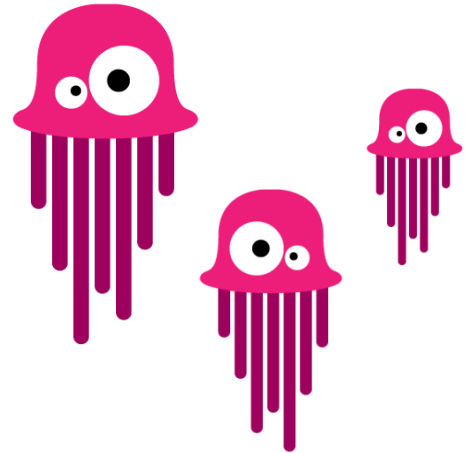


Greater Cleveland Aquarium

C.S.I.

(Creature Science Investigators)

Teacher Guide



Theme: Animals' Basic Needs for Survival

Grade Band: K – 2

Program Length: 1 hour 30min

Overview

Dive into the Greater Cleveland Aquarium where your class will become C.S.I.s (Creature Science Investigators!) for the day. Your class will work in cooperative groups to research animals in four different aquarium galleries: Ohio Lakes and Rivers, Exotic Freshwater, the Coastal Zone and a Caribbean ocean habitat in the Main Exhibit. Their investigation begins with a classroom briefing about animal basic needs by comparing humans to our fishy friends. After completing their course, students will be commissioned as official C.S.I.s for the day. A set of “Creature Case Files” will be given to each group to set the stage for their investigation around the world to learn about our aquatic animals. Each file contains a series of clues based on a particular animal’s basic needs. Guides will read the clues to their group so students can pick the animal out of “The Line-Up.” This program reinforces state standards and uses guided inquiry investigation.

Goal

Students will investigate four animals from four distinct aquatic habitats based on their individual basic needs. Students will come to an understanding that all living things must meet these needs in order to survive within their environment.

Standards

Grade	Strand	Topic	Content Statement
K	Life Science	Physical and Behavioral Traits of Living Things	Living things have physical traits and behaviors, which influence their survival.
1	Life Science	Basic Needs of Living Things	Living things have basic needs, which are met by obtaining materials from the physical environment.
1	Life Science	Basic Needs of Living Things	Living things can survive only in environments that meet their needs.
2	Life Science	Interactions within Habitats	Living things cause changes on Earth.

Objectives

1. Students identify the differences between basic needs of human and aquatic life.
2. Students investigate animals from four aquatic habitats: Ohio freshwater rivers, sub-Saharan desert, coastal sea grass zone, and the coastal and pelagic coves in the Caribbean Ocean, to determine how these environments meet an animal's needs for survival.
3. Students examine four aquatic animals and propose explanations for how these animals are adapted to survive in their particular habitats.

Vocabulary

Habitat

Saltwater

Observation

Survival

Freshwater

Environment

Basic need

Investigate

Aquatic

Shelter

Trait

Pre-Activities

Lessons to help prepare your students and enhance your field trip experience:

1. What's That, Habitat? Adapted from Project Wild K-12 Curriculum and Activity Guide.
 - a. Introduce the concept of basic needs. Have students generate a list of basic needs for humans. The list should include food, water, shelter, and air.
 - b. Give the students a piece of paper and a drawing implement. Have students draw a picture of where they live that includes where they find their basic needs. Students can label the faucet "water" and label the refrigerator "food" etc.
 - c. Introduce the term habitat. Habitat: where a living thing lives and gets everything it needs to survive.
 - d. Give students a second piece of paper and have them draw a habitat for their favorite animal. Students should include all of the basic needs for their animal.
 - e. Compare the human habitats to the animal habitats. Though the basic needs may look slightly different (different food source, different homes, etc.) the basic needs of all living things remain the same.
 - f. On the back of each picture, have students write and complete the sentence "This is a good habitat because..."
 - g. Extensions:
 - i. Include space and arrangement in the list of basic needs. Could people survive in a single room with 40 other people? Could a Sand Tiger Shark survive in a 10 gallon tank? What would happen if the bathroom in your house was 9 miles away from the kitchen? Discuss how space and arrangement play an important role in survival.
 - ii. Discuss the differences between wild and domestic animals. Make a list on the board or sort pictures of different animals to distinguish between them. How are the basic needs of these animals met?

2. Investigate differences between fresh water and salt water with the egg experiment.
 - a. Review which bodies of water on Earth contain salt water and which bodies contain freshwater.
 - i. Use pictures of oceans, rivers, lakes, etc. as visual aids.
 - ii. Have students find oceans on a globe.
 - b. Fill a glass with salt water (2 cups water and $\frac{1}{4}$ cup salt) and another glass with fresh water.

- c. Dip popsicle sticks into each glass to let students taste the difference. Have students write down observations and descriptions.
 - d. Have students predict what will happen when you put an egg in each glass. Have students write down their hypothesis.
 - e. Place an egg in each glass. The saltwater egg floats while the freshwater egg sinks. Have students record the results.
 - f. Discuss why this happens: salt water is denser, allowing the egg to float.
 - g. Do you think the same plants and animals can live in fresh and salt water? Why or why not?
3. Familiarize the students with the aquarium by viewing the aquarium map and by visiting the Greater Cleveland Aquarium website: www.greaterclevelandaquarium.com
 4. Preview the animals we have on exhibit on our animal facts website: <http://m.greaterclevelandaquarium.com>

Post-Activities

Lessons for the classroom to help reinforce concepts from your field trip experience:

1. Explore additional aquatic and terrestrial habitats. What kinds of animals live in the rainforest, the tundra, a wetland, a temperate forest? How are the basic needs of these animals met?
2. Create a shadow box habitat for one of the habitats investigated during the aquarium trip (Ohio freshwater, sub-Saharan desert, coastal sea grass zone, and Caribbean coral reefs).
 - h. Help students recall the essential elements of these habitats (sand, saltwater, coral, rocks, etc.). What plants and animals are found in this habitat?
 - i. Have students recreate that habitat inside of a shoe box. Students can use paper, crayons, glue, and whatever recycled craft materials they have available.
 - j. To get started, check out this website; it has good ideas on how to prepare the shoebox, make 3D items, etc.
http://www.firstpalette.com/Craft_themes/Animals/coralreefdiorama/coralreefdiorama.html
3. The power of human impact. Learn how people affect environments.
 - a. Look at ways people are harming habitats (deforestation, over fishing, pollution, etc.) Are there examples of this happening in our own community?
 - b. People can also cause positive change. Introduce the term conservation. Brainstorm ways people can help protect these unique habitats and the plants

and animals that live there. Make a list of daily activities that can help protect the planet (turning off the lights, taking shorter showers, picking up litter, etc.)

Additional Resources

Habitats

<http://www.bbc.co.uk/nature/habitats>

<http://www.mbgnet.net/index.html>

River

<http://www.eoearth.org/view/article/152862/>

<http://www.bbc.co.uk/nature/habitats/River>

Desert

<https://www.worldwildlife.org/habitats/deserts>

<http://environment.nationalgeographic.com/environment/habitats/desert-profile/>

Sea Grass

http://gulfsi.usgs.gov/gom_ims/pdf/pubs_gom.pdf

<http://ocean.si.edu/seagrass-and-seagrass-beds>

Coral Reef

http://education.nationalgeographic.com/education/news/coral-reefs/?ar_a=1

<https://www.koriosbook.com/read-file/coral-reef-teachers-guide-reef-relief-founders-pdf-214899/>



Education Department

Greater Cleveland Aquarium

2000 Sycamore Street

Cleveland, Ohio 44113

www.greaterclevelandaquarium.com



OHIO LAKES & RIVERS:
Follow the stone path through our forest and check out our bubbling "brook" and our new reptiles and amphibians including salamanders, newts, snakes and turtles.

LAKES & RIVERS OF THE WORLD:
Enjoy four individual regions through this gallery: Australia, Asia, South America and Africa. On this journey you meet eastern snake-neck turtles in Australia, archerfish, and one very special giant gourami in Asia, cocoiated stingrays, and an Amazon river turtle in South America, and spurred tortoises from Africa. Pay

special attention to these tortoises; they are gentle creatures with playful personalities who encourage you to interact with them by touching their shells.

DISCOVERY ZONE:
First, discover facts about water pollution and learn about what you can do to help. We must remember that creating awareness is an incredible challenge, our oceans, lakes and rivers are depending on us. Don't forget to look up at what comes next; the base of one of the Powerhouse's original smokestacks is now home to a moon jellyfish exhibit. Learn about their life stages, from polyps to fully grown jellies, and watch as they "glow" in the dark.

COASTAL:
Check out our 11,000 gallon Touch Pool, seahorse exhibit, and live coral exhibit in our Coastal gallery. At our Touch Pool, learn the official "two-finger touch" technique and interact with our friendly stingrays.

PACIFIC:
Here you see fish from the Red Sea, Eastern Asia, Indonesia and the northern cold water regions. Of the many, pay close attention to the venomous lionfish, the black stars and the giant Pacific octopus.

EXPLORATION STATION:
The Exploration Station is designed as a research vessel and is located on the second floor of the Powerhouse, next to the Cafe. This exhibit features hands-on interactive fun especially for our younger guests. Stop by to meet our most electrifying resident, the electric eel, presented by FirstEnergy.

TROPICAL REEF:
This corridor features fish from Fiji and Hawaii including the playful rabbitfish, the burrfish and angelfish.

SHARK SEATUBE:
Home to four species of sharks and an amazing variety of aquatic life, this gallery is surely impressive. Elegance and splendor co-exist in the exhibit with sand tiger sharks reaching up to 6' long. Let our Seatube fascinate you as you walk through this wonderful subaquatic world, allowing extraordinary viewing access to sharks, moray eels, groupers and more.

