Biomes and Biodiversity: Brazil

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Introduction:

When we think of Brazil the first thing that typically comes to mind is soccer, and the Amazon. However, there is much more to Brazil than just these few things, often we forget that just like other countries, Brazil has a variety of different biomes and environmental issues that go along with them. Brazil is a very large country and has different climates, biomes, and ecosystems throughout. Including the Marine and Coastal biome, Brazil is actually made up of seven different biomes; all of which are just as important as the famous Amazon Rainforest and six out of seven will be briefly discussed.

Background:

Brazil is the largest country in South America covering half of the continent and touches every country except for Chile and Ecuador. The Atlantic Ocean borders its eastern half and much of the north and northwest is taken up by the Amazon and has a tropical humid climate. Brazil's largest city is Sao Paulo which is located in the south eastern part of the country and is mainly part of the Atlantic Forest biome. (Cabral, P, 1982, pp. 12). Brazils Capital is Brasilia which was a city that was created from scratch in 1960 replacing the original capital of Rio De Janeiro.

Brasilia is located in the state or Goias which is a part of the Cerrado biome compared to Rio De Janeiro which is a part of the Atlantic Forest biome. The most western part of the country in the state of Mato Grosso the Pantanal biome is located where as the north eastern part of the country is located in the Caatinga biome and the southern tip of Brazil is located in the Pampa biome.

http://www.braziltourstravel.com/biomes.htm



The Amazon (Tropical Rainforest)

The famous Amazon Rainforest is part of a tropical rainforest and covers 2,300,000 square miles and most of the northern part of Brazil. It holds the largest river basin in the world that stretches 1,200 miles long and in some areas reaches 200 miles wide (Editors of Encyclopedia Britannica, 2014). The Amazon is home to some of the rarest and most endangered species in the world, about 100-300 species per every two and a half acres, along with millions of different species of plants, animals, and insects (Michael G, 2001). The forest is mainly dry for half of the year and is flooded from rainwaters in the other half. During the rainy season the forest floods and many fish from the river end up swimming among the canopies of the trees. Tropical Rainforests are classified as areas with tall trees in areas of year round warmth with an average of 50 to 260 inches of rain per year (Michael G, 2001). Most rainforests are located near the equator because of the high moisture and temperature associated with it. Rainforest temperatures are typically between 68 and 93 degrees Fahrenheit and between 77-88% humidity. Rainforests cover less than 6% of the earth's surface but produce 40% of the world's oxygen (Michael G, 2001). Rainforests are habitat to many species that only live in that type of habitat and have many plants that are used for medicinal purposes. The Amazon like some other rainforests is a protected area in hopes to

preserve the forest and all of the biodiversity it provides and protect it from some of the environmental issues that are occurring there.

The rainforests face many threats, the most commonly known is deforestation. Many groups of people illegally log trees from the forests because of their precious wood and destroy habitats in the process. Many species that only live in these types of trees are being forced to find other homes in areas unsuitable for them. Farmers also clear the land for more farmland, however the soil in the rainforest is very poor and most of the nutrients and water is held inside the biomass of the tree. The farmers may get a year or so out of the land but after that they need to find new land and once again cut down or burn more trees without replacing them. Another issue that the Amazon in particular faces is illegal gold panning, people will illegally dig their own mines in search of gold and cause erosion that clogs the streams and damages the water. Mercury contamination is a big part of this issue because it is used to fix the gold dust found in the dirt. However, once the mercury has fixed the gold, approximately 150 liters daily is dumped right back into the streams of run-off water which carries it through the forest and dirt into the river contaminating everything in its path. (New Atlantis Full Documentaries, 2013). This poisons habitat, food, and water for many of the species living there and kills many of the thousands of species of fish in the river. Even

though rainforests are typically protected areas, they are still facing many issues and have a while to go before becoming a truly safe and stable habitat for the species that call it their home.

Mata Atlantica (Tropical Deciduous)

The Mata Atlantica forest covers 1,481,946 square kilometers and accounts for 17.4% of Brazils land (Hance, 2010). This type of forest is distributed among many states and regions throughout Brazil's territory and just like the tropical rainforests, they are extremely high in biodiversity of plants and animals. The Mata Atlantica forests are highly fragmented and are in can be found in 13 states throughout Brazil. The Mata Atlanica forests has many types of forest in it such as Mangrove forests, Atlantic Dry forests, Atlantic Moist forests, and Semi-Deciduous forests. The average temperature is 22 degrees Celsius and can decrease to 11 degrees Celsius in higher elevations. The average rainfall for this region is about 1.600mm but can reach up to 2.600mm in certain areas (Hance, 2010).

At one time Brazils Atlantic Rainforests covered 330 million acres of land, however 85% of that land has been cleared for agricultural and industrial purpose (The Nature Conservancy, 2008). Most of the land was used to grow sugar cane and coffee however the extreme deforestation

caused many concerns with species and plant endangerments and created erosion and landslide issues along with damage to the water supply in certain areas. With the water supply and loss of habitat in mind, certain areas reacted by replanting the forests in an attempt to restore the original land mass. Rio is a prime example of this where 18.4% of the forest was recovered by 2008 from the starting point of the project in 2000 (Smith, 2013). Rio in particular had a high deforestation rate because of how many favelas are in the area. People would cut down the trees to build their homes up into the mountains outside of the city. However with the loss of trees erosion became a major issue not only to the water supply but for the safety of the residents and their homes as well. Although favelas are not being removed, they are no longer growing very much and the regrowth of trees in the area seems to be improving but not solving the landslide issue.

Caatinga (Tropical Scrub Forest)

The Caatinga is a biome that is specifically unique to Brazil and is the most populated and biologically diverse semi-arid regions. It is located in the northeastern part of the country and covers about 10% of the countries territory. Only 7.8% of the Caatinga is protected but Brazils national goal is to get 10% protected (Caatinga Associacao) it goes through drought for an average of 8 months out of the year and has an

average rainfall between 250 and 1000mm. The average temperature range is 24-26 degrees Celsius and the average height of plant growth is between 25-30m (Da Silva, *Northern South America: South Eastern Brazil*).

The Caatinga biome fauna in particular suffers greatly due to deforestation and human occupation. Because of this many species go extinct and become threatened and concerns for desertification are high. This rare one of a kind biome is fragile and the species are specific to this one area including 148 mammals, 348 birds, 185 fish, 154 reptiles and amphibians, and 5344 species of plant (Caatinga Associacao). All of this makes it extremely important to protect and preserve and find a way for the people living there to create less of an impact on it.

Cerrado (Savanna)

Brazil's Cerrado covers two million square kilometers and approximately 21% of the country. It is the second largest biome in the country, next to the Amazon, and is located between the Amazon, the Pantanal, and the Atlantic Forests and is the largest Savanna in South America (WWF, *Cerrado, The Brazilian Savanna*). The average rainfall in the Cerrado is 800-1600mm per year with an average temperature range of 15-30 degrees Celsius (World Weather Online). Brazils Capital Brasilia is located in the heart of the Cerrado which is also where Some of South

Americas most important rivers, the Amazon, Parana, Paraguai, and Sao Francisco, start and travel through. The Cerrado is also home to many endangered species and 10,000 types of plants, half of which are not found anywhere else in the world. Some of the major threats to the Cerrado is unsustainable agricultural practices and cattle ranching. It is one of the highest exploited areas and also the least protected (WWF, *Cerrado, The Brazilian Savanna*).

Pantanal (Temperate Flooded Grassland)

The Pantanal is one of the world's largest freshwater wetland system. This area is a plain that is located along the northern part of the Paraguay River and becomes extensively flooded during the rainy season (Dr. Maria Tereza Jorge Pádua. *Pantanal.*)Around 80% of the Pantanal is located in two states of Brazil, Matto Gross and Matto Grosso do Sul, most of the rest extends into Bolivia. Because of its flooding, it creates a unique grassy freshwater ecosystem for many thousands of species. The Pantanal creates many sub regions, including terrestrial systems, rivers, standing water, lakes, dry and wet forests, and of course wetland ecosystems. Along with creating a variety of habitat, it also is an area that is safe for flooding because it give flood water a place to go, keeping it out of other residential areas. The Pantanal has a wet season from October to

March and a dry season from April to September. The area has an average rainfall of 10 inches over half of which occurs from January- March and water levels can be up to five meters higher than they are in the dry season (Dr. Maria Tereza Jorge Pádua. *Pantanal.*).

The Pantanal is home to a wide variety of species and a large number of them. Along with thousands of fish, the Pantanal is a very important spot for migratory birds including Ospreys from North America and Flycatchers from the West Andes (Dr. Maria Tereza Jorge Pádua. *Pantanal.*). Also, there are 95 species of mammals that make their home in the Pantanal and 46 of them are threatened or endangered. The Pantanal is one of the most productive ecosystems in the world because of its agricultural, domestic, and industrial uses along with the ability to transport water (Dr. Maria Tereza Jorge Pádua. Pantanal.). It is beneficial to fish, peat, timber and wildlife along with keeping flood waters out of residential areas and providing water for agriculture. Although the Pantanal region itself remains mostly untouched, the watershed is in serious danger. Water pollution, specifically from Mercury used in gold panning, is a major threat to this region along with sewage, garbage and fertilizers from agricultural run off (Dr. Maria Tereza Jorge Pádua. *Pantanal.*). Logging and burning to clear land for agricultural use is another problem which also creates erosion in the area, all of these issues

are caused by improper disposal and unsustainable practices and need to be monitored and fixed if the Pantanal ecosystem is going to survive.

Pampa (Grassland)

The Pampa or Grasslands are large plains of fertile land that cover 300,000 square miles from the Atlantic ocean to the Andes. The average temperature is 18 degrees Celsius with a dry summer with winds that always blow. Many of the species that live there like to burrow in the ground much like the parries of North America and is a very rich grazing area. The plants include cattails, reeds, shrubs, and plants with shallow roots (L. Claire, (2002) *The Pampas*.).

Just like the Pantanal, the Pampas major threat is water pollution due to improper management of pesticides and fertilizers. This issue damages the water supply and all of the plants and animals that use it. This can damage species by causing sickness and death and effect reproductive organs as well (Nunes M., da Silva Wacker F., Costa Silva D., Luz Wallau G., Posser T., Franco L. J. (2015). This contaminated water is being used on plants that we eat or plants that are used for homes for certain animals greatly effecting the entire ecosystem including humans.

Concluding Statement

As you can see, there is a lot more to Brazil than just soccer and the Rainforest. Brazil is a large and ecologically diverse country, made up of many other important biomes and ecosystems that are just as important and need just as much attention and protection in order to maintain a happy medium between humans and the environment.



http://en.wikipedia.org/wiki/File:Flag_of_Brazil.svg

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