



## 24<sup>th</sup> international YRE mission

# Importance of the ecosystem, threats, and impact of climate change in the Caribbean region

Freeport Bahamas, 23 – 30 October 2002

*From 23th to the 30th of October 2002, 3 young reporters investigated the Caribbean environment, in Bahamas. They had to identify the threats for this region, including climate change. Laury from France, Ioannis from Greece and Danielle from Denmark interviewed several people, and went on a few trips in the Caribbean nature. Read on, and see what they concluded.*

*This mission is the second part of a general inquiry about the local impacts of a global problem : climate change. The first of the two missions took place in France, on the Mont-blanc, in April 2002. In this mission, 12 young reporters investigated the melting of glacier, the impact on the tourist industry, and on ecosystems. Their report is available on the web site: [www.youngreporters.org](http://www.youngreporters.org)*

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# Introduction : the main points of our mission

We made some interviews with scientists, to investigate what their points of view on the ecological value of the Caribbean region, and what the impacts of climate change on the fauna/flora.

We also interviewed politicians and decision makers, to see how they manage with tourist masses, and with the fishing industry. What are the impacts on local habitants and what measures have been already taken? Which problems are related to climate change, and what can we do to resolve it?

## Coral Reefs – the rainforests of the ocean

*Coral reefs are in great danger after the world's climate change continues to thrive. We've been diving with Ricky Johnson (photo, at the back) from the Kayak Nature Tour and Nicholas Nuttall (photo, with white hat) from the Bahamas Reef Environmental Educational Foundation (B.R.E.E.F), to see the coral reefs in real life. It made us really appreciate the complicity and beauty of these huge communities in the ocean. We also interviewed Angelique Brathwaite from the coastal Zone Management Unit. She is a marine biologist at the ministry of environment in Barbados and she is main participant in the Reef Checks that's being performed around the world.*



### What are the coral reefs?

Coral reefs are one of the oldest ecosystems on earth. They can grow to be enormous structures in shallow, warm, clear tropical and subtropical oceans, and are thus perfect for waters surrounding the Bahamas.

A coral formation is a colony of hundreds or thousands of tiny organisms, also known as polyps. These organisms feed on small articles floating in the water, building a skeleton of calcium carbonate that forms the reef. The outer layer of healthy coral polyps is habited by small one-celled plants (zooxanthallae). These plants develop a sort of symbiotic algae that gives the corals their amazing colours.

Just apart from being incredibly beautiful, the **coral reefs represent crucial sources of income** and resources through their role in tourism, fishing, building materials and providing new drugs and bio chemicals. Last but not least, they buffer waves and protect shorelines from erosion. Because coral reefs provide food for the fish, they also have a massive role for the biodiversity in the Caribbean.

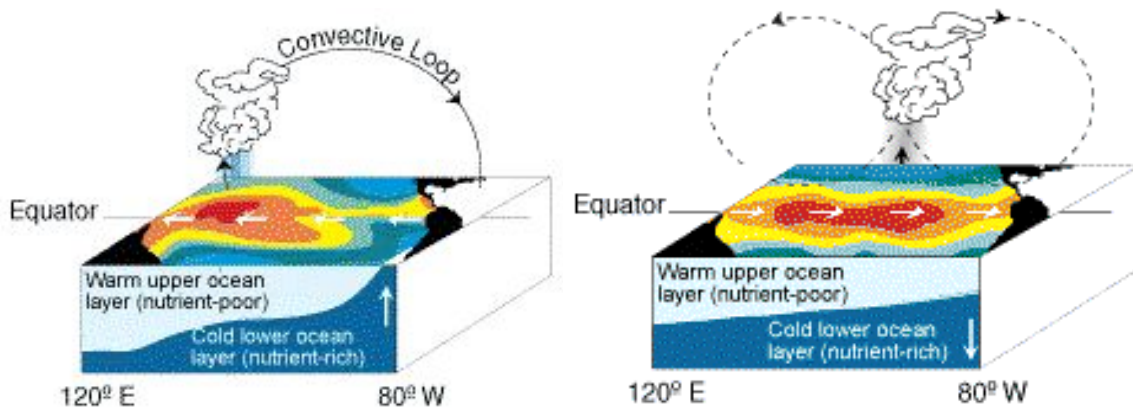
## General threats and consequences on coral reefs

### *Climate change:*

### **Global warming has a big impact on the survival of the coral reefs.**

As they are very fragile, small disturbances in the weather will have a big effect on the natural course of the reefs. In our case – as the weather gets warmer – as a consequence of global warming, the oceans will then also get warmer. Though the corals live in warm water, they cannot cope with it getting much warmer. As the weather is getting warmer, it puts a stress on the corals and as a result of this, they reject the plants they host. This makes the corals skeletons see-through or white, and is what we call bleaching. If the stress stops (the water gets colder) then there is a chance that the corals will become healthy again. If it continues, then the result will be that they die.

Another weather event that causes complications to the survival of the reefs are the El Niño. This weather phenomenon can cause extreme temperatures differences in the waters containing coral reefs, and thus again putting more stress on the organisms.



### *Tourists:*

Another big risk is the continuous pollution that the tourists inevitably are a cause of. Hotels near the shore may not all be environmentally safe and gives a risk of leading sewage out into the ocean. They use new soap, changes bed linen everyday, and all in all are a big environmentally risk, as they use too much water and energy. The sewage that is led out into the ocean and to the coral reefs, will lie on the surface of the water and prevents the sunlight to break through down to the corals. Many tourists and divers don't understand the importance of these reefs so they take lessons to see the coral reefs, unfortunately will the result of breaking some of them. Corals are also very popular as decorations. Often, people on vacation in tropical locations are surrounded by beautiful reefs, and just want to take coral souvenirs home. This is very damaging because a large amount of the healthiest corals are selected, and sold. This has the obvious consequence of taking them away from their natural habitat, pulling them up by their roots, so they can't reproduce anymore. We start to detect a cycle where if the corals and fish extinct a lot of the tourism will be lost in the Caribbean.

### *Fertilizer*

Agriculture has a large part in the conservation of the Caribbean islands, and that means a lot of fertilizer is being used. And that means a lot of fertilizer is being led out in the ocean. Besides being a pollution cause, the fertilizer affects the plants and organisms in the corals, and they expand, which in the end will put such a stress on the corals, that they die.



*Penelope Hynam (Board of directors of the Caribbean Conservation Association, and Blue Flag Representative). She is holding a Blue flag, an international scheme to identify tourism managers promoting sustainable tourism policies:” They (hotels) are now understanding that sustainable tourism means saving money. (...) By destroying your environment you are destroying the goose that layed the golden egg”.*

### ***Fishing:***

**Over fishing is a really serious putting at risk the Caribbean ecosystem today.** Commercial fishing ships landed around 84 million metric tons of seafood in 1999, according to FAO. Valuable fish species are getting extinct and this is caused due to fishermen and due to the fact that nearly 1 billion people depend on the sea for sustenance.

Angelique Bathwaite from “the Coastal Zone Unit” remarked that fishermen haven’t realised that coral reefs are actually connected with fish: if you destroy one, you inevitably destroy the other as well. This phenomenon is worrying especially if you think that many industries often use illegal methods such as poison and blast fishing. Earlston McPhee, who works for the “ministry of tourism”, mentioned though that fishing industries are starting cooperating with them and that fishermen are beginning realising the importance of the situation. So fishermen can really help to measure and reduce the extinction of fish. The truth is that they shouldn’t just stop fishing but stop over fishing. To fix this situation some measures should be made.

Well to measure the situation, actions should be made both from the government and the citizens. Mr Earlston Mc Phee (Ministry of Tourism) remarked that “Before legislation, there is information”. That means that government and the **local authorities cannot really pass a law if they don’t first develop awareness to fishermen.** Mr. McPhee explained that the ministry of tourism informed many fishermen that if they over fish, there will not be work for the future generations and for their kids. According to Mr Mc Phee, it’s better

to have people who understand what they do, rather than having a policeman behind every individual.

Not only do the ships produce sewage directly into the sea, killing the corals, many of them also drop their anchor without giving a second thought to, that they might hit giant formations of corals.



*Angelique Bathwaite, right, (costal zone unit), with Isabelle Gachet, left (the YRE mission leader)*

*“Try and learn a little bit how important these animals are to us. We are not only killing the corals. This will have an impact on our children and our children’s children.*

*So learn a little, or just take my word that they are extremely important: please don’t kill them.”*

### ***How can we help?***

Coral reefs have existed on earth for over 350 million years, but **over a quarter of the world’s reefs have already been destroyed**. That is why it is so important to spread the information, so the current situation doesn’t get worse. Firstly, what you have to find out is how far away from a coral reef you are. You are probably closer than you think. Globally, many people depend partly or wholly on the coral reef for their livelihood and around 15% of the world’s population live within 100 km of a coral ecosystem. And even though you live far away, there are still things to be done. For example, global warming is a major threat to the corals. To reduce it you have to start with the tree R’s: Reduce, reuse and recycle. Save water and energy, don’t use too much waste, and drive less. All this contributes to the climate change which is destroying the coral reefs.

If you’re far away from the coral reefs you may not be able to help physically, but you can help with the decision-making. For example start by talking to your government. Make them start realising the problem.

Angelique Bathwaite (*costal zone unit*), remarks that the attitude of the tourists is changing. They are getting more aware and active. This has a lot to do with the information they are being given now. 5 pamphlets have been made by the ICRI (the International Coral Reef Initiative) and UNEP (United Nations Environment Programme) concerning the protection of coral reefs by tourists, kids aged 8-12, boaters and hotel managers. Angelique even explained that tourist now report when they see fisherman destroying some corals.

### ***Awareness:***

Several organisations have been developed since the world realised that we need to preserve our nature and environment. Among these, we find the Foundation for Environmental education, that organises a programme for sustainable tourism : the Blue Flag. They specialise in the protection of the beaches and marinas around the world. A new suggestion has been made that the Caribbean regulations should include criteria on the standards of the coral reefs.

A lot of education has also started now. All over the world new programmes for young people are beginning, and in the Caribbean the focal point has been put on the younger kids.

**Reef Checks:**

Reef check is a monitoring organisation created started in 1997, just in time, we reckon. Their surveys in 1998 show a big decrease of coral Reef. The organisation consists of students, professors, scientists and volunteers who observe the state of corals worldwide. They represent a network of divers to surveys the corals survival.

## Global Warming

In the last year there has been a change in the climate of the earth that is mainly caused by the global warming. The greenhouse effect is actually a natural phenomenon. The atmosphere that is protecting the earth causes it. This complex gaseous thing is composed of water vapour, carbon, dioxide, method and nitrous oxides. This is natural because it protects living organisms from the harmful sun radiation and it captures the glares of the sun and it's why we have a normal climate. The problem is that gaseous emissions from human amplify this phenomenon. Due to these emissions and its intensification during the 20 century, we progressively increased the concentration of greenhouse gases in the atmosphere. These gases trapped the heat from the sun and contributed to the increase of the temperature on earth. As a result, climates are changing globally and regionally. Since the greenhouse effect is a natural phenomenon climate change is in part natural but as Angelique Bathwaite claimed, "I dot think there is any doubt that it is a natural phenomenon. The problem is that it is exaggerated by human beings. So it is a combination of both nature and human



beings". **Global warming has consequences that are really serious for living organisms.**

The rise of the temperature is inevitably going to cause the melting of the ice in the poles. As consequences the sea level rises and this will cause the "sinking" of the earth. According to Penelope Hynam (Board of Directors of the

Caribbean conservation Association and Blue Flag Representative) little islands like the Bahamas will gradually disappear under the sea.

The earth will have either extreme heat or heavy rainfalls. And that's because the extreme heat (rising of the temperature) will cause heavy rainfalls and that is really harmful not only for our health but **it will cause extinction of some species** and will, as well, have bad effects in the agriculture this will cause **lack of food security and lack of potable water.**

To reduce this serious problem, concrete measures have to be taken. First of all we have to reduce the emission of gases that worse the greenhouse effect. To achieve that **we should improve the efficiency of technologies using fossils fuels.**

By doing that, gases will still be released, but we will reduce their effect. Another means of achieving the objective of the climate change convention is to compensate the emission of greenhouse gases by forest programmes that absorb CO<sub>2</sub>. But changes should not only be made by scientists but by all of us. Angelique Bathwaite affirms that every person could do something to change the situation. In our every day life we are emitting a lot of gases. Even recycling is going to avoid the burning of the garbage that is releasing greenhouse gases.

## Too bad – tourism



Alex Titcombe with Mabel Sanabria

*Alex Titcombe (Director of Product Development and operations):*

*“Caribbean is the most tourism-dependent region in the world. It always was a worldwide destination of sea, sand and sun. Good environmental management makes good business”.*

### ***The beneficial effects of tourism:***

In the Bahamas the first economic activity is tourism.

With tourists, the islands the population grows, representing a lot of people to host in hotels. So local's promoters, politicians and decision makers decide to build hotels complex, with big restaurants, shops, etc.

For the tourists it's a good way to spend money, it's also a good way for locals people to get a job as said Penelope Hynam from the CCA (Caribbean Conservation Association). The problem is that tourists are a good for economy, but not always for the environment.



### ***The consequences of tourism:***

The first thing you have to think about all the resources tourist need: You have to provide fresh water, and those islands that don't have river need desalination plants, which transform seawater into fresh and clean water.

Moreover, in the Bahamas you've got coral reefs, which are necessary to sea life and it's also with the corals that you've got a peaceful ocean. So no one should cut a coral.

To build all those hotels, politicians, promoters, etc. have to make space, so they destroy the natural environment, and turns it in a big spending money place. Beaches are reshaped, changed into luxury places; the nearby forests are changed into garden, all around hotels be changed into a big commercial place.

Tourists not only consume water. They also waste it, **“it has been proved that a tourist waste 3 time more water than a regional habitant”** like as said Earlston Mc Phee, from the Ministry of Tourism



*Nelson Andrade Colmenares (United Nations Environmental Programme): “One tourist uses three times more water than one resident person. (...) Imagine the impact in the generation of water sewage and in the generation of garbage as well”.*

## The Mangroves

***Mangroves are forests growing between the sea and the land. They are home for many of birds, fish and plants.***

***Where did we find them?***

We visited the mangroves in the Lucaya National Park, with Ricky Johnson, who is a biologist and also a kayak instructor, not to mention that he is one of the two bird experts on the whole island. We were also accompanied by Nicolas Nutall, who works for B.R.E.E.F. (Bahamas Reef Environmental Education Foundation). They showed us the mangroves, that we visited



sailing in kayaks, and told us about the biodiversity of this environment.



***Left : the YRE hiking through the mangroves***

The mangroves are constituted by trees named mangroves as well. There are 3 different sort of mangroves.

- You've can fin the red which are considered as land builder because they grow in the sea. Ricky told us that when

it's raining in the mangrove,



the acid rain reveals the fantastic red colour. “Unfortunately”, the sun was shining, but none the less, we could still see the red colour in the brackish water. An interesting fact is, the mangroves grow in brackish water – that is fresh and saltwater mixed together. As these swash lands are in between regular streams

and the ocean, the saltwater will inevitably lie under the fresh water, as it has a heavier density. The result is that the water becomes a bit unclear. The fish that live in these waters learn to adapt to the mixture (photo right). We found several fish, amongst these the snapper and the grouper.



The red mangrove protects the shoreline against erosion, caused by the sea.

- The white and the black mangrove are found preferably on land. Their roots grow vertically out of the ground, so they're protected from erosion and runoff from the landside when it's raining. The vertical roots are an adaptation to the hard soil. Since



the roots can't get oxygen in, they grow out of the ground. A lot of birds take their residences on the dense branches.

***How can they survive in salt water?***

Each mangrove have his own way to reject the salt. The red, secretes salt through the prop roots and into

the water.

The black and white mangrove ejects the salt by the leaves. As the saltwater evaporates, you can see the salt left on all the leaves. We can confirm, we tasted it!

## 10 GUIDELINES TO HELP

1. Recycle your garbage
2. Don't use too much water
3. Walk and ride your bike instead of driving
4. Don't generate too much waste
5. Run dishwasher and washing machines with full loads
6. Start using and stop over using
7. Use a compost in your garden
8. Use low toxic household products
9. Buy locally grown products (transports is source of global warming)
10. Never put money before nature

## The conclusion of our mission

*“Don't harm nature, nature won't harm you”*

During our mission, we've learned a lot about the environment in the Caribbean and the impact of climate change. Tourism, global warming and sewage have a huge impact on ecosystems in the Caribbean.

Coastal and ocean areas can be managed sustainable for the benefit of current and future generations. But only if united efforts can be made by national governments and the international community, acting together and working towards a common set of objectives.

If we don't start spreading the message as soon as possible, educating people, influencing politicians and reducing global warming, we will soon find the Caribbean region in a horrific state.

We, three Young reporters for the Environment, have learned how big was the impact of humans on such wonderful natural ecosystems like coral reefs.

*“It is important that we start educating now”*

### **By**

Danielle Heaf (Denmark) – 17 years old

Ionnis Balamotis – 15 years old

Lauri Lamy (France) - 17 years old

## **Useful web sites:**

UNEP: [www.uneptie.org](http://www.uneptie.org)

UNEP: [www.ceo-unesp.org](http://www.ceo-unesp.org)

People and the planet: [www.peopleandtheplanet.net](http://www.peopleandtheplanet.net)

Reef Check: [www.reefcheck.org](http://www.reefcheck.org)

Blue flag: [www.blueflag.org](http://www.blueflag.org)

The Danish Outdoor Council (in Danish): [www.friluftsradet.dk](http://www.friluftsradet.dk)

Climate: [www.pewclimate.org](http://www.pewclimate.org)

YRE: [www.youngreporters.org](http://www.youngreporters.org)

CCA: [www.ccanet.net](http://www.ccanet.net)

CCA: [www.caribbeanconservation.org](http://www.caribbeanconservation.org)

ICRI: [www.icriforum.org](http://www.icriforum.org)