



TiME (This is My Earth)

Climate Change and Nature Preservation Curriculum for high School



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Summary

This program offers students the opportunity to engage in a truly democratic process and to learn how to do that appropriately (study-learn-decide-vote process). It also offers students the opportunity to learn skills in leadership (small group processes, as well as class presentations, and especially in fund-raising efforts outside of the immediate learning environment). Through this program, each student will help solve a real-life problem in biodiversity conservation as they analyze environmental perspectives and acquire scientific knowledge.

The essence of the **TiME (This is My Earth) project** is the establishment of awareness and personal responsibility regarding the preservation of biological diversity by purchasing and conserving the most important natural areas in the world (biodiversity hotspots).

Conservation of biodiversity is a central mechanism for the stability of Earth's living environment and has been shown to retard global change processes through Nature-Based solutions.

Signatories to the Convention for the Conservation of Biological Diversity agree that the preservation of global biodiversity is of vital importance to the existence of life on Earth.



Here is a proposal for 10 sessions, though due to the originality of the ideas, and variety of activities, they may require a longer processing and learning time. However, the central aspect is the familiarization with TiME operations to save open spaces and increase biodiversity, which is offered in sessions 6-9, with the final session devoted to the question – “How I can continue to have an impact?”

Please don't hesitate to contact us!

The TiME Team



Unit 1: The Sixth Extinction (Suitable for 2-3 Lessons)

Mass extinctions on Earth have occurred in the past. We know of at least five major extinctions, with the most well-known taking place about 65 million years ago – the extinction of most Cretaceous-Paleogene species likely caused by the impact of an asteroid. Earth's history also shows that after every mass extinction there was a significant increase in the development of new species on Earth, such as the rise of mammals following the aforementioned extinction of the dinosaurs.

The extinction of the dinosaurs was the fifth largest extinction on Earth. Most of the extinctions in the past (both background extinctions and mass extinctions) were due to natural internal processes.

Today, many scientists warn us that we are in the midst of the sixth mass extinction on Earth. Many species have disappeared, and many species are in danger or on the verge of extinction. This time, the main cause of this extinction is human activity which has already led to the disappearance of many species, habitats, and even entire ecosystems.

In this unit we will discuss historical mass extinctions and the sixth one which could be nearing us, if we do not act to avert it.

To deepen your knowledge, we recommend referring to the following article: [What is the sixth mass extinction and what can we do about it?](#)



Part A: 5 Past Extinctions

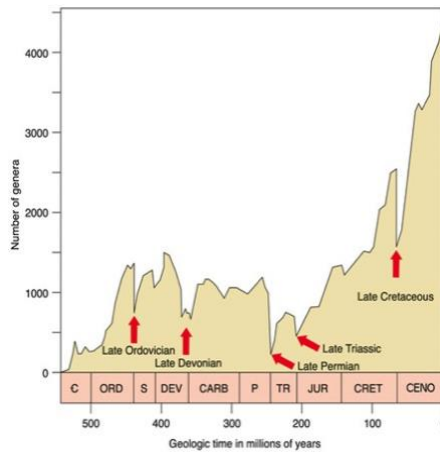
Opening: see the film [Dinosaurs Didn't Know That This Was The Last Day!](#)

Short discussion: Why did the dinosaurs disappear? When did it happen? What would have happened if the asteroid had not hit the Earth? What would have happened if the asteroid fell into the deep sea?

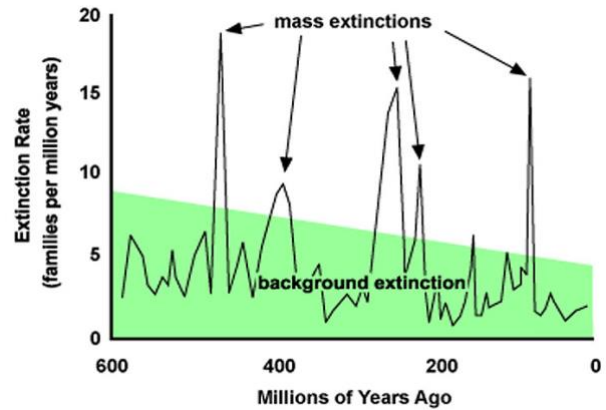
Presentation (use of the internet recommended)

- A. Divide the students into 5 groups. Give each group an article and a page of questions. The groups will present the work in a collective presentation.

Each group will study a separate mass extinction from the article, answer the questions on the sheet below, and present their findings to the class.



<https://ontherocksgeoblog.wordpress.com/2013/03/01/mass-extinctions->



<https://anastasiasamp.wordpress.com/2013/03/13/131>

Compare the two graphs:

1. Why do they look so different? Hint: Look carefully at the axis.
2. What is the difference between mass extinction and background extinction?
You can use information from the Internet.

Have a discussion with the students:

1. What are the differences between the two graphs (refer to the difference in the Y axis)
2. Why in the left graph (the brown) we see a constant increase of species?
3. What happens every time there is a mass extinction (left graph)?
4. What does the green color in the righthand graph symbolize?

Part B: The Sixth Extinction

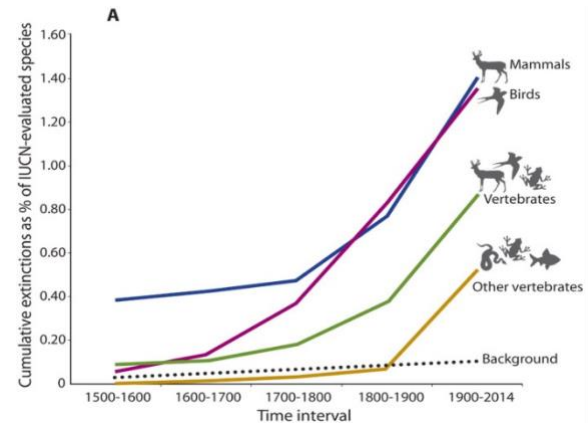
Is there a sixth extinction? Send the students for a 5-minute search for information on the Internet.

Discussion:

What is the sixth extinction?

This extinction is also considered as the "anthropogenic extinction" - why?

Look at the attached graph at class, and pay attention to the following points:



<https://www.science.org/doi/10.1126/sciad>

- What does the graph depict?
(Note the Y-axis - the graph depicts the cumulative percentage of species extinct in the last 500 years compared to the background extinction rate).
- Compare the different species groups on the different years (why was there a significant jump about 200 years ago? Compare a linear graph and an exponential graph).
- Why is the percentage of extinct mammals 500 years ago greater than the percentage of extinct birds? (hunting).

Causes of Modern Extinctions:

Divide the class into small groups. Each group will receive a short video describing the extinction of a species or group of species. Each video is accompanied by several guided-watching questions.

Please note - each video touches on one of the aspects leading to the extinction of species and in some cases provides a specific example of a broader issue. Use each individual presentation as a means of expanding the entire discussion.



Global warming and ocean acidification

Watch the National Geographic video [*Rising Ocean Temperatures are "Cooking" Coral Reefs*](#) and answer the following questions:

- a. What is coral bleaching? What is it caused by?
- b. What will happen if the corals disappear from ocean habitats?
- c. What is the human activity that causes this process to happen?

Destruction of natural habitats

Watch the video [*What is Deforestation?*](#) and answer the following questions:

- a. What is "deforestation"?
- b. What are the main drivers of human-driven deforestation? List at least 3 reasons.
- c. List at least 4 reasons why the existence of forests on Earth is important for our survival.

Overexploitation of natural resources

Watch the [video](#) and answer the following questions:

- a. What are the primary causes of a decline in the fish population?
- b. What environmental issues would a complete tuna extinction cause??
- c. A lot of fishermen use boats called "trawlers" to fish. Look for information about this online. What are the problems with this fishing method?

Invasive species

Watch the video [*The threat of invasive species*](#), and answer the following questions:

- a. What are invasive species?
- b. Why are invasive species a problem? Do we want to increase the amount of organisms? No?
- c. Look for examples of invasive species in your state. Give at least 3 examples.



Pollution

Watch the video [*Evolution of the Peppered Moth by Natural Selection*](#), and answer the following questions:

- a. How does pollution affect the moth?
- b. The moth is just one example of a species that is affected by pollution - what other species are affected by this?
- c. What other types of pollution does humanity cause?

Class discussion: Each group will present its findings. We recommend discussing the factors leading to the extinction of species, as well as the fact that these factors apply to situations beyond the examples given. Allow students to provide additional examples, and add them to the list on the board.

Summary of the lesson: see the video [*MAN vs EARTH*](#). Leave opinion out of this, let people draw their own conclusions



Study Unit 2: Biodiversity (suitable for 3-5 lessons)

Biodiversity is a concept that describes the diversity and richness of all living things in our world. The concept refers to all biological levels of organization – from individual gene to entire ecosystems. This also acts as an umbrella term for more specific terms like species or genetic diversity.

There are specific regions across the planet with an unusually high level of biodiversity. These areas are called biodiversity **hotspots**. There is a single national park in Peru, for example, with more species of birds than in the contiguous United States and Canada combined. In a single tree in Central America, researchers found more species of ants than in all of Great Britain. Guinea, in West Africa, has a single forest containing half of the mammal species found on the entire African continent.

Part A: Introduction to the concept of species diversity

1. Watch the video: [*What on Earth is Biodiversity?*](#) And answer the following questions:
 - What is biodiversity?
 - Why is it important for us to preserve biodiversity? State and explain at least 2 examples.



Recommendation for an outdoors activity:

At this stage, the teaching can be varied and the students can be taken on a tour of an open area near the school. Preference for a tour in a natural area as much as possible and not a public garden.

When at the field with students demonstrate to them biotic and abiotic factors and their influence on each other. Send the students in pairs for two tasks:

1. Count (possible with photos on your phone) as many different organisms as you can see (a class competition can be held). You should ask them to make a photo collage and sort the photos into plants, birds, arthropods, mammals, etc.
2. Photograph an interesting natural phenomenon - any interactions, pollination, behavior of an organism, etc. Ask the students to characterize their chosen image - the title of the image, who the organism is, what is seen in the image.

In the next class - pairs of students present their picture in front of the whole class. It is certainly possible to make this task part of a graded alternative assessment.

Part B - The importance of preserving biodiversity

This section presumes some level of background knowledge regarding the food chain.

Opening: Set up a game of Jenga. Then let one of the students pull out one brick. Ask the students - what happened to the building? (Probably became a bit unstable but still standing). Get another brick out. Ask the students what is happening to the building now? Keep doing this until the building collapses.



Discussion: The strength and stability of the building depends on the number of bricks and the mutual relations between them. Each removal of a brick violates the stability of the building. Are some bricks more important than others?

Watch the video: [How wolves change rivers](#).

Divide the class into small groups of 3-4 students and instruct them to answer the following two questions after watching.

1. Draw a food web with at least 10 different organisms from the video.
2. Complete the table with examples of different effects (biotic and abiotic) shown in the video.

		influenced	
		biotic	abiotic
influencing	biotic		
	abiotic		

allow each group to present the examples it wrote down.

Hold a discussion, emphasizing the following questions:

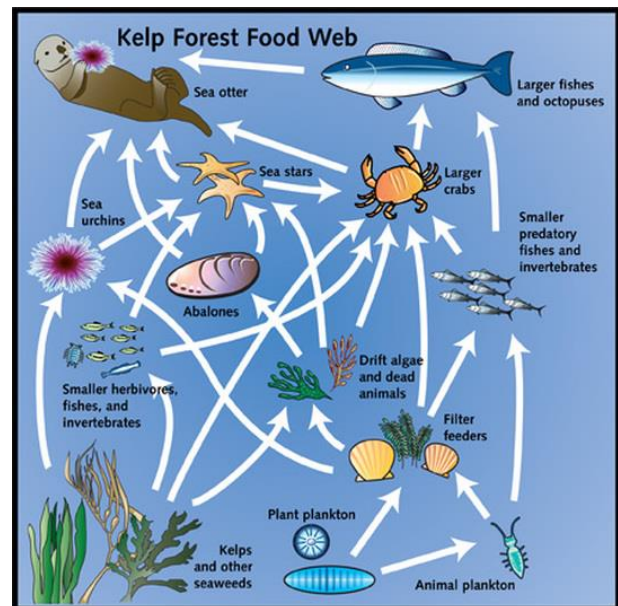
- What happened in Yellowstone after the wolves returned?
- Why did the river change its course?

- What do you think would happen if the beavers were removed from the area? Or moose? Try to imagine possible scenarios.

Tie the discussion to the opening game—just like how the Jenga tower lost stability as pieces of it disappeared, ecosystems lose their stability when their aspects begin to vanish.

A keystone species is an organism that other organisms depend on to such a high degree that its local environment would significantly change if the keystone species were to disappear.

Use the example of **kelp forests**, one of the richest marine ecosystems. They can be found throughout many temperate coastal regions around the world, revolving around a fast-growing variety of brown algae as a keystone species. See [kelp forests](#), or the movie [My Octopus Teacher](#) (on Netflix, 8:30 min)



<https://kelpforestwebsite.weebly.com/food-chain.html>

Over the years, **otters** were hunted for their rich fur and their population dwindled to the point of complete extinction in some areas. Due to the absence of a natural predator, sea urchins began to multiply rapidly, eventually destroying the algae population. Due to the extinction of a single species, entire ecosystems collapsed. Since the 1970s, efforts have been made to return the otters to their habitat, with the ultimate goal of restoring the entire kelp forest ecosystem, but fishermen who benefit economically from its absence have resisted the efforts.



To restore or not to restore?

Establish a formal class discussion on the restoration of the kelp forests.

Divide the class into groups, each representing a different aspect of the debate: fishermen, environmental organizations, restaurateurs, tourists, etc. Each group should make an argumentative presentation representing their different perspectives. (add some sources for extra info)



Part C - Why should I save?

Opening: Each student should use three to four sentences to describe their actions today/ yesterday afternoon/ morning etc.

After writing the text, ask the students to determine how many of those actions were related to nature and the environment in some way. A few examples: **eating** (the food itself, pollination, irrigation water, biological control, etc.), **drinking** (water purification, springs, fruit concentrates, milk), **travel** (fuel, materials for building the car), **studies** (writing paper, pencils, paints, pencil case, bag), **clothes** (cotton, silk, wool), **recreation** (nature trips, aquatic sports, etc.)

Allow the students to present what they wrote.

While the student is reading, sort the ensamples the students give into **categories**: nutrition services, water purification and drinking sources, materials, medicines, source of inspiration, air (oxygen), culture and leisure. It is of course possible to create subcategories.

Discussion - Why did we divide into these categories? What services does nature provide us? What will happen if we harm nature?

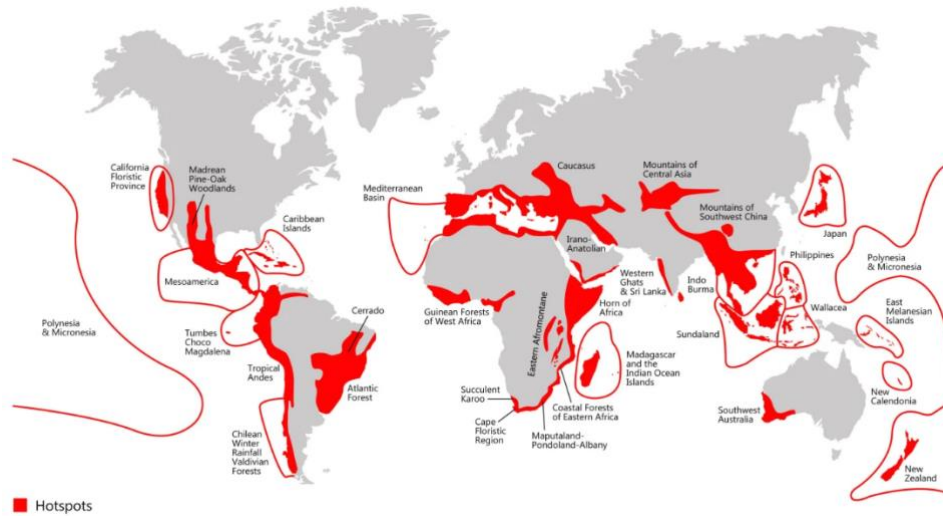
Everything we do today is based on services that nature provides us.

Finally: show the students the video [*There's a Rang Tan in my bedroom*](#) (based on [*An Orangutan Tries To Fight The Digger*](#),) or [*There's a monster in my kitchen*](#).

Part D – Some Areas are Worth More Than Others...

show the students the following map:

(<https://databasin.org/datasets/23fb5da1586141109fa6f8d45de0a260/>)



Present the following questions to the students:

What do we see in the picture? Why is part of the map colored red?

What are Hotspots, what do you think this means?

Hotspots are ecological areas with significant biodiversity, threatened by human activity to the extent that they require special protection. While these hotspots only make up about 2.4% of the Earth, they contain over a third of all of our plant and animal species due to their unique environmental conditions.

How does one judge whether a given area has rich or poor biodiversity?

Give the students a few minutes to come up with ideas on which indicators should be used to evaluate biodiversity.

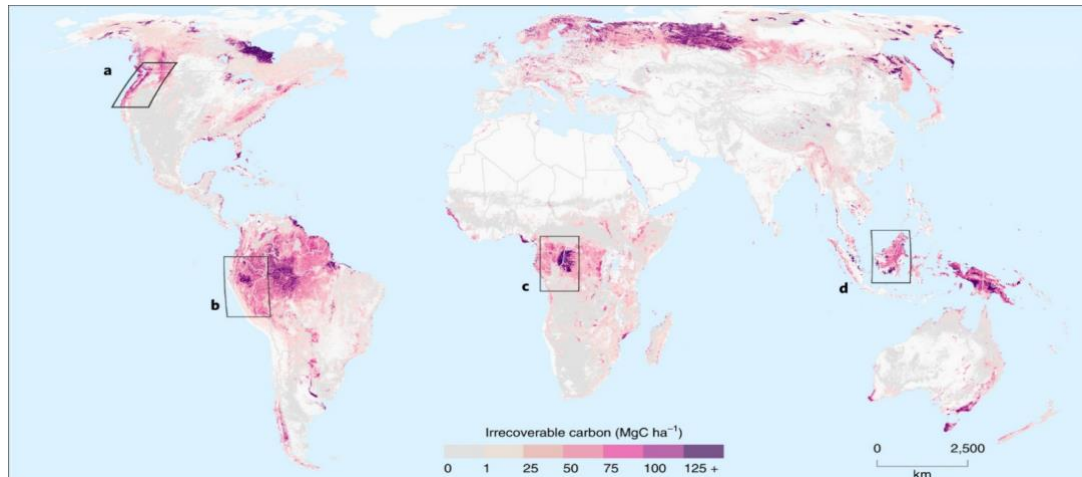
Hotspots areas are determined according to two criteria:

1. At least 1,500 species (or 0.5%) of endemic plants among the 300,000 existing species grow in them.
2. The area has lost 70% or more of the primary vegetation in the area.

Discussion: Do you think there will be an overlap between areas that have a significant concentration of carbon and areas that are Hotspots? Full overlap? partially? In certain areas?

Show the students the following map

(<https://www.sciencenews.org/article/climate-change-natural-carbon-stores-new-map>), and discuss whether there is really an overlap. Where? What does that mean?



There is a correlation between irrecoverable carbon and biodiversity hotspots, especially in the Amazon and Congo rainforests. These areas are simultaneously highly biodiverse and vital to the reduction of carbon in the atmosphere, making their preservation elemental to the preservation and protection of the planet.

Watch the video [*Why is Amazon Rainforest disappearing?*](#)

- Emphasize the part of the video discussing photosynthesis versus cellular respiration and the carbon cycle.
- Ask the students if there are biological inaccuracies in the article. (For example, the forests turn the hydrogen into oxygen, etc...)

Why is the emission/absorption rate of CO₂ so high?

The primary cause of this is deforestation (through both the cutting and burning of forests). Damage of the entire producer society together with habitat fragmentation, causes severe damage to the entire food web. As a result the entire ecosystem is losing stability.



Study Unit 3 - What is an Endangered Species? (Lesson 1)

Work in pairs or groups of three. Each group should fill in the table below for one of the species listed (you can assign more than one group to each species), and turn the information into a short collaborative presentation (the list of species was taken from the TiME website during 2023, please check the TiME Website, <http://this-is-my-earth.org> for updates and choose additional or other species).

	picture	Habitat	One thing you should know about this species	status in the wild according to the Red List	What is the status in the wild according to the Red List mean?
Magnolia guatapensis					
Andean Poison Frog					
Mountain Tapir					
Spectacled Bear					
Brown-headed Spider Monkey					
Bomarea longipes					
Cucharillo					
Lemon-browed Flycatcher					

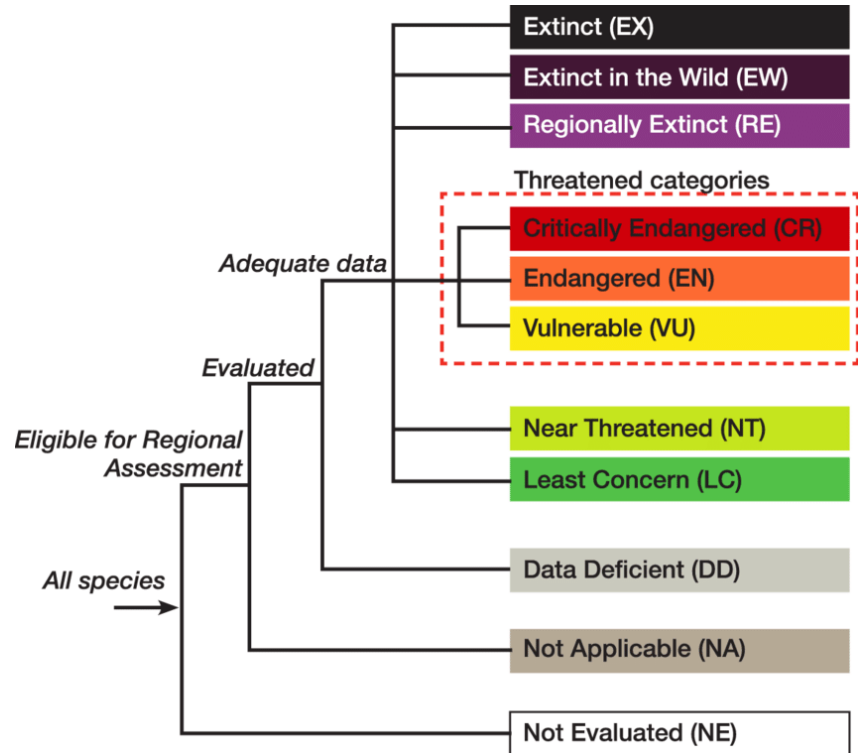
(<https://www.iucnredlist.org>).

After all species were presented and the class completed jointly filling the table divide the class into groups and ask the students to rank the species according to how important its preservation is, with justification for their ranking. Then, have each group present their findings.

Show the students the following picture:

Review the categories with the students, and explain the correlation between the vulnerability of a species and the prioritization of its preservation.

Discuss – why should we try and preserve all species and not just some? Why is it important for a habitat to consist of many and not few populations?





Study Unit 4 - Activity With the TiME Organization (4-6 lessons)

TiME (This is My Earth), an international organization for the conservation of nature, was founded by Prof. Uri Shains from Haifa Oranim University and Prof. Alon Tal from Tel Aviv University in January 2016. The goal of the organization is to save biodiversity hotspots by purchasing them from private landowners and making them nature reserves, preserving them for future generations.

TiME is a non-profit organization. 100% of the donations are intended for the preservation of nature and there is no overhead. All labor done to support it is voluntary. TiME is also run on an egalitarian, democratic system. Individual membership is a minimum of \$1 per year, and every member has the right to vote on what properties Time acquires, regardless of the size of their donation.

Over the years, the organization has purchased natural areas in several regions of the world (at the time of writing, about 3,900 acres in 8 different areas on three continents) with the help of its members. These areas will be preserved for future generations and will protect dozens of species from extinction.

The purpose of the upcoming study unit is to expose the students to TiME activity, but more than that, it is to make the students understand that the responsibility for change lies in their hands and that they have the power to bring it about.

Before starting the activity, it is highly recommended that you, as teachers, enter the website and browse it, study it and familiarize yourself with its contents. This will make your activity much more successful!

Some general notes:



We recommend having the students summarize the basics of each unit



We recommend carrying out the activity in tandem with other fields of study (e.g. biology, geography, environmental sciences, English, citizenship, etc).

Step 1: Investigating the various sites displayed on the organization's website.

Divide the class into pairs. Define the task for the students:

Each pair will receive an area offered for purchase on the site. Your goal is to convince all the other students that your area is the best and most worth purchasing. Students



will have to research the area, locate its main strengths, know its limitations and know how to make relevant biological arguments as to why it should be purchased.

Each pair receives one of the three areas shown on the TiME website. During the first lesson, the students enter the TiME website, locate their area and begin to explore it independently and with the help of the table in Appendix 1.

After investigating the area in pairs, group the students according to the different areas (all the pairs that investigated the same area sit together). Students are encouraged to share the information among themselves and find main arguments. This step encourages cooperation and information sharing between the couples. At this stage the students formulate their main arguments so that they can convince others to vote for their territory. A summary sheet should be prepared and submitted to you for review.

At this stage you can also prepare them for the debate - how to choose relevant and important arguments, how to present them and convince the audience to support you.

Step B: Holding a debate in groups.

Gathering for the groups of 6 students - each group consists of three pairs with each pair exploring a different area.

The purpose of the gathering - to hold a debate and decide which area they wish to save and raise the money for as a group. Each couple is required to defend their territory and convince their peers to choose their territory. The students need to have control of the information they gathered, find convincing reasons, and know how to argue them. The end result should be a respectful discussion, and a final group decision.

The way to the decision should be democratic and relevant to the arguments. How they will make the decision is in their hands, but ensure the way is based on arguments and reasons and not arbitrary or random.

Ask the students to write a summary page in which they explain their decision – how it was made and the reasons behind it



Phase C: Fundraising

After deciding on the site in which they plan to invest, the students must raise the money to finance membership in the organization to cast their vote. They must raise 1\$ for each member of the group.

Important points:

Many teachers are afraid of fundraising. First - you don't have to do this. It is possible to do the entire activity without fundraising or voting on the site. It is possible to hold a class vote only.

Second, it is possible to raise money in a way that has added value; such as collecting bottles for recycling, or a fair selling second-hand clothes/ equipment, reusable cups baskets, etc. This allows the fundraising itself to be a lever for environmental activism outside of the TiME program.

Step D: Voting on the website

The TiME site allows students to take personal responsibility for nature conservation through voting and financial contribution to natural preservation. . Membership in the organization costs only \$1 per year.

During the lesson, each student will receive a link with which they can vote on the website(this is a choice).. In Appendix 2 you will find instructions on how to vote on the website with regards to whole classes.

The advantage of voting during the class is that it allows students to see the actual impact they have on environmental conservation, making them feel involved and engaged in the process of saving the planet.

Step E: Pass it on:

It is worthwhile and recommended to think about a volunteer activity to continue - transferring an activity on the subject to other classes (for example in middle school, elementary, Scouts, etc.), organizing an event at school regarding natural preservation, organizing a parent's evening/trend on the topic, preparing posters on the topic, etc.



This provides a very important opportunity for independent action and thought, allowing students to be the change they wish to see in the world, creating an environment of greater equality, activism, and allowing students to break free from an exclusive focus on academic knowledge, ultimately bringing about radical change both in the psychologies and actions of each student involved with this coursework. Allow and encourage them to grow!

Good Luck!!



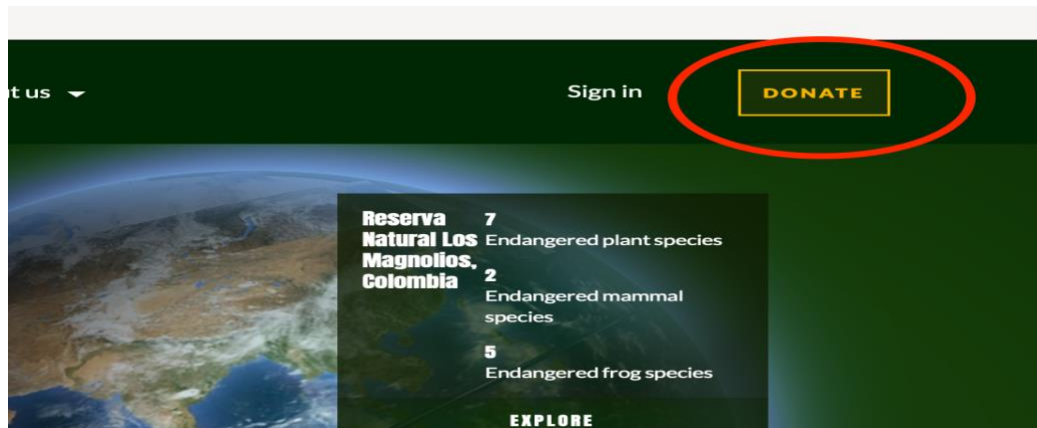
Appendix 1 - Table for TiME Area Information Summary

Go to the TiME website at <https://this-is-my-earth.org/> and search for information so that you can complete the attached table. You can also search for general information on other trusted websites

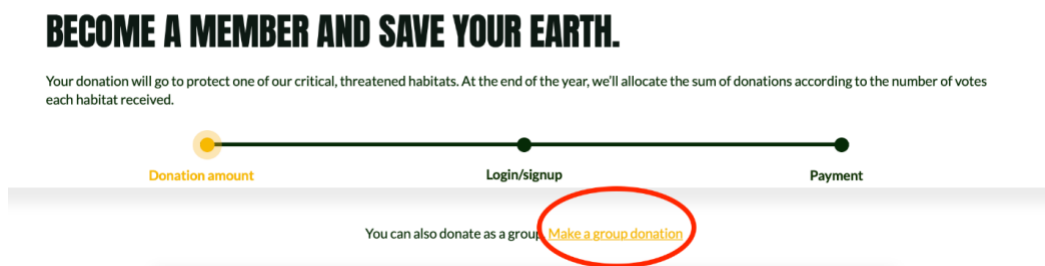
Name of the site	
Mainland	
Capital city	
Currency	
Religion(s)	
National Government	
Languages	
Nationalities	
Size of Area	
The price of the area	
Habitat type	
Unique animals	
Extinct animals	
Main reasons for maintaining this site	
Major dangers in buying this area	

Appendix 2 - Instructions for the teacher to register students on the TiME website (9 steps):

1. Go to: TiME website at <https://this-is-my-earth.org/>
2. Go to Donate.



3. Go to “Make a group donation”



4. Give a name to the group.
5. When registered, students need to have permission to register.

DONATION AMOUNT

GROUP DONATION

*Please note: a minimum donation of \$1 US per group member is required for each group member to receive a vote

Please enter the number of group members/votes and choose a group name:

☒ I am authorized to share links with students or others who will receive a link with an option to vote.

NEXT



6. Fill out the institution name.
7. The minimum donation for voting is \$1 per person. Choose the amount as the number of students.

DONATION AMOUNT

GROUP DONATION
*Please note: a minimum donation of \$1 US per group member is required for each group member to receive a vote

Choose donation amount (all denominations shown in US dollars)

\$5	\$7	\$10	\$12	\$15
------------	------------	-------------	-------------	-------------

Other Amount:

☒ I confirm that I am making this donation in my own capacity or on behalf of a school or institution that approved to make this donation on their behalf.

NEXT

8. Sign up or Re-enter

LOG IN

Please log in with your email address and password. After you have logged in, you'll be able to vote (if you haven't used your voting opportunity yet).

Not a member? [Sign up](#)

Email address

urishanas@gmail.com

Password

••••••••••


[Forgot password](#)





LOG IN

9. Fill in the payment details.

PAYMENT

PAYMENT METHOD


Credit Card



BILLING INFORMATION All fields are mandatory

First name <input type="text" value="First name"/>	Last name <input type="text" value="Last name"/>
Address <input type="text" value="Address"/>	City <input type="text" value="City"/>
Country <input type="text" value="Choose country"/>	Telephone <input type="text" value="Telephone"/>

Card info

Total donation amount: **5\$**

DONATE

10. You will receive a link and a code, specifically for the group you created.



11. The link and code will be used by the students to vote.

THANK YOU FOR YOUR DONATION.

OUR GROUP VOTING LINK: <https://this-is-my-earth.org/voting/group/five2uri5-5>

OUR GROUP VOTING CODE: 125137

SEE OUR SUCCESS STORIES

12. Students Entry: Students submit their personal or institutional email and the code

PLEASE ENTER YOUR EMAIL & CODE


☒ I want to receive TiME's newsletter

CONTINUE

13. Vote


THANK YOU FOR YOUR DONATION.

NOW YOU CAN VOTE FOR ONE OF OUR CRITICAL HABITAT CANDIDATES.




Chocó Forest,
Ecuador

7 VOTES (1%)



El Alto de Ventanas,
Yarumal, Antioquia,
Colombia

7 VOTES (1%)



Cerro Tapichalaca,
Eastern Andes,
Ecuador

6 VOTES (1%)

SUBMIT VOTE



Appendix 3 - Copyright and contact details

The booklet was prepared voluntarily by TiME's education team.

Contact: time@this-is-my-earth.org

The international volunteer organization TiME (this-is-my-earth.org) acquires and preserves important natural areas in the world, with the help of mass mobilization and a transparent, democratic and egalitarian model allowing every citizen on Earth to be an active partner in nature conservation. The organization's activities are based on volunteers from all over the world so that 100% of the membership fees (one dollar only) and donations will be used to purchase and maintain land and prevent carbon emissions.