

BIOSPHERE

VOLUME 01
2020

Do your part, help
the biosphere.

You are a part of it.

BIOMES

do you know which one
you live in?

MONSOONAL FOREST

the terrestrial filtration
system

DOLPHINS

perceptions on captivity

OCEANS

water breathes





From October 19-24, 2020, Montessori School Bali's Adolescent Program visited the Biosphere Center's facility in North West Bali. Students created this magazine to reiterate learning and to show appreciation. Enjoy.

Biosphere Foundation	4
Monsoonal Forests	6
Dolphins	8
How Trees Give Back	10
How Fish help Us Survive	13
Coral Reefs	16
Biomes	20

Biosphere Foundation

A hidden gem for learning and changing the world in the West Bali National Park...

By: Rocco Klim

Biosphere Foundation Team

Recently the Lotus Class from Montessori School Bali went on a camp trip for six days to the Biosphere Foundation in Bali. There are a lot of amazing people in the Biosphere Foundation. One of the pioneers was Sally Silverstone, who passed away shortly before we were about to go to camp. The staff thought that she would want them to continue the program so we proceeded with our plan and honoured her. Sally was a really amazing person who helped local kids learn English and without her, the Biosphere Foundation, would not have been possible. Sally Silverstone, Abigail Alling and Van Thillo; all played a major role in helping the Biosphere in Bali and all stayed in the original Biosphere II project in Arizona for two years from 1991 to 1993. That was the start of everything.



Sally Silverstone



Biosphere II

Biosphere II was a massive glass dome. In the glass dome, there were five different biomes, including a tropical rainforest, a desert, and a savannah, mangroves and an ocean complete with a coral reef. Van, Abigail and Sally spent two years in the Biosphere II for research, and for more understanding of our planet, as well as whether humans would survive on Mars.

The Biosphere Centre

The Biosphere Foundation's purpose is to educate people about what is going on in our environment and to inspire people to help the environment in Bali and the world. A major thing that Biosphere Centre staff talked about was the health of coral reefs. The main problem was that people stand on the coral which kills it and it gets damaged from boats. When a boat stops they have to put the anchor in the ocean which then lands on the coral reef damaging and sometimes killing it.



What Else Do They Do?

Biosphere Foundation also has a program to teach people about the importance of trees. The problem the Biosphere program was trying to solve is that locals are cutting all the trees down to feed their cows, build things and for fire wood. It would be okay if they were planting a tree every time they cut one down but they are not. Biosphere programs are trying to protect the coral reef and the trees by making education accessible and relevant for locals. .



**BIOSPHERE
FOUNDATION**

Planting Coral Gardens

Pak Ketut Utama is the leader of the planting coral program. The Biosphere Foundation is working on a new method of planting coral. Their method is to find a place with a lot of loose but still living coral fragments then use cement to plant them on the reef. The Biosphere Centre educated us on all the coral and fish we would see while we went snorkelling at Menjangan island and we actually saw the gardens he created.



NRCS

Recently our class watched a documentary on Netflix called Kiss the Ground. It's a great documentary that explains how soil is really important and might be able to save the world by storing carbon. During the documentary they explained something about an organization called NRCS (Natural Resources Conservation Service) which is an agency in the United States Department of Agriculture. The NRCS has a lot of similarities to the Biosphere Foundation because they offer education programmes around the importance of soil. It also provides assistance to farmers and landowners on agriculture. It is great to see global initiatives caring about the soil. This shows that humans are starting to catch on to the importance of soil health because after all, healthy soil equals healthy humans.



Funding

The Biosphere Foundation would not be possible without sponsors and supporters. If you want to donate to the Biosphere Foundation, and help save the trees in North West Bali, follow the link below.

<https://biospherefoundation.org/donate-2/>

Sources:
Biosphere Foundation 2020. Retrieved October/27/2020.
<https://biospherefoundation.org>

Tickell,R.(Rebecca Harrel Tickell).(2020)Kiss the Ground.Big Picture Ranch

MONSOON FOREST

BY RYOMA TAKAMA

If you were to ask what is one of the most beneficial natural types of forest, what would you answer? Most likely you would say temperate, tropical, and boreal but have you heard of a monsoonal forest? They are magical and amusing places with many benefits.

Monsoon forest

A few weeks ago students from Montessori School Bali's Adolescent Programme went on a camping trip in Buleleng which is approximately 3 hours West of our school facility. Eight amazing local Indonesian students also attended. One of my most exciting moments during the camp was on the second day when we visited the monsoonal forest, where we experienced the amazing natural connection of animals, trees and humans. Hiking through it really brought an adoration of nature. There are vines inside the monsoon forest that were strong enough to hold people; unreal looking trees that we had never seen before; black monkeys which are said to be a very rare monkey species in the area, and trees that were extremely beautiful and tall.

Monsoonal Forest Benefit To The World

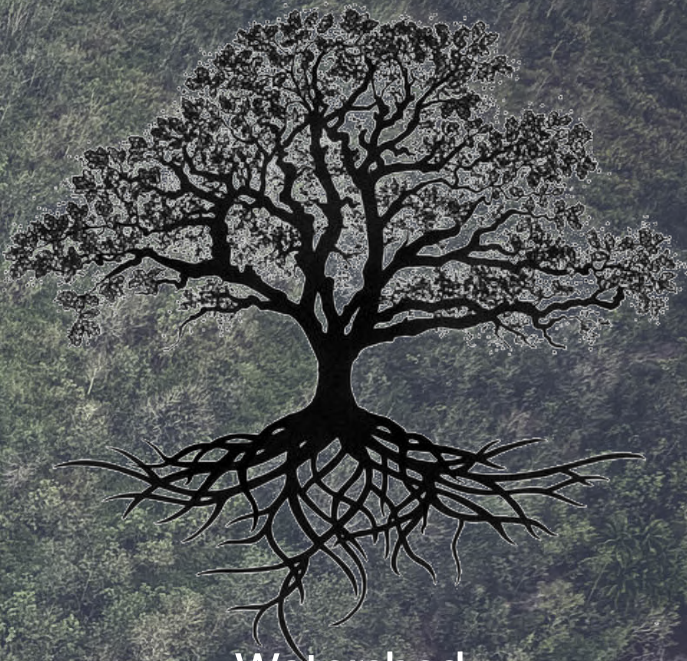
Have you ever wondered why a monsoon forest benefits this world? The monsoon forests help desert regions by giving and retaining much needed moisture. According to Azcentral.com, the monsoon forest also makes "it possible for agriculture, forests and inhabitants of the region to store water for the next dry cycle". Another huge benefit is preventing and slowing erosion because roots stabilize the ground.

Tsunami Protection

According to Fao.com, "Monsoon forest and vegetation can reduce the impact of tsunamis, driftwood and other flotsam are stopped, inundation depth and water flow velocity are reduced, creating dunes by the amasses wind-blown which are great natural barriers". Also, houses without vegetation nearby have huge impacts on tsunamis while houses with vegetation have only had some slight damage.

Aquifers and Desalination

Did you know the monsoon is a natural aquifer filtration system? Many of you might have heard of an aquifer but do you know its benefits and what it does? A good example for an aquifer comes from the USGS (United States Geological Survey). If you and your friends were to dig a hole in the beach and you observe what happens when you pour water in "the upper surface of this zone of saturation is called the water table. The saturated zone beneath the water table is called an aquifer, and aquifers are huge storehouses of water". "An aquifer is an underground layer of water-bearing permeable rock, rock fractures or unconsolidated materials", like sand in the beach example, monsoon forest filter and desalinate water.



Watershed

Lastly, the monsoon forest is capable of providing watersheds. First, what is a watershed? According to USGS "a watershed is an area of land that drains all the streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel". A watershed can be in different and many sizes such as from being the size of your footprint to being the size of an island. Watersheds are important for animals and plants to support their habitat. They also provide recreation and "drinking water for people and wildlife".

Conclusion

A monsoon forest is one of the most beneficial forests out there. Next time you and your friends go to a forest, pick some garbage up to help them thrive, every little thing makes a difference.

Reference

1. Author: unknown, publish: unknown, title What Are the Advantages & Disadvantages of Southwest Monsoons?, subtitle What are the Disadvantages of the Monsoon Season?, PIP3 <https://getawaytips.azcentral.com/what-are-the-advantages-disadvantages-of-southwest-monsoons-12570489.html>
2. Author: unknown, publish: unknown, title, subtitle, PIP1 https://www.usgs.gov/special-topic/water-science-school/science/aquifers-and-groundwater?qt-science_center_objects=0#qt-science_center_objects
3. Author: unknown, publish: unknown, title: Aquifers and Groundwater, subtitle: Groundwater and Aquifers, PIP1 https://www.usgs.gov/special-topic/water-science-school/science/aquifers-and-groundwater?qt-science_center_objects=0#qt-science_center_objects
4. Author: unknown, publish: unknown, title: Aquifers and Groundwater, subtitle: Groundwater Aquifers, PIP1 https://www.usgs.gov/special-topic/water-science-school/science/watersheds-and-drainage-basins?qt-science_center_objects=0#qt-science_center_objects
5. Author: unknown, published 2020, title: Why are watersheds important, subtitle: Why are watersheds important, PIP1 <http://www.mywatershedwatch.org/about-watersheds/why-are-watersheds-important/>

Dolphins

Dolphins get held captive for human entertainment and are put in tiny chlorinated swimming pools. We need to stop this!

By China Kemp



The problem with dolphins in captivity

When you see a dolphin show, did you know that in a lot of cases, mother dolphins are killed and captors take the baby dolphins and train them in tiny chlorinated pools.

One sad but amazing dolphin story that helps us understand the plight of dolphins is called “This is Johnny's History”, created by the Ric O'Barry's Dolphin Project. Johnny the dolphin was captured in the Java Sea in Indonesia. He is an older dolphin who has been kept in captivity in a chlorinated shallow swimming pool at the Melka Excelsior Hotel, in North Bali. Many people would pay money to swim with this poor dolphin and they were the only times Johnny had any company. To attract paying customers the hotel staff would add chlorine and other harmful chemicals. These chemicals sadly caused him to go blind. As a result, poor Johnny no longer had any teeth and was extremely underweight when the team found him.

To make matters worse, his pectoral fin was permanently damaged and he could no longer do many things. His fin got so bad that part of it had to be cut off to stop the infection from spreading. Even after that, Johnny still had to deal with people kissing, hugging, swimming and riding him in a small chlorinated tank. Poor Johnny was probably thinking he was going to live like this for the rest of his life. Thankfully, Ric O'Barry's Dolphin Project team rescued Johnny from the hotel and took him to their facility on October 8, 2019.

Since leaving the hotel, Johnny is not able to be set back into the wild which is the goal of the project, but instead gets to enjoy the team's facility in a saltwater pen with the sounds of the ocean. He also gets to be with the two other dolphins, Rocky and Rambo. Johnny is being fed fish and has gained a lot of weight and strength. According to the project, “the healing properties of real ocean water are having an effect. Johnny often expresses his joy with energetic jumps, and he spends much time swimming, diving, and playing. We will do everything in our power to ensure the rest of his life is filled with peace and dignity.” Ric O'Barry's Dolphin Project 2020

<https://www.dolphinproject.com/campaigns/indonesia-campaign/bali-sanctuary/>. This is a sad but beautiful story and we need to support foundations like this.

Umah Lumba Rehabilitation, Release and Retirement Center

During a recent school camp provided by the Biosphere Centre, we visited the Umah Lumba Rehabilitation, Release and Retirement Center in Banyuwedang Bay, West Bali. At the center (as mentioned above) they house three dolphins named Johnny, Rocky and Rambo. This organisation does so much for the dolphins. They take them away from the tiny chlorinated pools and untrain them so they learn how to live like real dolphins and then set them free. The goal is for the dolphins to be able to live freely without starving. I think this is absolutely amazing. Sometimes the dolphins will have trouble returning to their real home because they have been trained for entertainment from so young. For this reason, we were not allowed to get close to them but instead see them from a distance only.



Ric O'Barry

Ric O'Barry started the centre and has worked with dolphins for 58 years. For ten of those years trained dolphins and for 48 years he has been trying to save them from captivity. I think being on both sides of dolphin issues is what makes him an amazing advocate.

In the 1960s Ric was hired by Miami Seaquarium to train marine animals. Ric dolphin napped (kidnapped) and trained the five dolphins who played the same role in Flipper, a popular American TV show in the 1960's. Hugo, the first orca to be kept in captivity east of Mississippi, was also trained by Ric. After one of the dolphins Kathy; who played one of the dolphins in Flipper died in Ric's hands, he decided to take another path and help the dolphins.

According to Ric O'Barry's Dolphin Project "On the first Earth Day, 1970, he launched a searing campaign against the multi-billion dollar dolphin captivity industry, and the Dolphin Project was born" Ric O'Barry's Dolphin Project 2020

<https://www.dolphinproject.com/about-us/about-ric-obarry/>. Over the past 47 years Ric O'Barry has rescued and put dolphins from all over the world into rehab facilities. Ric O'Barry has saved dolphins from Haiti, Colombia, Guatemala, Nicaragua, Brazil, South Korea, the Bahamas Islands and the United States.

If you want to stop this you can not visit dolphins in captivity whether it is at a hotel or a circus. You can support initiatives like the Umah Lumba Rehabilitation, Release and Retirement Center and the organisations shown below.

"Dolphin shows are as educational about dolphins as Mickey Mouse is about real mice."
- Ric O'Barry

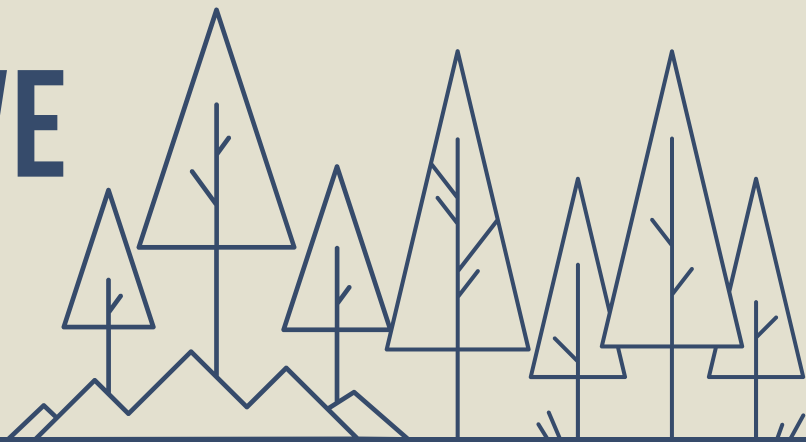


Resources:

Ric O'Barry's Dolphin Project 2020 <https://www.dolphinproject.com/blog/jaan-education-in-indonesia/>
Ric O'Barry's Dolphin Project 2020 <https://www.dolphinproject.com/campaigns/indonesia-campaign/bali-sanctuary/>
Ric O'Barry's Dolphin Project 2020 <https://www.dolphinproject.com/about-us/about-ric-obarry/>

HOW TREES GIVE BACK

By: Mia Dillon & Vaihei Vannes



Recently, the Adolescent Programme at Montessori School Bali, attended camp at the Biosphere Foundation in West Bali. Students learnt heaps about the environment, life under water and how we could save our one and only biosphere: the Earth. One of the most important things you need for a healthy biosphere is trees. Trees do a lot like producing oxygen for us to breathe, storing carbon, growing food like fruits, stabilizing the ground and providing wood and shelter (Trees.org. 2019).

What's a tree?

Most of the plants called trees have one self supporting trunk that contain woody tissue and limbs growing out of them called branches. The majority of the Earth's biomass is represented by trees. If you look at a tree you can see that 5% of the tree is composed of leaves, 15% of branches, 50% is composed of the trunk and 20% is the roots. Did you know, Did you know "The biosphere is dependent on the metabolism, death, and recycling of plants, especially trees" (Britannica, 2019)?

Erosion

Pak Ketut, an expert in trees at the Biosphere centre, shared a big problem with us; farmers are using the trees for firewood and clearing land for crops which mean no top soil is established. He said the farmers do not think it is bad to cut down trees because there are so many. But when all farmers in the area cut down the trees for a long period of time, the result is erosion which kills the soil perpetuating the problem in many ways.

Tree roots support the ground and soil beneath them, holding and stabilizing everything so when its rains, the soil stays intact. But when there are no trees and it rains, the top and most important layer of soil which contains nutrients to grow crops and other trees, is washed away into the sea. Erosion is caused by weather, specifically rain and hail storms.

How to stop erosion while replanting

When we visited the main hill in the reforestation area at the Biosphere centre, Bukit Indah (Beautiful Hill in Indonesian), we planted trees and watered them as a part of the programme and community service. We noticed that there were small trenches that went around each hill and we were curious as to what they were for. Pak Ketut mentioned that they were used as a barrier so when it rained, the water would be forced into the ground helping the trees to grow and to prevent the soil from going into the ocean. Also, compost was applied which is a helps to regrow plants and trees by providing a nutritional top layer to the soil because it holds the water.





Above, Pak Ketut working at Bukit Indah.

Habitats

Trees give habitat to creatures like birds, sloths, snakes, geckos, monkeys, opossums, insects, squirrels etc. Let's take an example of a bird. Trees are the main refuge for birds, so if we cut the trees there will be no more home for birds. It means that they can't make nests anymore, no more babies. Birds have low survival rates so without trees, a lot of birds are going to go extinct. Also, did you know that birds plants the most trees of any mammal by eating seeds and spreading them through their digestion (PLT, 2019)? Trees are also important because they make shade. Shade is important because it gives cooling from hot seasons and it keeps the humidity. According to BES (British Ecological Society, 2011) 25% to 50% sunlight had a positive effect on the grass, but 90% of sunlight showed that plants with more shade had less dry mass therefore were healthier.



Trees stop global warming

Trunks and the root system store carbon dioxide, move water and create oxygen that is released in the atmosphere. We also learnt that trees participate in helping us stop climate change, through a documentary called *Kiss The Ground*. Humans breathe in oxygen and breathe out carbon dioxide. Trees do the opposite. Trees consume carbon dioxide from us and fossil fuel emissions, through the process of photosynthesis. Then they store the carbon dioxide in their roots to give nutrients to the soil and turn it into oxygen for us to breathe. The leaves take the carbon dioxide and water, and use the sun's energy to convert the carbon dioxide into a chemical compound such as sugar that feeds the trees and this chemical reaction results in oxygen being produced and released into the atmosphere. One large tree can provide a day of oxygen for four people. But when you cut trees down, all of the carbon dioxide it has stored is released again, damaging our atmosphere further. The more trees we have the more carbon dioxide is taken away from our atmosphere (U.S. DOA, 2015).

The importance of soil

After the farmers came to the realization that trees are not ever lasting, they grew them, but with pesticides and fertilizers. Not having enough time to grow in time for the rain to come, the rain washes the top layer of soil into the ocean, as well as the pesticides and fertilizers with them. Without the knowing the farmers are killing the coral in the area. In 2018, Pak Ketut and the rest of the Biosphere Foundation helped these farmers plant trees and their crops in an environmentally friendly way and helped them learn how their choices have a ripple effect.

What you can do?

So how can you farm without cutting trees? It's simple "when you cut a tree plant another tree" said Pak Ketut. Instead of using wood for your fire use biogas. Recycle wood. Stop cutting all the branches with the leaves, because we need shade. Stop burning the trunk, without knowing how to do it. Stop shooting birds, they are important whatever species they are. And stop thinking that trees grow by magic.

Conclusion

Pak Ketut taught us a lot about how erosion affects coral and, the effects of farmers cutting trees without planting another tree. So trees are important because they store carbon and release oxygen, they stop erosion, they give habitat, they give shade and balance temperature. Supporting and donating to nonprofit organizations like Biosphere Foundation, will give them the help they need to save the world. Replanting trees and coral and most important and the education of local farmers. If everyone comes together to help our biosphere, we can save it.



Recources:

Britannica 2019, Thomas H. Everett, Tree <https://www.britannica.com/plant/tree>

British ecological society 2011, Marina Semchenko, Mari Lepik, Lars Götzenberger, Kristijan Zobel. Positive effect of shade on plant growth: amelioration of stress or active regulation of growth rate? <https://besjournals.onlinelibrary.wiley.com/doi/10.1111/j.1365-2745.2011.01936.x>

PLT(Planting, Learning, Tree) 2019, ANIMALS THAT LIVE IN TREES (AND HOW THEY'VE ADAPTED TO SURVIVE) <https://www.plt.org/educator-tips/animals-live-trees#:~:text=What%20do%20sloths%2C%20koalas%2C%20flying%20young%20in%20the%20trees>

Trees.org. (April 19, 2019) 10 Essential Ways Trees Help Out Our Planet. Retrieved: October 27. <https://trees.org/post/10-ways-trees-help/>

U.S. Department of Agriculture 2015, Joanna Mounce Stancil, The Power of One Tree - The Very Air We Breathe <https://www.usda.gov/media/blog/2015/03/17/power-one-tree-very-air-we-breathe#:~:text=Through%20a%20process%20called%20photosynthesis,and%20released%20by%20the%20tree.>



How fish helps us survive

Would humans be able to survive without fish? Fish could certainly survive without humans and in fact, are declining at disastrous rates because of us.

by Leo

This article talks about why we need fish and what fish do for our environment. It's going to tell you some important facts and information you might want to know about how fish and coral work as a team to keep our planet alive.

Fish are very important to the world. Without fish, the life we know would not be possible anymore. The ocean would no longer be able to perform essential functions and people would eventually suffer because they will lose a major food source. If there are no fish there will be no ocean, if there's no ocean there won't be any people, so what can we do to help?

Humans can...

- Be conscious when buying canned fish
- Know where your fish comes from
- Campaign and support initiatives that help fish
- Take care of any reefs you see by wearing reef friendly sunscreen
- Be plastic conscious
- Plant a tree
- Eat plant based



Corals Breathe

According to scholarworks.com, "just like plants, coral provides oxygen for our earth. Typically, deep oceans do not have a lot of plants producing oxygen, so coral reefs produce much needed oxygen for the oceans to keep many species that live in the oceans alive."

Without a healthy ocean all living plants on the earth will die leaving the world unbreathable for humans, including you.

So as you can see we need to make a difference and start to help Mother Earth.

You can...

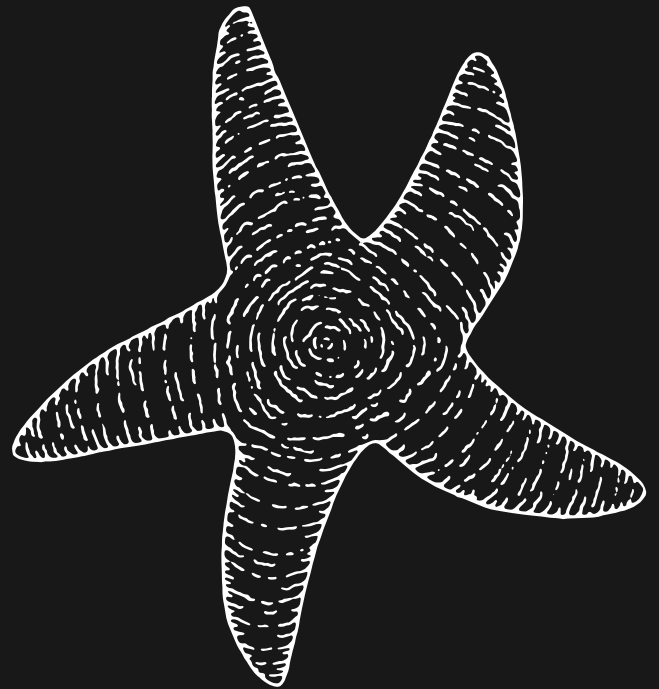
Go to beaches and hang up signs that say "do not step on coral or touch it because it could really damage and kill the coral."

You could try to find pieces of coral that have fallen off and glue it back on with cement and sea salt. Not just normal salt it has to be traditional sea salt, and you mix it and put it on the fallen pieces and glue it back on the piece it was before it fell.

Start snorkeling more or diving and go for an underwater clean up. Bring a small bag and if you see any trash just pick it up and put it into a bag.

It's a home

The ocean doesn't only need fish it needs coral as well. Coral is one of the most important things in the ocean because coral provides homes for fish. It also keeps them safe and provides a safe place to lay their eggs. Corals produce mucus as a protective layer using its stickiness to trap food. Butterflyfish feed on this nutrient rich layer and take advantage of this easy to consume food source. Damselfish kill a section of the coral, and then wait for algae to grow in the dead spot. On this coral, only a few live sections remain.



Species that indicate reef health

According to Pak Ketut Sutama from the Biosphere Centre, there are 5 types of fish that the coral reefs need to survive and keep healthy. Parrotfish spend up to 90% of their day eating algae off the coral reefs using their hard teeth. The algae they eat use photosynthesis to produce nutrients which goes to the coral and sometimes kills it so this fish is a big help. Surgeonfish also eats algae but they don't spend 90% of their day doing it.



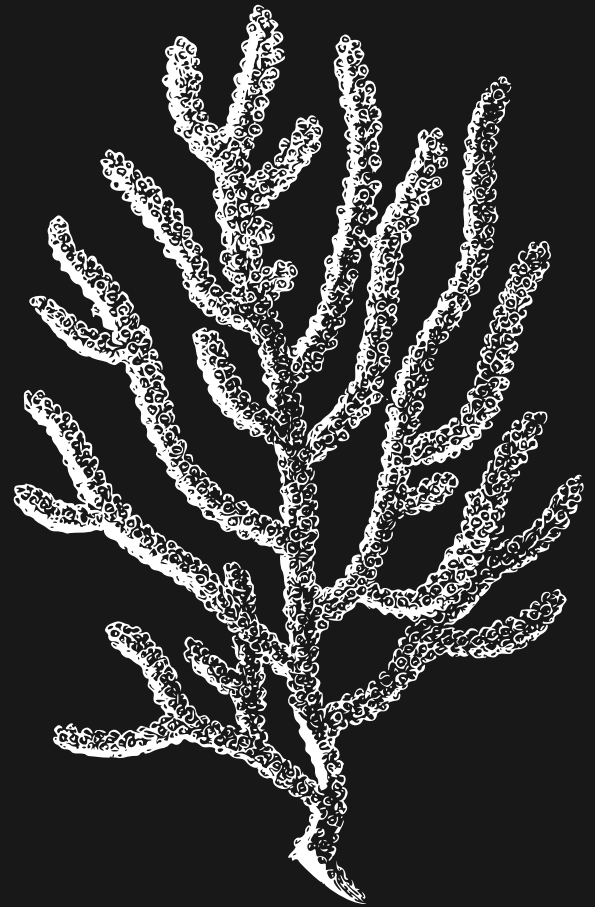
Use your social media to
promot awareness and
support campaigns and
foundations like the
Biosphere Foundation
@biospherefnd.



**BIOSPHERE
FOUNDATION**

Facts

Some scientists speculate that in 2050 there will no longer be any fish in the world and the reason is because of people. They say that there will be 850 to 950 million tons of plastic produced and put into the ocean so plastic will outweigh the volume of fish. This will obviously kill coral reefs and fish which will kill the ocean and the world will slowly start to die. It will be a place no one or any living thing can live on. If we make a difference and start to realize what our pollution does to Mother Earth, maybe more people will start to care and try to help.





Corals

WHAT ARE CORALS? CAN WE SURVIVE WITHOUT THEM?

BY AMADEUS RAPHAEL LO

Recently, I went to one of the most beautiful places in the world, Menjangan Island. There are so many different corals and seeing them blew my mind. Unfortunately, I realized that some corals were broken and some did not have colours. There are many reasons for this, but before I'll tell you why it's probably best for you to learn what corals are.

What are corals?

Corals are aquatic invertebrates that usually live in colonies. They are really important for marine life and they have many uses such as protecting coastlines from erosion and storms. They also provide habitat for small fishes and protect smaller fishes from predators but most importantly, corals produce half of the Earth's oxygen. ¹





Reefs

Coral reefs are colonies of corals. The largest coral reef in the world is The Great Barrier Reef which is located in Queensland, Australia. There is also another coral hotspot named The Coral Triangle made up of coral reefs which is located in the waters of Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands and Timor-Leste.

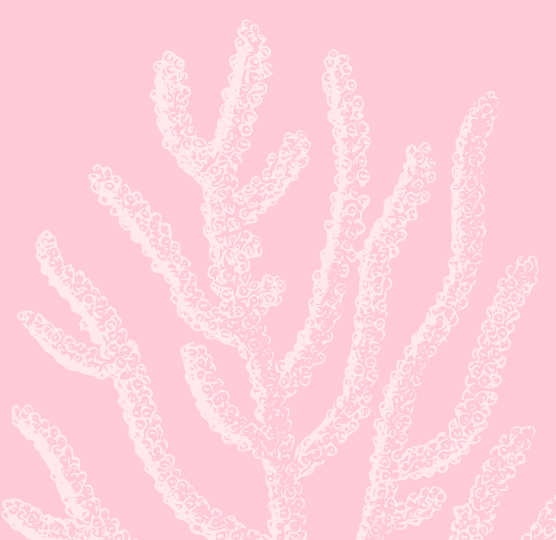
How do corals help us breathe?

How does Coral help us breathe? Coral helps us breathe by producing oxygen. According to cotf.edu, corals produce oxygen because they have a symbiotic relationship with an algae called Zooxanthellae, return the algae produce oxygen and they provide the coral with products which are needed for photosynthesis.



The Decline

Research says that corals are endangered and the main cause is climate change. How does climate change affect corals? Well, the ocean gets warmer, which causes corals to be stressed and causes bleaching and infectious diseases. Another reason is pollution. Trash blocks sunlight and oxygen which are the most important things needed for corals to grow. It also pollutes the water, which causes damaging algae to grow faster and smother coral reefs. Unsustainable fishing also affects coral. When people fish near the shore, they step on top of corals, which breaks them. Predator outbreaks are also threats, in this case the threats are too many predators making the ecosystem unbalanced. Some examples of these predators are the crown of thorns, butterflyfish, parrotfish and filefish. The Biosphere Centre staff taught us about the crown of thrones which predate on the coral killing.



Solutions

The solutions are actually pretty simple. First, you can plant a tree which will help with climate change. Not only will it be helping corals, but it can help the entire planet and stop erosion of soils, therefore mitigating pesticides from running into the ocean. Another simple solution is don't litter. This might seem straightforward but most people have trouble with this. However, it is one of the fastest ways to not only help corals, but help the world. Another solution is eating sustainable seafood. Eating too much seafood that is not ecologically sourced will create an unbalanced ecosystem. Lastly, are you aware of the type of sunscreen you use? Did you know many corals around the world are dead because of sunscreen. A barrier of sunscreen blocks the sunlight so then the corals won't receive sunlight and then they die. The solution is simple, just use coral friendly sunscreen.

Replanting

I also learned how to replant coral at the Biosphere foundation. They have an ongoing excellent program for this and we saw these amazing coral gardens that were created by humans. But how? First, you find coral that is still alive but broken off the reef. Then, you would mix white cement and traditional salt, and put it in a bag. After that, you dive and find a live coral then plant it on top of dead coral fragments with the cement. I saw so many corals that were replanted in a bay off the Bali Sea. The restoration made these corals have life again and they were so beautiful.

Reduce your footprint

How can reducing your carbon footprint help? Well there are many ways, but let's start with cars. Cars produce so many bad things. I know that you can't stop using cars, but what you can do is bike on short distances or walk. Another way you can slightly reduce is buying an electric car, they still produce carbon emissions but the difference is huge. The other way is to use less electricity, for example, you can turn off your lights when you're out of your room, or turn off your air conditioner when you're not using it. Every action you take in your life you should think about the impact it is having on the planet. So, we must do our best to save and protect our environment before it's too late, and help our corals, one of many ways to save the Earth.



References

1. Et Al. (4 April 2002). Coral: Coral Reefs. Published by: Wikipedia <https://en.wikipedia.org/wiki/Coral>
2. Rachel Ross. (24 September 2018). What are coral reefs? Published by: Live Science Contributor. <https://www.livescience.com/40276-coral-reefs.html>
3. Et Al. Conservation and Research: Menjangan Coral Reef Conservation. Published by: Biosphere Foundation. <https://biospherefoundation.org/>



lil lotus coffee

in partnership with su-re.co

OPEN Every Friday

8am-9am



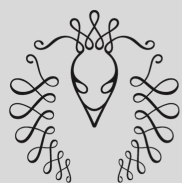
MONTESSORI SCHOOL BALI

Biogas

“Biogas refers to a mixture of different gases produce by the breakdown of organic matter in the absence of oxygen. Biogas can be produce by a raw material such as a agricultural waste, manure, municipal waste, plant material, sewage, green waste or food waste. Biogas is a renewable energy source.

Biogas can be produce by anaerobic digestion with methanogen or anaerobic organism, which digest material in a closed system, or fermentation of biodegradable materials. This closed system is called anaerobic digester, bio digester or bioreactor.”

Source: Wikipedia



su-re.co
sustainability & resilience



Instagram

WORLD OF BIOMES

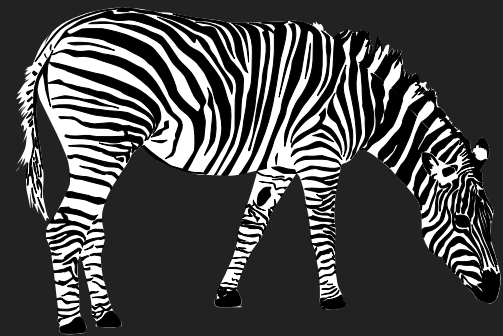
Author: Andreas Malo

Biomes are an environment with specific types of plants, animals, and climate. There are five main types of biomes: aquatic, grassland, forest, desert, and tundra. Within each biome is a subcategory of biomes.

GRASSLANDS

LAND OF THE WILD GRASS

GRASSLANDS, AS THE NAME IMPLIES, IS A LAND FULL OF GRASS. THERE ARE SUB-BIOMES OF GRASSLANDS WITH TREES AND BUSHES LIKE THE SAVANNA; DESPITE THAT, IT IS STILL A PREDOMINANTLY GRASS BIOME. GRASSLAND BIOMES ARE USUALLY FOUND IN THE MAJORITY OF AFRICA, AUSTRALIA, SOUTH AMERICA, PARTS OF EASTERN EUROPE, NORTH AMERICA, AND INDIA. THE DOMINANT ANIMAL IN THE GRASSLAND BIOMES ARE USUALLY UNGULATES, FOUR-LEGGED ANIMALS WITH HOOVES LIKE ZEBRAS AND BUFFALOS.



ZEBRAS ARE ONE OF MANY ANIMALS
LIVING IN THE GRASSLANDS.

Forest

City of tree's

Forests are covered by lots of trees and huge biodiversity. There are three types of forests: tropical forests, temperate forests, and taiga forests. Tropical forests exist near the equator. Some of its plants include: Orchids, Ferns, Moss, etc. The animals that inhabit the forest biome may include many types of birds, insects, and small mammals. Temperate forests exist in North America, East Asia, and Central Europe. Some plants include Oak, Elm, Willow, and Maple tree. The animals in this sub-biome include: squirrels, rabbits, wolves, foxes, bears, bobcats, deer, etc. The taiga forest is found in Eurasia, North America, and Scandinavia. The plants include: spruce, evergreen, and pine trees. The animals include: hawks, moose, chipmunk, etc.



Toucans are found in the tropical forest.



Foxes are found in the temperate forest.



Moose are found in the taiga forest.

DESERT

The dry dimension

Deserts are the driest biomes on earth. They can be hot, or they can be cold. Deserts are found in the Americas, Africa, Antarctica, and Australia. Not many plants live in the desert with the exception of cacti, and shrubs. Animals of the desert include: kangaroos, snakes, owls, and ants.



Snakes can be found in the desert.



Owls can also be found in the desert.

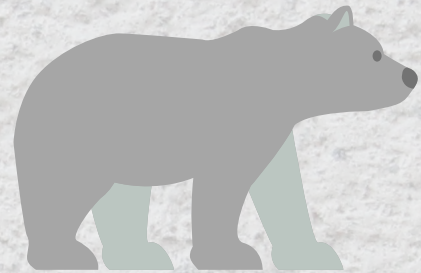
Tundra

The cold wastelands

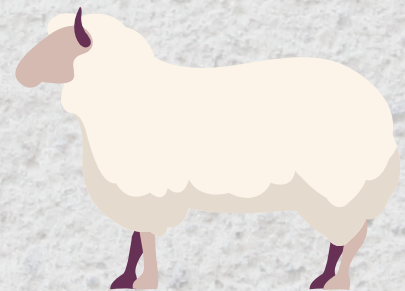
Tundras are the coldest biome on earth. Tundras are found in the north and south poles. The only plants that grow in tundras are dwarf trees. Animals that inhabit the tundras include: mountain goats, sheep, ravens, polar bears, etc.



Ravens are commonly found in tundras.



Polar bears are commonly found in tundras.



Sheep are commonly found in tundras.



Goats are commonly found in tundras.

UCMP (2001) Reference list: The tundra biome.

Retrieved from:

<https://ucmp.berkeley.edu/exhibits/biomes/tundra.php>

AQUATIC BIOMES

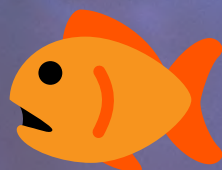
The Underwater Realm



Shrimps live in the freshwaters.



Ducks live in freshwaters.

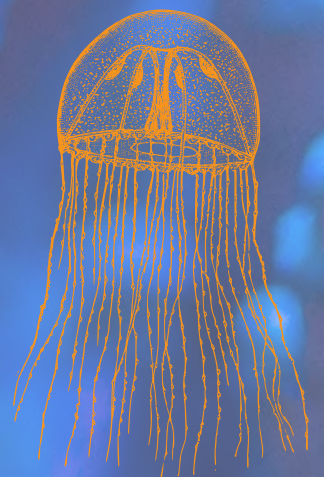


Fish lives in both biomes.

Aquatic biomes are biomes that are found underwater. There are two main types of aquatic biomes, Marine and freshwater. The marine biome is found all over the world. It's plants include: seaweed, mangrove trees, algae, etc. the animals of this biome are: corals, planktons, and many types of fishes. The freshwater biome can be found across the world. Plants found in this biome are lilies, cattails, and sedges. Animals that inhabit the freshwater biome include: turtles, snakes, ducks, and shrimps.



Corals live in marine waters.



Jellyfish live in marine waters.



Ape



**BIOSPHERE
FOUNDATION**