

GLOBIO created Learning Activity Guides are designed to simplify integration of Glossopedia based learning into classroom and extra-curricular activities and curriculum. Each activity is designed around the use of Glossopedia articles and subjects, incorporating technology into interdisciplinary instruction. Learning Activities are intended to be fun, inquiry-driven, and interesting; exciting for students and helpful to teachers.

## Activities

Home, Wet Home  Pages 2 - 4

Layers of Life  Pages 5 - 6

## Extensions

Wetland Wall  Page 7

Wetland Species Search  Page 7

### Concepts

- Wetlands are flooded, water-soaked areas classified by the water plants that grow there.
- Wetlands have many values and are important to life on earth.
- People have destroyed many wetlands because they haven't understood their value.

### Related Topics

- Plants
- Animals
- Environments
- Tropical Rainforests
- Salmon
- Species
- Birds
- Fishes
- Insects
- American Beavers
- Bald Eagles
- Arthropods

### Standards



Standards Key available at [www.globio.org/standards](http://www.globio.org/standards)

### Recommended Outside Links

- Athena Earth and Space Science: <http://www.kathimitchell.com/wetlands.htm>
- Audubon Society: <http://www.audubon.org/campaign/wetland/ecosystem.html>

### Vocabulary

- Endangered
- Adapt
- Biodiversity
- Fossil
- Habitat
- Migrate
- Niches
- Degraded
- Pollution

## Home, Wet Home

### Directions:

#### Part 1

- Give each student a copy of the Home, Wet Home worksheet.
- Ask students to complete the sheet as they read the Wetlands article in Glossopedia. They will also need to read photo captions, Fast Facts, the interactive Wetland Layers, and vocabulary word definitions.
- **Note:** This exercise will demand careful reading. All animal-to-home links except one are found in the text and captions. Students will need to find the answer for that animal based on outside knowledge and process of elimination. (Moose live in the Canadian muskeg)

### Time:

- 30-60 minutes

### Materials:

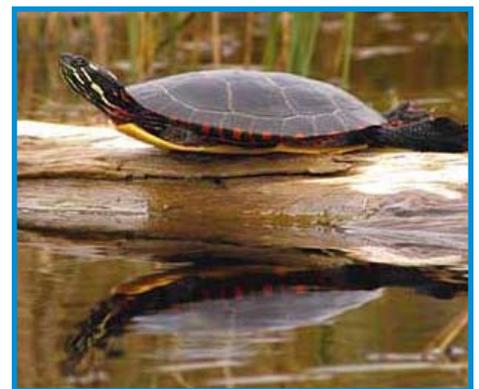
- Glossopedia
- Worksheet: Home, Wet Home
- Pencils

### Glossopedia:

- [www.globio.org/glossopedia/wetlands](http://www.globio.org/glossopedia/wetlands)
- [www.globio.org/glossopedia/tropicalrainforests](http://www.globio.org/glossopedia/tropicalrainforests)
- [www.globio.org/glossopedia/mangroves](http://www.globio.org/glossopedia/mangroves)
- [www.globio.org/glossopedia/beavers](http://www.globio.org/glossopedia/beavers)

### Answers

Wetland Type or Location	Answers
Water Surface	<i>Dragonflies</i>
Emergent layer	<i>Heron</i>
African wetland	<i>Hippo</i>
S. America	<i>Capybara</i>
Bayou	<i>Anhinga</i>
Shoreline	<i>Frogs</i>
Estuary	<i>Salmon</i>
Mid-water	<i>Manatee</i>
N. America	<i>Beaver</i>
Tropical wetland	<i>Caiman</i>
Muskeg	<i>Moose</i>



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## Part 2

- Divide students into three groups. Direct all students to return to Glossopedia.
- Group #1 will open the article on Tropical Rainforests and explore the forest layers interactive. Ask students to compare Tropical Rainforest layers to Wetland layers.
- Group #2 will open the article on Mangroves and explore the animal interactive. Explain to students that a Mangrove swamp is a wetland with both fresh and salty water.
- Group #3 will open the article on American Beavers and read the first two paragraphs and the last two paragraphs, beginning with, “Beavers in Trouble.” Instruct students to consider why beavers are a keystone species and how people have harmed and helped them. Students may also open the Anatomy interactive to see what special adaptations beavers have to help them with their work.

## Discussion:

- What is a wetland?
- Where are wetlands located?
- What are some different types of wetlands?
- What are the layers of a wetland and what is special about them?
- What are some values of wetlands?
- What ancient creatures lived in wetlands?
- Name some creatures that live in wetlands today, see completed worksheet. What adaptations do they have to their environment?
- Why and how have people destroyed wetlands? Have you seen any bad results from their destruction?
- How can you help people understand the value of wetlands and save them?
- What do you think the world would be like without wetlands?
- Group #1: How do you think Tropical Rainforest layers are like layers in wetlands? How are they different? Do these forests serve a similar role in the planet’s health?
- Group #2: How is a Mangrove Swamp like the other wetlands you read about? How are they different? Are some of the animals the same or similar to ones that live in other wetlands? What are some of their interesting adaptations?
- Group #3: Explain how American beavers help other wetland animals and what a keystone species is. What has their relationship with people been like? Tell what special “tools” beavers use to do their work.

## Worksheet: Home, Wet Home

Where would you expect to find each of these animals?

Draw a line between the wetland type or location and the animal that lives there.

Wetland Type or Location		Animal
Water Surface		Capybara
Emergent layer		Anhinga
African wetland		Manatee
S. America		Beaver
Bayou		Dragonflies
Shoreline		Moose
Estuary		Caiman
Mid-water		Frogs
N. America		Hippo
Tropical wetland		Salmon
Muskeg		Heron

## Layers of Life

Create a layered wetland aquarium habitat

### Directions:

#### Part 1

1. Starting with the bottom layer, put soil, rocks, clay, sand and gravel in the bottom of your aquarium. Try to create a high “shoreline” on one side of the aquarium with larger rocks, bricks, or cement pieces.
2. Add water that is not chlorinated or fluorinated. Leave some rocks and soil exposed for your shoreline.
3. Wait for a day to let the mud settle before adding anything more.
4. After your aquarium has stabilized, add some plants, preferably from a local freshwater wetland. If you don't have a wetland in the neighborhood, get some plants from a store that sells aquarium supplies. Try to get some that will emerge from the water, like rushes or sedges, as well as some that will float on top like water lilies or duckweed. Add a few land plants, like grass, to the shoreline.
5. If you live in an area with a wetland, you may visit it with your class and supervise collection of small invertebrates like snails and beetles for you aquarium. If not, most pet stores sell fish that will live in poorly oxygenated water, such as small catfish and Plecostomas. Plecostomas have the added value of keeping your tank clean by eating algae, and they grow quickly. You will need to have appropriate food and watch animals carefully for signs of stress and poor health. Invertebrates can be returned to their original home, and most pet stores will allow you to return a fish if it has outgrown its tank or you no longer want it, providing it is in good health. Students may also be willing to take a fish home to their own aquarium.
6. **Note:** Turtles require extra care, such as tank cleaning and specific food, and may eat other aquarium inhabitants. Some also bite hard or are escape artists. Choose carefully if you decide to get one.

### Time:

- (2-3) 30 minute lesson times for set up and additional observation and maintenance time as needed

### Materials:

- 10-20 gallon aquarium
- small wetland and water plants
- small land plants
- rocks, bricks, cement chunks
- soil, clay, sand, gravel

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### Part 2

- Can you see the layers in your aquarium? Photograph and draw pictures of your aquarium and label the layers.
- Keep a class data journal of observations and make daily or weekly entries. Always write the date and time of your entries and who made them.
- Possible data: water color and turbidity(how murky it looks), temperature, water pH, plant and animal growth, any changes that take place, and quantity of water added over time.
- Find out more about the plants and animals in your aquarium.
- Using your computer, make a graph of one plant's growth over one month; three months; six months. Do this for three plants and chart their progress.



### Questions:

- How frequently does your aquarium need more water?
- Do you see any natural cycles occurring inside? If so, what?
- Do you think that you have a balanced ecosystem?
- Are your plants and animals healthy? Why/why not?
- Photograph your aquarium every day for a month. Post your photographs and journal data on your school or classroom web site or blog.
- Make an aquarium at home with your family.



## Extensions

### Wetland Wall

#### Directions:

Create a mural or large team drawings of wetland layers and add some animals to them using the Wetlands interactive and article images as a guide. Try to place animals and plants in the correct layers.

### Wetland Species Search

#### Directions:

Look for other species in Glossopedia that have connections to wetlands. Most will be found in the photo galleries of subjects listed in the “See Everything” link. Have students draw a picture of an animal or plant and label and describe one or more parts of it that are useful adaptations for life in a wetland.

### Some species with wetland ties listed in Glossopedia subjects are:

#### Plants

Water lily, papyrus

#### Insects

Mosquito, dragonfly, stonefly larva

#### Animals

Phytoplankton, alligator, little blue heron

#### Birds

African fish eagle, flamingo, great blue heron, duck

#### Bald Eagles

#### Conservation

Black caiman

#### Salmon

Salmon, trout

#### Fishes

Striped catfish, rainbow trout, pink salmon

#### Mangroves (Interactive)

Green anole, osprey, manatee, green sea turtle, roseate spoonbill, mangrove snapper, mangrove oysters, horseshoe crab, upside-down jellyfish, mangrove trees