

Name:
Period:

Student Response Sheet

swampscapes.org

PART I: THE SIGHTS AND SOUNDS OF THE SWAMP

1. What do you picture in your mind when you think of a swamp? How do scientists define a swamp?

2. Using the photographs, make a short list of biotic and abiotic factors found in the Everglades

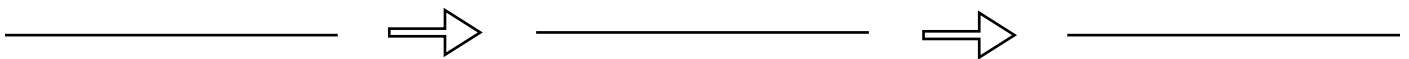
Biotic Factors:



Abiotic Factors:

3. A swamp is a type of ecosystem, where living and non-living things interact with one another. For example, Great Blue Herons are birds commonly found in swamps. They drink the water (non-living thing) and eat the fish (living thing) that live in the water. Using the photos you just viewed to help you, can you think of a simple food chain of living things who rely on each other for food and energy?

Hint: Food chains usually begin with a plant, which can make its own food using the sun's energy.



4. Humans often leave their mark on a swamp, too. Which photographs show human activity in the swamp?

5. Why are swamps important??

They protect us from storms

They clean the air

They purify water

They nurture biodiversity

- a. Wetlands are as critical as rainforests and coral reefs with regards to the number and variety of species they support.
- b. Globally, wetlands are estimated to store over a third of the world's terrestrial carbon.
- c. Coastal wetlands can provide critical protection against incoming hurricanes
- d. Wetlands filter out excess nutrients and dangerous pollutants in rain and stormwater runoff.

Answer the following questions about the films. You may have to do a little research on your own to answer some of the questions.

Film 1: Mike Owen

6. What does Mike Owen do for living?

7. How many ghost orchids have been found since scientists began studying them?

8. Mike Owen says that diversity is the key to why life on Earth has persisted millions of years. What is biodiversity?

Film 2: Betty Osceola

9. What do the Miccosukee call the Everglades?

10. Name the 2 types of ways humans have impacted the Everglades in her lifetime.

Film 3: Larry Brand

11. Larry Brand studies algal blooms. What is an algal bloom?

12. What causes the algal blooms in the Everglades?

13. What is a federal subsidy?

14. How much does the US Government give the sugar farmers annually?

Swamp Symphony

Let's listen to some of the sounds of the swamp.

Go to <http://www.swampscapes.org/guides.html>

You have met the six different people featured in these short films. For two of the films, click on 360° Landscape button to the right of the film's description.

20. What animals do you hear?

21. What non-living things can you hear?

Go to <http://www.swampscapes.org/swamp-symphony.html> and make your own swamp symphony. Drag the different photos into the circles at the top of the page. You can make some sounds louder than the others by dragging the photographs left or right with your mouse.

22. What is your favorite sound?

23. Which sound surprised you the most?

Open a window or step outside of your home and listen silently for 60 seconds. What do you hear? Using your phone or other recording device, record your surroundings for 20 seconds. Be silent.

Using your phone or other recording device, step outside wherever you are now and record what you hear for 20 seconds.

24. Can you tell which sounds are natural and which ones are human made? Humans talking or playing outside can be considered natural sounds. Lawn equipment or cars are examples of human technology.

Natural sounds:

Sounds created by technology:

Your teacher will let you how we will share your recordings. (ex. Edmodo, Teams, in class).

PART 2: EVOLUTION AND CLIMATE CHANGE

Evolution is a very important theme in life science, it ties everything together. It explains how so many living things have come to exist on Earth. These living things have changed over time for over hundreds of millions of years. Thanks to fossils, for example, we know that the alligators in our swamps were roaming the Earth before the dinosaurs even evolved.

Species of living things have had to evolve (change over time) in order to adapt to new environments. In other words, as environments change, living things change. One of the ways this can happen is called natural selection.

Natural selection occurs in a population (a group of individuals of the same species). Different individuals can have different traits or characteristics. Some individuals survive to reproduce and others do not, depending on which ones are best suited to live in the environment.

This little video will help you understand: <https://tieseducation.org/resource/excellent-and-simple-explanation-of-natural-selection/>

Answer the questions below at the corresponding time stamp in the video.

Time stamp 0:23 –

25. What similar traits do the members of the species have? What different traits do the members of the species have?

Time Stamp 0:46 –

26. Which members of the species are more vulnerable to the predator?

27. Which members of the species are more likely to survive?

28. Can you predict what the population will look like over time?

Time Stamp 0:52

29. Can you describe natural selection?

30. What is adaptation?

Time Stamp 1:33:

31. What will happen to the green individuals in this sandy environment? What if the environment changes and gets greener?

Time stamp 1:49:

32. How does variation play a role in the survival of the species?

Climate Change and Extinctions

Species do not always make it. Sometimes, none of the individuals in the species has what it takes to survive in a new environment. Over the course of Earth's history, 99% of all species have not been able to change in response to new environments. This is called extinction.

People may say to you, "What's the big deal? There have always been natural climate changes on Earth." They may also say, "Humans and animals breathe out carbon dioxide, are we causing climate change"?

Answer: It's all about the pace of change **and** the addition of carbon dioxide to our atmosphere from sources coming from inside the Earth.

First, it's important to note that natural selection can take thousands of years. Many species have adapted **because** the changes in Earth's climate have also taken thousands of years. However, in film #5, Win Everham mentioned that humans are changing the pace of at which many environments are changing. Because of climate change, environments are changing too quickly for species to keep up and adapt. So, sure, there have been natural climate changes in the past, but the one today is happening way too fast for species to adapt. It's happening over 100-200 years instead of tens of thousands of years. Big difference.

Second, yes, our Earth's atmosphere naturally has carbon dioxide, and other greenhouse gases (heat-trapping gases). These gases help keep our temperatures relatively stable. Take the planet Mercury, for example, which has no atmosphere. The temperature can range from 800 degrees Fahrenheit (427 degrees Celsius) during the day to minus 290 F (minus 180 C) at night. That's a swing of over 1,000 degrees Fahrenheit!!!

So, thank goodness for the greenhouse gases in our atmosphere, right? Yes. But what if we add more and more of them to our atmosphere? That's what climate change is caused by, we are taking fossil fuels (gas, coal, and natural gas) from underground, bringing them to the surface, and burning them for energy. We are adding to the amount of carbon dioxide already here naturally.

Think about it this way, do you sleep with a thin blanket or sheet on your bed? Most people do. That thin blanket is the Earth's natural atmosphere. It keeps you comfortable at night, not too hot, not too cold. Now what if while you are sleeping, I start taking blankets out from UNDER your bed and toss them on top of you? I keep adding more and more blankets on you. There will come a point when it will be too hot for you to sleep comfortably. Get it?

In film #4, Houston Cypress mentions sea level rise. This is one of the results of climate change. What do you think is causing sea level rise? (Your answer should include the terms fossil fuels, carbon dioxide, global warming, and melting).

33. What do you think is causing sea level rise?

34. Somebody says to you, "What's the big deal? There have always been natural climate changes on Earth." What would you say back (Hint: You can start with, "Of course there have always been changes, but...")?

35. Now try this one, "Humans and animals breathe out carbon dioxide, are we causing climate change?"
