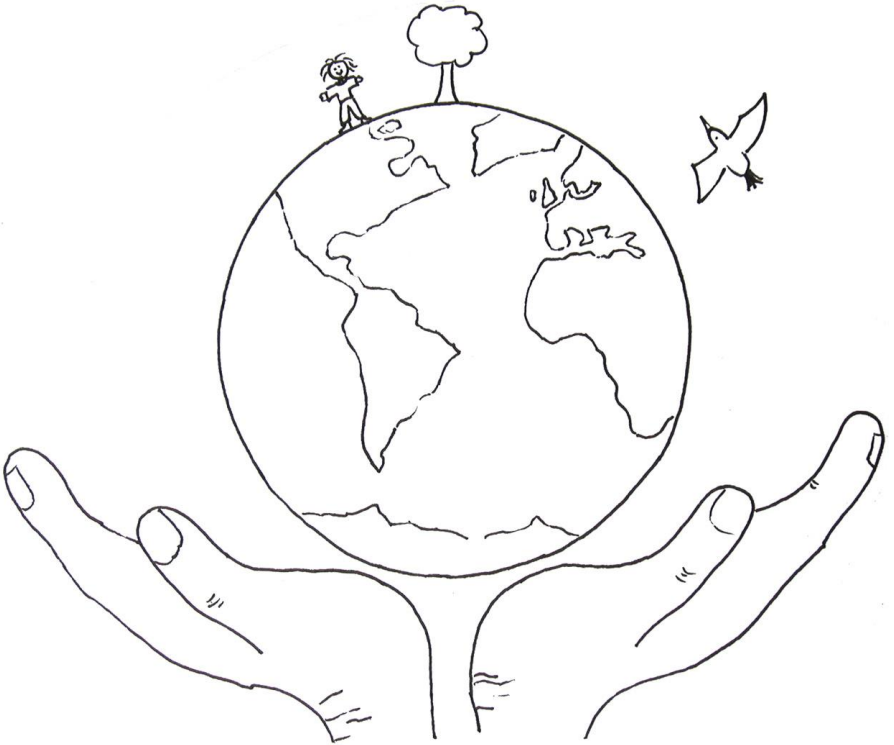


Bioregional Education - Theme 1:

# Bioregionalism



**Planet Drum Foundation**  
"Working for our Future"

# Welcome

Hello and welcome to Bioregionalism class. We're in a new year of this environmental education program. Among the modern technology that we're using these days are cell phones, the internet and mp3's. Now if you want to see if a friend can come out to play, you send a message from your phone. In the past, you would have walked over to his or her house. Obviously it is faster to write a message on your cell phone than to walk across town, but what other changes result from using this technology?

Since you don't leave your house, you miss seeing other people on the street. You don't see the trees that are growing all around you, or the birds that are flying above you. You don't take walks for exercise nor do you breathe in the fresh air of your bioregion. So we can see that the new technologies come with unexpected changes, and sometimes we don't notice how they affect our lives.

What new technologies do we use these days and how has your life changed by using them? What kinds of technology would you like to have? What other kinds of changes will other new technology bring?

What does this have to do with nature and the environment? Nature has its own pace and these days we are moving much faster than it is. We need to turn off the TV, the car, the microwave and take off our headphones for a second to appreciate the nature that is all around us.

Although it helps to have a cell phone to call your parents and tell them you're going to be at the beach for another hour with your friends, don't let that device distract you from your surroundings. Look at the beach, the water, the crabs, the rocks— they are all part of the circle of life. You feel your life might end if you lose your cell phone, but without trees to produce oxygen how are we going to breathe? We're not going to learn about nature and its importance if we always travel in motorcycles or cars and surround ourselves with an artificial world.

This generation has inherited a polluted world where it's the norm to be very wasteful. We all breathe polluted air, swim in contaminated rivers, and it's not our fault that it is this way. Ask your grandparents what nature looked like 50 or more years ago to hear their perspective. However, we are also fortunate that now there are people around the world who are becoming more aware of these problems and want to make changes.

In Ecuador and other developing countries there are people who say that the majority of pollution in the world comes from the developed countries. They say that it is not their responsibility to find solutions for environmental problems and that people here don't have to preoccupy themselves with contamination or waste.

The truth is that developed countries do produce the majority of the contamination that affects the rest of the world, and one day it's possible that they will take responsibility to clean up the disasters and environmental exploitations they created. But this does not mean that Ecuador, or Bahía de Caráquez should not be concerned about their environment.

More importantly, the solutions needed in Bahía will be different from those in the rest of Ecuador and in other countries. We need to come up with our own solutions so that we can live in a more sustainable way.

Start to think inside your bioregion. What are the things that you buy and consume that come from outside of your bioregion? Which are the things that come from within your bioregion? You need to become an example for others of how to live healthy lifestyles. We all need to look for solutions to the environmental problems in our particular bioregion. If everyone focuses on taking care of their part of the planet, we will begin to find solutions to the environmental problems of the whole world. This book will help you along this route... Enjoy it!

~ Clay Plager-Unger  
Eco-Ecuador Project Manager,

# Planet Drum Foundation



## **Introduction:**

A bioregion is a geographic area defined by an interconnected system of various natural characteristics. We can divide these characteristics into five categories

- 1. Climate**
- 2. Landscape**
- 3. Soil**
- 4. Watersheds**
- 5. Native Plants and Animals  
(Flora and Fauna)**

A bioregion has unique characteristics with which the humans who live there can establish an equilibrium. There are differences between one region and another on the planet, so many different bioregions exist. in the world. Similarly the people inhabiting these different bioregions have particular and distinct relationships with the nature that surrounds them.

If the people all around the world lived with awareness of the specific characteristics of their own bioregion, everyone would create a globally harmonious relationship with nature. Humans have to sustain and support the health of their bioregions, because their own lives depend upon them.

Take what's being done in the city of Bahía de Caráquez. For Bahía to truly be an eco-city it's not only necessary for it to be clean and have green places; it is necessary for the population to form a new way of thinking. For example, rather than having to deal with cleaning up the trash from the streets, people can prevent

the streets from becoming dirty in the first place by not littering and throwing trash into them.

**We have to be environmentally conscious.**



# **The Characteristics of a Bioregion:**

## **1. Climate**

- Identify the winter and summer months in the Bahía region:

Winter: \_\_\_\_\_

Summer: \_\_\_\_\_

- What is the weather like (temperature, humidity, sun exposure, etc.) in winter and in summer?

Winter: \_\_\_\_\_

Summer: \_\_\_\_\_

## **2. Landscape**

- What landscapes exist in Bahía? Are there mountains, hills, valleys, or plains?

\_\_\_\_\_  
\_\_\_\_\_

- How do you think the terrain was formed (is it because of active volcanoes, earthquakes, rain, etc.)?

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### 3. Soil

- What soils are predominant in the region of Bahía? Describe their composition and fertility.

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- Soil is a resource that humans use to satisfy their needs. Explain how it is utilized in the following:

➤ Agriculture: \_\_\_\_\_

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➤ Cattle raising: \_\_\_\_\_

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➤ Forestry: \_\_\_\_\_

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- What characteristics should soil have for plants to grow healthily?

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- Soil needs to be used properly in order to avoid depletion. List three recommendations to conserve fertile soils:

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

\_\_\_\_\_

#### **4. Watersheds**

- How many sources of water are there in Bahía?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- What do you use water for?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

#### **5. Native Plants and Animals (Flora and Fauna)**

- What is the difference between native, migratory and introduced species?

Native: \_\_\_\_\_

Migratory: \_\_\_\_\_

Introduced: \_\_\_\_\_



- List three species of plants and three species of animal that are **native** to the bioregion of Bahia:

<u>Plants</u>	<u>Animals</u>
1.	1.
2.	2.
3.	3.

- What type of trees can you find in the Dry Tropical Forest? What types can you find along river banks?

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- What kinds of food do birds eat? List three.

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- What changes do plants undergo with the change in season from winter to summer?

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## **An Article by Peter Berg, Founder of Planet Drum:**

*This “article” is the first half of an essay titled Bioregionalism (Defined and updated 2002) by Peter*

*Berg. The examples specific to Bahia de Caraquez were inserted by the teachers who created this manual. They based their examples on another Berg essay, The Bioregional Approach for Making Sustainable Cities, which points out that a bioregional outlook considers sustainability for both natural systems and human communities to create local self-reliance. The two complete essays by Berg are included in the book's Appendix and they are also available online at: <https://pdrum23.wpengine.com/peter-bergs-essays-dispatches-presentations-tributes-and-notes-on-art/>*

The catastrophic effects on Earth's biosphere due to human activities since the inception of the industrial era have become imperiling to all life. A transformation of fundamental aspects of consciousness is urgently required to halt and reverse this destructive process. Conservation of resources and environmentalism alone are not adequate to the task. The concept of a bioregion as the basic location where people live, and the practice of reinhabitation of that life-place by its residents, are necessary to rejoin human beings into the overall web of life. Harmonizing with the natural systems of each bioregion is a necessary step toward preserving the whole biosphere.

A bioregion is defined in terms of the unique overall pattern of natural characteristics that are found in a specific place. The main features are generally found throughout a continuous geographic terrain and include a particular climate, local aspects of seasons, landforms, watersheds, soils, and native plants and animals. People are also counted as an integral aspect of a place's life, as can be seen in the ecologically adaptive cultures of early inhabitants, and in the activities of present day

reinhabitants who attempt to harmonize in a sustainable way with the place where they live.

Because it is a cultural idea, the description of a specific bioregion is drawn using information from not only the natural sciences but also many other sources. It is a geographic terrain and a terrain of consciousness. Anthropological studies, historical accounts, social developments, customs, traditions, and arts can all play a part. Bioregionalism utilizes them to accomplish three main goals:

- 1) restore and maintain local natural systems;
- 2) practice sustainable ways to satisfy basic human needs such as food, water, energy, housing, and materials;
- 3) support the work of reinhabitation.

The latter is accomplished through proactive projects, employment and education, as well as by engaging in protests against the destruction of natural elements in a life-place.

Bioregional goals play out in a spectrum of different ways for different places. In Bahía de Caráquez, for example, the mangrove forests were devastated by the shrimp farm business. This industry directly interfered with the mangrove ecosystems and as a result, many birds lost their habitat.

The mangrove ecosystem is especially important because the mangroves themselves serve to clean pollution from the water and they provide habitat to numerous animals in the estuary, which is where a river meets the ocean. In Bahía there is an understanding that it is necessary to restore the depleted mangrove population that was compromised by the shrimp industry.

The shrimp farmers have to learn how to preserve and restore mangroves while at the same time running their business. For example, the first organic shrimp farms, planted mangrove trees in the middle and along the edges of the shrimp ponds. They are proof that it is possible to run a business without over-exploiting the environment.

During 1997 and 1998, Bahía experienced an El Niño Phenomenon and shortly thereafter, a strong earthquake on August 4th, 1998. In the aftermath of the high levels of destruction that resulted from these combined natural disasters, a group of local residents planned the creation of Bahía Ecological City.

Other non-government organizations in Bahía, such as Stuarium Foundation, supported the process and the Government of Sucre County drafted an official declaration of Bahía as an Ecological city on February 23rd, 1999. Now Bahía de Caráquez coordinates its development with the notion of an Ecological City in mind.

An Ecological City is an urban ecosystem organized so that human activities are sustainable and integrated into the surrounding environment in order to maximize natural resources and without causing negative impacts in either the present or future.

Some of the ways this is achieved are through:

1. Waste recycling programs
2. Waste water treatment and reutilization
3. Parks and nature reserves for recreation

4. Local environmental education programs
5. Creating alternative energy systems
6. Reducing energy consumption
7. Promoting non-polluting forms of transportation





# Bahía Ecological City Projects:



- “Bahía Recycles” - Separation of the organic and non-organic waste in houses, the streets and in the market.
- Eco-Paper (Eco-Papel) and other workshops for recycling used paper to make new products.
- Revegetation of 14 hectares of urban hillsides in four different neighborhoods.
- Revegetation and maintenance of a walking trail in the Maria Auxiliadora neighborhood (The Forest Amidst the Ruins public park)
- Mangrove reforestation of Heart Island (Isla Corazon)
- Río Muchacho Organic Farm
- Río Muchacho Ecological School
- Fanca Ecological Club

- Cerro Seco Nature Reserve
- Saiananda Park.
- “Eco-Schools” program of environmental Education.
- Environmental Participatory Planning of Canton Sucre.
- Bio-Corridor “El Bálsamo.”



## **Other Thoughts on Bioregionalism:**

There is a strong correlation between a biological perspective and ecological sustainability:

Professionals of ecological restoration understand the importance of local cultures in order to achieve healthy native plant and animal populations.

Promoters of urban ecology use bioregions to locate redesigned cities in a broad and natural context.

Practitioners of Permaculture and organic agriculture use cultivation techniques that promote healthy soil, watersheds and native species.

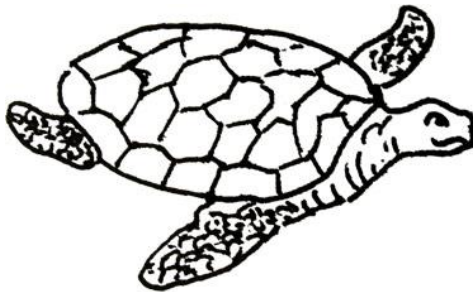
Painters, poets and theater groups and other artists have used themes of bioregionalism in pieces of art. Primary school teachers introduce the concepts of bioregionalism and universities offer degrees based upon it.

Followers of “Deep Ecology” say that bioregionalism is a social manifestation of their Biocentric philosophy.

There are traditional environmental groups and conservation groups that have adapted a system of “ecoregion” that focusses on the specific problems within their life places.

Every bioregionalist is primarily focused on their own local area. There are a number of opportunities and projects available to those wanting to change the conditions of daily life for the benefit of local sustainability.

For example, there are many reforestation projects and the construction of green areas within cities that are concentrated close to schools and the poorest neighborhoods that are managed by the residents of previously devastated areas.







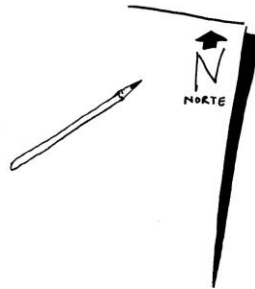
## Activity – A Bioregional Map:

Let's draw a map detailing the bioregion of Bahía de Caráquez, as outlined below. Be sure to include the five specific characteristics of a bioregion: **weather, terrain, soil, water, flora and fauna.**

- I. Start by drawing the terrain to give form to the map. Where is there water, earth, hills and valleys?



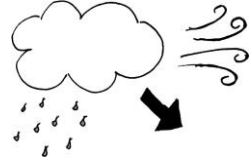
- II. Identify the cardinal points. Draw a compass in the direction of North, and identify it with an N.



- III. What are the largest natural characteristics? Where are the forests and other ecosystems?

IV. Where are the largest impacts of human beings? Where is Bahía? Where are the houses and buildings? Where is there agriculture? What about other impacts?

V. Include the weather. From what direction do the clouds and rain come from? From what cardinal points does the sun rise and set?



VI. Now draw some of the animals, plants, and trees in the places where they live.



VII. Finally, draw where some of the environmental projects that the people in Bahía are working on. Remember the list of environmental projects in Bahía we previously discussed!





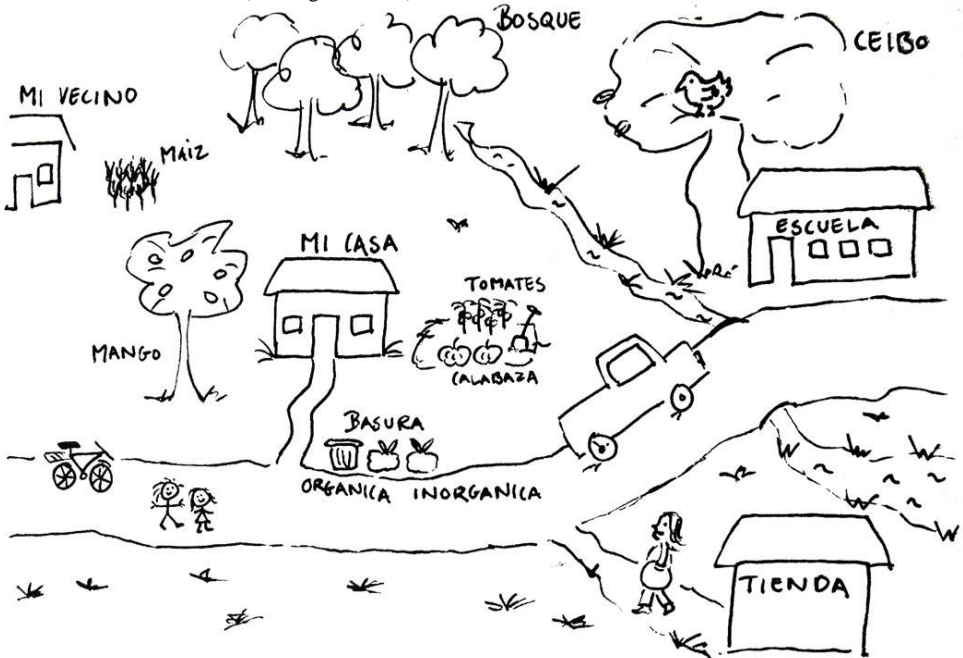
# Homework:

Now let's think of the relationship between humans and the natural world in their communities. Where do you see plants? On patios, orchards, gardens or parks? Where do you find pollution? What types of animals live in your community? Where does water come from and go? Do you think that people are conserving the environment? Why?

Draw a map of your community. Don't forget about the natural components and the human impacts. Include rivers, hills, houses, streets, farms, plants, trash, electric cables, activities (football, fishing) etc.

Here is an example:

- |   |                               |                               |
|---|-------------------------------|-------------------------------|
| <i>Basura</i> -Garbage                        | <i>Escuela</i> -School        | <i>Organica</i> -Organic      |
| <i>Bosque</i> -Forest                         | <i>Inorganica</i> -Nonorganic | <i>Tienda</i> -Store          |
| <i>Calabaza</i> -Squash                       | <i>Maiz</i> -Corn             | <i>Tomates</i> -Tomatoes      |
| <i>Mi Casa</i> -My House                      | <i>Mango</i> -Mango Tree      | <i>Mi Vecino</i> -My Neighbor |
| <i>Ceibo</i> -Ceibo Tree (an indigenous tree) |                               |                               |



- What are the environmental characteristics that define your neighborhood?

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- What are some of the greatest human impacts on nature?

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- Do you know someone who has an orchard or garden? What do they grow?

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- What domestic or wild animals live around you?

Domesticated: \_\_\_\_\_

Wild: \_\_\_\_\_

- Are there many trees in your community? Are they native species? Which species are there?

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- Do you see trash and litter in your community? Where?

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# Steps to Protect your Bioregion:

There are various ways to live in harmony with the environment, and there are also lots of ways to live at odds with the environment. If we live in conflict with the environment we will destroy the weather, soil, watersheds, flora and fauna. We will also destroy our bioregions and the resources on which our life depends. This is why we must protect nature—to protect our future.

Below we will talk in greater detail about some important points of an Eco-city that Peter Berg listed in his article. While you read this, think about how these points can be related to Bahía in order to answer the questions that follow.

## 1. Food

It is a good practice to eat foods that arrives directly from the farms to the markets. Locally produced foods are fresher and more delicious. Buying locally produced foods also supports the local economy by helping farmers in the area. They often also cost less and produce less waste.

Highly processed food (such as junk food) has more fat, chemicals and preservatives in it. It also requires more energy to produce and package it and transport it to market. Imported food is similar as it requires transportation and therefore produces more pollution. As a result, they are more expensive for you and the

environment. Therefore, it is healthier for you and your bioregion to eat locally grown foods.

Food that is produced without chemicals is called “organic” or “organically grown.” A lot of times, farms use chemicals to kill insects and other plagues that can damage crops. But these chemicals also get into the food as well as the ground and water, polluting you and the ecosystems. It’s not possible to always avoid these foods, but we can carefully wash the fruits and vegetables that we buy to remove chemical residues. Also we can educate people about the harm that these chemicals produce in our bodies and in nature. Alternatively, we can enjoy the food that we know is organically grown and healthier as much as possible, such as crops that are grown in local gardens without pesticides and collected from wild trees.

## 2. Water

Are the rivers and the ocean in your bioregion clean? What can be done to preserve them?

Most of the year in Bahía there are water shortages. As a result, it is very important to conserve as much water as possible. One way to start is to collect and utilize rainwater. Another way is to reuse water in your house. Collect water from washing your hands, clothes or dishes to flush the toilet or, after filtering, water plants.

## 3. Waste Disposal

All nonorganic products are manufactured in one form or another. These processes use energy and often create pollution that affects the planet. By reducing consumption of material goods, we can reduce pollution.

Everything that you throw away usually ends up in a landfill that will pollute the soil in that area for thousands of years. If we keep going along this path, we might run out of clean areas to be able to grow food.

All waste should be recycled whenever possible. For example, organic waste can be used to make compost. Metals, plastics and glass can be recycled and then remanufactured to make new products.

Think about a plastic bottle. After its first use, it can be used again or melted down to be made into something else. By recycling or reusing it, it isn't necessary to create new plastic so we are saving energy and helping the environment.

#### 4. Waste Water

It's important to treat waste water in order to control harmful bacteria. By treating waste water the risk of spreading disease in local ecosystems is reduced.

Toilets represent human civilization "progress." But imagine the amount of water that is used to flush all of the toilets in the world. The used water from toilets often goes directly into rivers and oceans where it turns into a form of pollution. It is possible to process human waste to make soil. This would be one alternative to wasting lots of water to flush toilets.

## 5. Energy

The less electricity and gas that we use, the better. The majority of the electricity that we consume is produced in electrical plants where coal, petroleum or natural gas is burned to produce it. This process damages the atmosphere and the environment. Electricity from renewable sources, such as water, wind and solar does not contaminate the environment.

The sun can be used to heat water – with a large black tube on your deck or terrace. The sunlight heats the tube and warms the water. A tank can also be used to heat water like this.

## 6. Materials and Production

Instead of simply putting discarded materials in the garbage, it is possible for local artists and builders to transform some of this waste into new products with new functions. For example, “Eco-Papel” in Bahía takes the discarded paper from offices and homes around town and processes it to make recycled paper products.

Well managed resources, such as groves for harvesting trees or bamboo for lumber can provide unlimited resources for human beings without negatively impacting the environment. This is a way to not over-exploit nature.



## 7. Transportation

All of the vehicles that run on fossil fuels (such as gasoline or diesel engine motorcycles, trucks and cars) are harmful for the environment. The gases released may contain lead and other toxic materials which can make people sick and they also cause global warming which impacts the weather. It's important to use these vehicles as little as possible.

If we think about the amount of pollution that each person produces, then buses pollute much less than cars. But riding your bike or taking an eco-tricycle doesn't produce any pollution at all.

Some countries are already designing alternatives to petroleum based fuels. Prototypes exist for automobiles that run on electricity, alcohol, natural gas and hydrogen. Large scale production of these vehicles could be part of a solution to the problem of transportation generating pollution.

The best option for reducing pollution from transportation immediately is to take advantage of technologies that we already have. In Bahía Eco-taxi tricycles offer a way of transporting people and goods without any pollution.

## 8. Education and Culture

It's very important for us to recognize that nature is a part of our culture. Or to think about it differently, recognize that our culture is a part of nature.

It is essential to understand our surroundings and both how they impact us and how we impact them. Environmental education can begin in pre-school and go all the way through university. Public bulletins about how to care for the environment can raise general awareness about problems and solutions. Festivals to celebrate nature unite people around a common cause and can be organized by public and private institutions.

## 9. Gardens and Open Spaces

By using native species and through careful planning, parks and gardens around a city can be converted into wild ecosystems that benefit surrounding communities. For example, trails can be used to connect parks and gardens located in different neighborhoods. Using local flora provides habitat for local fauna and the ecosystem is strengthened. New habitat for wild animals can exist simultaneously with the development of human activities within an urban area.

## 10. Sustainable Planning

In rhythm with the growth and changes of a city, it's important to try and put into practice the ideas of sustainable development. For example, after the El Niño phenomenon, there was an area of the city that was destroyed by mudslides. Planet Drum helped to transform this space into a city park, the "Forest Amidst the Ruins." Now this area is a green city space that can be used as a center for environmental education and recreation. It is

the perfect example of recovering space for sustainable usage.

Bahía was declared an Ecological City and as a result has undergone a variety of changes, but there is still a lot to do. For example, there is a program for recycling, but it still needs more support to function efficiently. In order for Bahía to function as an Ecological City, the politicians, architects and civil engineers who together plan and develop the city, need to take into account all kinds of ideas about sustainability

In order to survive as a species we need to manage the resources of the planet in a sustainable fashion. Often we forget that some resources are non-renewable and they won't last forever. We need to take care of our levels of consumption to ensure that our environmental impact is as small as possible. We need to be conscious of our actions and respect the environment. Whenever possible we need to replace what we have taken. If we cut a tree from the forest, we should plant and care for many more to replace it. Sustainability means survival.



## Work in Groups:

Form study groups to answer the following questions. Each group will have a topic of one of the following things vital to life: food, water, energy, household, material goods, waste disposal, culture, or transportation. Remember the points from the article by Peter Berg. After you answer the questions, each group will present their work and share observations with the class.

### 1. Food:

- Where does the food you consume at home come from?

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- Of the foods you eat, which come in plastic packaging?

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- What types of organic food do you consume?

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### 2. Water:

- Where does the water you use at home come from?

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- What do you use water for? When do you use it? Where do you utilize water?

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- Write down some examples of how water in the waterways and canals of the city can become contaminated?

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- What methods do you know for conserving water?

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- Why is it important to conserve water?

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- How can you collect water from the rain?

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### 3. Energy:

- What kinds of energy do you use? What are the origins of this energy?

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- What things do you use that consume gasoline?

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- What products do you use that need electricity?

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- Give some examples of forms of renewable energy:

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- How can you save energy?

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#### 4. Household:

- What materials is your house made from? Are they sustainable?

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- Where do these materials come from? How do they arrive?

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- What do you do to save energy in your house?

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- Do you have a family garden? What do you grow?

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#### 5. Material Goods:

- List some objects that you have and use at home:

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- What are they made of? Where were they made?

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- What are the environmental impacts of these objects?

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- Do you think you'll be happier if you get more things?

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#### 6. Waste Disposal:

- What do you throw into the trash?

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- Where does the trash go?

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- Is what you're throwing away recyclable? Could you recycle it or use it again for something new?

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- Do you know anyone who makes compost?

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- How can we create less trash?

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## 7. Culture:

- What are your hobbies? Examples: football, basketball, listen to music, read...

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- How do these impact the environment?

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- What do your parents do? How do their jobs effect the environment?

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- Is nature a part of your culture?

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### 8. Transportation:

- What forms of transportation exist in Bahía?

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- What effects do these have on the environment?

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- Do you buy products that come from far away? How do they get to you?

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- How can we limit the damages to the environment with these ways of transportation?

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## Practice – A Map:

Take a walk around your bioregion and take the map you just drew with you. Compare the map with what you observe. Try to see everything you drew onto the map. landscapes, watersheds, flora, fauna, soil, weather...

- What kinds of animals/plants/soil do you see?

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- Can you find positive/negative impacts from humans on the environment?

Positive: \_\_\_\_\_  
\_\_\_\_\_

Negative: \_\_\_\_\_  
\_\_\_\_\_

- Can you find ways in which the weather affects the environment?

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- Can you find any evidence left by the El Niño phenomenon or the earthquake in 1998?

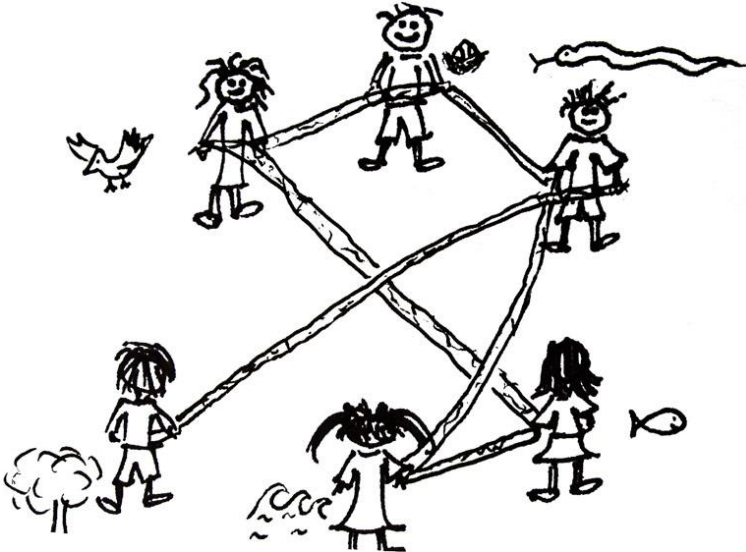
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## A Game – The Web

This game will teach you the interconnectedness of everyone in your community with nature. It demonstrates how air, rocks, plants, and animals work together in the web of life.



The players make a circle. A leader goes in the middle with a ball of string. The leader asks, “Who can name a plant native to this region?” The leader gives the end of the string to whomever answers first. Now the leader must ask how this plant is related to another part of the web of life. For example, which animal eats that plant? Whoever answers next gets to hold onto the string a little farther down. The leader keeps asking questions about how each plant or animal is related and the players in the circle keep answering. Each player in the circle who gives an answer gets to hold onto part of the string until everyone is connected by it. Other examples of questions could be: Where does this animal live? What

does it eat? Does it have predators? What other animals use this plant? The questions can include other characteristics of the bioregion such as soil, water, etc.

After everyone in the circle is holding onto part of the string, the second part of the game begins. To show the importance of each piece of the web, the leader makes a change that impacts one of the players. For example, if a tree is cut, that person has to fall down and pulls the string with them. Then, each person who is connected to the tree feels the string pull. And all of the people who are connected to those people also feel the string pull and the group can see that if there is one small change to the environment, everything in that environment is impacted.

