or river. It is a defined area where the collection and drainage of rainfall occurs.

## Watersheds in Jamaica



*Forested hillside in Jamaica*

The entire island of Jamaica is considered one big watershed, however, to effectively manage this watershed, it is divided into 26 management units. Some of the watershed areas include:

- Buff Bay
- Black River
- Rio Grande
- Milk River
  
- Yallahs

Each of Jamaica's 26 watershed management units have portions considered to be degraded, while 10 of these units are considered severely degraded. Since the 1960s about 2/3rds of our native forests have been destroyed. Studies show that the rate of deforestation in Jamaica is estimated to be 0.1% per year. Some of the causes of deforestation have been:

- Land clearing for agriculture
- Firewood collection
- Felling of trees for timber
- Construction of roads and highways
- Yam stick production
- Land clearing for bauxite mining and limestone quarrying
- Land clearing for housing



*Burnt out forest*

Although many of these activities are seen as important and necessary, there are several problems that arise from the destruction of our forests:

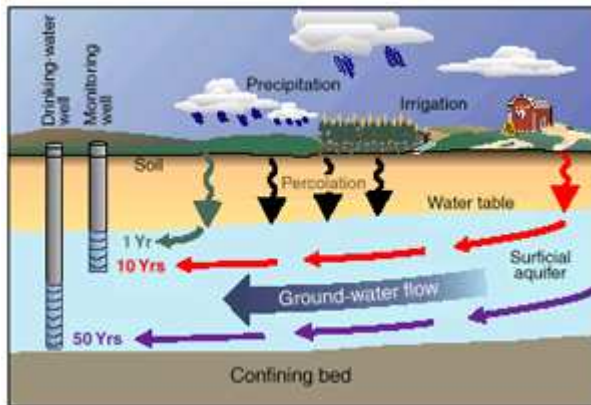
- Soil quality that is too poor to produce food crops
- Loss of topsoil
- Reductions in the flow of rivers and greater flooding
- Reservoirs and dams become filled with soil and debris
- Reduction in water quality and quantity. This means that we would have to pay higher water bills for treatment of water and use more fossil fuels to treatment water and distribute it to our homes

Jamaica's forests are the main storehouses of biodiversity, especially of endemic flora and fauna. Many of Jamaica's rare and threatened animals depend on the forest for their habitat and survival.



## Water (including groundwater, reservoirs, and rivers and streams)

When rain falls to the ground, the water does not stop moving. Some of it flows along the land surface to streams or lakes, some is used by plants, some evaporates and returns to the atmosphere, and some seeps into the ground. Water seeps into the ground much like a glass of water poured onto a pile of sand.



Ground water is an important natural resource. More than 80 percent of the water we use in Jamaica comes from ground water sources.

Ground water can become unusable if it becomes polluted and unsafe to drink. It can become polluted by seepage through landfills, septic tanks and sewage systems, underground storage tanks, waste oil

and other hazardous waste disposal, and fertilizers or pesticides used on farms and homes. However, with careful use and by reducing sources of pollution, ground water can continue to be an important natural resource in the future.

Rivers are important because they carry freshwater to cities and farms, serve as the home to wildlife and fisheries, and provide recreation and natural beauty for people throughout the nation. Rivers are used by humans for irrigation, to transport people and their manufactured products, to produce hydroelectric power, and to provide habitats for animals. It is for all of these reasons that we must protect our streams and rivers.

### Water Pollution in Jamaica



*Polluted River*

Most persons in Jamaica get their water directly from rivers, wells and through rainwater harvesting. Water pollution is a very important issue for us because less than 85% of the population receives treated water and are at risk of becoming seriously ill by drinking contaminated water.

All major river courses in Jamaica receive pollutants at some point. These may include:

- Industrial waste,
- Sewage
- Silt

- Solid waste
- Agricultural run-off etc.

Even though many homes in Jamaica are fitted with toilets, most of our sewage is not handled by a central sewage treatment system, but is disposed of on-site through the use of absorption or soak-away pits and pit latrines. This causes contamination of groundwater and rivers.

Groundwater in Jamaica also becomes polluted when we pump too much water from wells. This has caused wells near the coast to become contaminated with salt water. Over-pumping from aquifers in the Liguanea Plain and the lower reaches of the Milk River, Rio Minho, Rio Cobre, and Montego River Basins has caused the water in some of the wells in these areas to become salty.

## **Wetlands**

A wetland is an area that is covered by water or has water-saturated soil during a portion of the growing season. Wetlands are important natural resources that provide numerous benefits to our society. First, wetlands are the vital habitats for many plants and animals. In fact, many threatened and endangered species in Jamaica depend on wetlands for survival, for example the American crocodile. They provide water-storage basins that reduce the amount of flooding and storm damage, minimize erosion of our shoreline, improve water quality by filtering pollutants, and support tourism and the hunting and fishing industries.

In the past, humans have often regarded wetlands as wastelands—sources of crocodiles, mosquitoes, flies, and bad odours—and have destroyed many wetlands. Wetlands have also been destroyed for some of the following reasons:

- To provide land for agriculture and development including for construction of houses, hotels etc
- Pollution from fertilizers and other chemicals
- Exploitation of its products e.g. wood and other tree products, marine life etc.
- Construction of impediments to surface run-off e.g. roadways

These activities have disastrous effects and result in:

- Loss of fish and shellfish dependent on wetlands as spawning grounds
- Habitat loss for many species of plants and animals
- Flooding
- Land erosion
- Loss of materials for construction, fishing and craft

## **Jamaica's Wetlands**

Here in Jamaica we have both mangroves swamps and marshes. There are four mangrove species found here in Jamaica: the red mangrove, the black



*Prop roots of the red mangrove*

mangrove, the white mangrove and the buttonwood mangrove. Swampy types of wetlands often contain reeds and floating plant species.

At one time mangroves were estimated to cover approximately 2% of Jamaica's total surface area, but the total area of wetlands has declined. The largest remaining wetland areas are the Negril Morass, the Great Morass and the Black River Upper and Lower Morass. The Black River

Lower Morass in St. Elizabeth was declared a wetland of international importance under the Ramsar Convention in 1998.

## Coral Reefs

Coral reefs are important marine ecosystems which act like underwater forests. Coral reefs provide habitat for fish and other marine life, protect our coastline from storm damage, erosion and flooding, provide sand for beaches, provide for recreational activities e.g. SCUBA diving and snorkeling, and represent sources of income and resources e.g. tourism, fishing, building materials, drugs etc.

Coral reefs are threatened by:

- Coral diseases
- Coral bleaching
- Storm/ hurricane damage
- Excessive nutrients from sewage pollution
- Siltation and poor watershed management practices
- Excessive nutrients and algal over-growth
- Over-fishing and indiscriminate fishing practices
- Inappropriate recreational practices

Continued destruction of coral reefs result in:

- Shoreline damage and beach erosion
- Flooding
- Loss of marine fisheries including commercially valuable species
- Losses to economic sectors including tourism and fishing
- Loss of income to fisher folk



*Image of a healthy coral reef*

## Coral Reefs in Jamaica

There have been dramatic changes in Jamaican coral reefs in the last 20 years: once dominated by corals, they are now dominated by algae. On the fringing

reefs around the island, mean coral cover at 10m depth fell from 52% in the late 1970s to 3% in the early 1990s. Mean algal cover rose from 4% to 92% over the same period.

## Wildlife

The term “wildlife” refers wild animals and vegetation, especially animals living in a natural, undomesticated state. Jamaica is home to a wide variety of wildlife –



ranging from fungi, ferns, and other spore plants, and continuing with trees and shrubs, wildflowers, invertebrates, fishes, amphibians, reptiles, birds, and mammals.

Many of these wildlife species live throughout the island in a variety of habitats, however, there are several factors that threaten the survival of these organisms. These include:

- Habitat loss
- Poor forestry practices
- Over-fishing and excessive hunting
- Global climate change
- Pollution from toxic chemicals (including agricultural pesticides)
- Oil spills
- Poor air and water

Most of these threats are interrelated. For example, the use of forests for timber/logging, fuel, agricultural land and other needs have all contributed to the over-exploitation of forests. In addition, deforestation is contributing to the increased emissions of greenhouse gases, which in turn causes global warming that in turn affects overall forest loss. Forest loss also impacts species reduction as it increases habitat loss.

Human societies have recognized and accepted uses of wildlife for food, clothing, shelter, hunting, fishing, trapping, recreation, and as an indicator of environmental quality. These uses generate goods, income, and contribute to the economic and spiritual well-being of society.

## Wildlife And Biodiversity In Jamaica

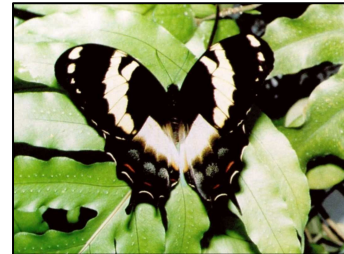
Jamaica is presently ranked fifth among the islands of the world with respect to endemic plant species. Jamaica has 822 endemic species of flowering plants which represents a quarter (1/4) of the total number of plant species in the island. In addition, we also have a high level of **endemism** for many species of animals including snails, terrestrial grapsid crabs, amphibians, reptiles, and lands birds. Fourteen (14) animal endemic species and over 200 plant endemic species are classified as critically imperiled or especially vulnerable to extinction.

At least six species of vertebrates are thought to have become extinct in Jamaica in the last 150 years. Some Jamaican wildlife now extinct includes:

- Caribbean monk seal
- Jamaican rice rat (since 1900)
- Jamaican Macaw
- Black-capped Petrel
- Jamaican Parakeet

NEPA has been working to ensure the protection of these species under the law. Some of these protected species include:

- Birds - plain (blue) Pigeon, Golden Swallow, West Indian Whistling Duck, Ring-tailed Pigeon, Jamaican Black Bird, Black and Yellow-Bill Parrots, Sooty Tern, Brown Noddy, Masked Duck
- Mammals - West Indian Manatee, Jamaican Hutia (coney)
- Amphibians & Reptiles - all sea turtles, Jamaican Boa, Jamaican Iguana, American Crocodile
- Invertebrates - Giant Swallow Tail Butterfly, Black Coral, White Coral



*Giant Swallowtail  
Butterfly*



## **Our Environment Agency - NEPA**

The National Environment and Planning Agency (NEPA) is a new Executive Agency that became operational on April 1, 2001. It is an agency of the Ministry of Land and the Environment.

NEPA represents a merger between the Natural Resources Conservation Authority (NRCA), the Town Planning Department (TPD) and the Land Development and Utilization Commission (LDUC). The aim of the merger is to integrate environmental, planning and sustainable development policies and programmes and to improve customer service.

### **NEPA's Mission**

To promote Sustainable Development by ensuring protection of the environment and orderly development in Jamaica through highly motivated staff performing at the highest standard.

### **NEPA's Vision**

Jamaica's Natural Resources are being used in a sustainable way and there is broad understanding of environment, planning and development issues, with extensive participation amongst citizens and a high level of compliance to relevant legislation.

# Careers In Environment

There are many opportunities to work in environment-related fields. Some jobs include:

- Atmospheric Scientist
- Artist/ Graphic Designer
- Computer Programmer
- Chemist
- Engineer
- Forest Ranger



- Geologist
- Internet Designer
- Lawyer
- Meteorologist
- Oceanographer/ Marine Biologist
- Politician/ Lobbyist
- Writer