ADVENTURE aquarium® | New Jersey Academy for Aquatic Sciences

Exhibit COMPANION

Exhibit Companion

Grades 1 – 3

Topic: Habitats

Created by the New Jersey Academy for Aquatic Sciences
Education partners of Adventure Aquarium

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About this Guide:

Thank you for booking a trip to Adventure Aquarium! This Exhibit Companion contains information and activities to enhance your visit, adding more educational value to an already exciting experience for you and your students. This companion was created to reinforce topics you are already studying in your classroom and stimulate conversations before, during and after your trip to the Aquarium. It is recommended that you read over the packet in its entirety, and distribute the "**At the Aquarium**" section to your chaperones. This section contains discussion questions to be asked at various exhibits throughout the Aquarium, as well as "Not to Miss" exhibits and shows.

For many of your students, this is their first visit to Adventure Aquarium and they may be interacting with animals that they have never seen before. With the help of you and your chaperones, their visit will be filled with fun and learning, and will be an experience they will never forget.

Adventure Aquarium is divided up into four areas, called Zones, to help you easily find your way around the building. This Exhibit Companion is also set up by Zone. The sections of the guide refer to exhibits found in each Zone and how they relate to the topic of this Companion. You may find other exhibits that also relate to the topic while touring the Aquarium. Please have your students and chaperones stop at each one to discuss the animals and their exhibit. Your students will gain more from your trip by taking the time to look, listen, and experience each exhibit, rather than racing through the building!

Adventure Aquarium is constantly updating and adding to our exhibits and collections. Please refer back to these documents prior to each visit, as they will also be updated to reflect changes at Adventure Aquarium.

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This guide includes:

- Activities to prepare your students for their visit and to reinforce topics addressed after they have visited.
- Descriptions of the exhibits that will be the focus of this Exhibit Companion and the animals they contain. Please note: while we make every effort to keep the animal list up to date, we are always adding to and adjusting our collections. Please ask an Adventure Aquarium cast member if you are unsure about the identity of a particular animal. We are always happy to help.
- Discussion questions about the animals or habitats in these exhibits.

Objectives:

After the visit, students will be able to:

- Understand the basic requirements for survival and how an animal's habitat provides for their needs.
- Realize that while basic needs are the same, different animals may have specific preferences.
- Recognize that some animals have the capacity to modify their surroundings to enhance survival.

Standards:

New Jersey	5.1A, 5.1D, 5.3A, 5.3B, 5.3C, 5.3E, 5.4G
Pennsylvania	3.1.1.A2, 3.1.3.A2, 3.1.2.C2, 3.1.3.C1
Delaware	SS6, SS7, SS8

Background Information - Habitats

A HABITAT is an animal or plant's home. It contains everything that it needs for survival – food, air, water and space to live. There are many different types of habitats around the world and animals can be found in every one of them. From the hottest deserts to the deepest oceans, animals will live in a habitat as long as the habitat can provide what the animal needs to survive.

All living things require **food** or nourishment. Plants make their own food using sunlight and water. Animals must eat plants (herbivores), other animals (carnivores), or a combination of both (omnivores).

Humans have the option to eat a variety of food. We all have our favorite foods, and animals do too. For some animals, food requirements can be mandatory: a rabbit could not survive by eating mice any more than a cat could survive by eating only grass.

Besides food, animals also need air, water and space to live. In general, animals choose their habitats by picking out the optimum place that satisfies their basic needs for survival.

Mammals, birds, and reptiles breathe **air** through lungs. Fish breathe by using gills to take air out of the water. Just as a fish cannot survive in a desert habitat because the water the fish needs to breathe is not available, mammals cannot survive in the deepest parts of the ocean without coming up to the surface to breathe.

Ninety-five percent of the Earth is covered by **water**. All animals need water in some form to survive. Many need a source of fresh water to drink, while others get water from the food that they eat. Others need to live in water, or depend on water for their food. Polar bears need to live close to the ocean because that is where the seals and fish that they eat lives. Whales and sharks have streamlined bodies and fins for moving around. They do not have the option to walk on land.

Many animals require **space** – space to raise babies, space to hide from predators, space to bask in the sun. Many birds build nests and their habitat needs areas that are appropriate for the type of nest they build. Penguins cannot build nests in trees, so a wooded forest habitat would not be suitable for their habitat.

Preparing for Your Visit:

In addition to using this guide, you can enhance your visit with a specially themed educational program. Ask about scheduling a classroom program such as ***What's Your Habitat****,* ***Life on the Reef****,* ***Food Web Frenzy****, or a* ***Behind-the-Scenes Tour****.*

A little preparation before the day of your field trip can set expectations and prepare your students to make the most of the visit. Visit www.adventureaquarium.com and view our interactive map. Familiarize yourself with the layout of the Aquarium, and advise your chaperones to do the same. It is easier to find the exhibits you will be focusing on if you know where you will be going and what shows and classes you will be attending. A handout of the daily show schedule is available at check-in and the Information Desk.

Adventure Aquarium has a variety of habitats on display. Most of them are aquatic, or watery, habitats, such as ocean, African river, swamp, coral reef and tide pools.

Prepare your students for the variety of habitats they will see at the Aquarium, as well as others, by showing them pictures of different habitats and animals call them home. Below is a suggested list of some animals and their habitats.

- Desert – tortoise, camel
- Forest – fox, owl
- Swamp – alligator, dragonfly
- Arctic – polar bear, Emperor penguin
- Coral Reef – clownfish, cleaner shrimp
- Deep Ocean – angler fish, giant squid
- Rainforest – macaw, tree boa
- Tide pool – hermit crab, sea star

Discuss the different needs the animals have for survival, and how those needs are met in each habitat. Be sure to discuss how the four basic requirements (food, air, water, space) are met.

Ask your students:

- How do the animals find food, or stay away from predators?
- What is different between how a forest provides for the creatures that live there versus how a tide pool provides for its inhabitants?
- In which of the habitats would they like to live? How would they need to modify those habitats to survive? What would be the pros and cons of your new habitat?

At the Aquarium:

While at the Aquarium, your students will be examining the different habitats on display. Below are some different habitats you will find at the Aquarium and questions (indicated by a "light bulb") that you can ask your students while looking at the exhibits. The exhibits are broken down by Zone.

Zone A – Caribbean Currents and Ocean Realm

Migration March – Spiny lobsters and slipper lobsters can be found in both coral reef and underwater rocky habitats. They prefer hiding in rocky crevices during the day, and venture out at night to find food. Spiny lobsters often migrate in large groups, and use their long antennae to feel the lobster in front of them.

- How are the lobsters in this exhibit different from the ones you've seen at the supermarket? Why do you think they are different?
  - *These lobsters do not have the large claws like the lobsters we are used to seeing in the supermarket (or in Zone C, Gill's Grotto) and their coloration is different. These lobsters are hiders, not fighters, so do not need large claws for defense, and their color helps them blend in with the rocks.*
- Why do you think the lobsters need to hide in the rocks?
  - *The lobsters hide in the rock from predators, especially after they have newly molted (shed their exoskeleton) and are waiting for their new shell to harden. Predators of these lobsters include fish, octopi and sharks.*

Ocean Realm – The Ocean Realm exhibit contains 760,000 gallons of salt water and represents an ocean habitat similar to what one might find off the coast of New Jersey. The temperature is relatively cold (72 - 74 degrees) and there is almost no shelter and no plant life.

There are many species of fish in this habitat and they occupy different areas of the exhibit. Some of the fish you see are in schools (large groups that swim together), some stay close to the bottom of the exhibit, and still others swim near the surface.

- Why do the fish swim in different levels in the water?
  - *Different fish find what they need to survive in different areas of the water column. Some swim in the middle of the water column, and many of these fish swim in schools for protection and ease of finding food. Bottom-dwelling fish often have mouths located on the underside of their bodies.*
- What is an animal in the exhibit that breathes air using lungs?
  - *Green Sea Turtle, Loggerhead Sea Turtle, diver*

Zone B – Penguin Island

African Penguins – When most people think of penguins, they think of birds that live in the ice and snow. Adventure Aquarium's penguins are African penguins, and live where it is warm. Their exhibit is similar to the rocky shores where they live in the wild. They use rocks and sticks to make nests for their eggs, unlike the Emperor penguin, which uses feet and a brood pouch to keep their eggs warm and protected in their Antarctic habitat. Penguins are flightless, with solid bones and waterproof feathers.

- Why isn't there snow in our Penguin Island exhibit?
  - *These penguins are found on the coast of Africa, where it is warm, not from an Antarctic habitat.*
- Why do penguins need water in order to survive?
  - *Penguins eat fish, squid and other animals that live in the ocean. While we hand feed our penguins at the Aquarium, in the wild they depend on the ocean for food.*

Zone C – KidZone

Creature Feature – These cold water invertebrates are examples of animals that live in a tide pool habitat. They must cope with daily fluctuations of salinity, water and temperature as the tides ebb and flow.

Many of these inhabitants have developed ways to survive periods of dryness as the waters recede. Anemones can retract their feeding tentacles, snails conserve water by closing their operculums, and seastars find crevices in the rocks where they can stay out of the sun and remain damp. Since these animals are not fish, they do not need to stay under water to breathe.

- Sea stars do not have fins for swimming. What helps them to not get washed away when waves crash on the rocks?
  - *A sea star's underside is covered with thousands of tiny tube feet, with little suction cups on the ends. These help the sea star to cling to the rocky substrate of their habitat.*
- Look at the sea cucumber. What do you think it eats?
  - *Sea cucumbers are scavengers, and eat bits of dead things on the bottom of the ocean floor.*

Coral Reef – There are several coral reef habitats in this area. Coral reefs have been called "the rainforests of the sea". The coral provides food and shelter for the fish that inhabit it. To grow, coral requires relatively warm temperatures and clear water so sunlight can penetrate. The sunlight enables the tiny algae living within the coral to provide food for the coral polyps. Individual coral polyps are only about a quarter–inch long, but they build vast colonies over thousands of years. The Great Barrier Reef is the only living thing that can be seen from space.

- Within the coral reef, you will find many smaller habitats. Observe which fish prefer certain spots. Why do you think they chose those spots?
  - *Different animals find what they need in different areas of the reef. Anemones provide shelter for the clownfish; filefish are often found upside-down within the waving arms of soft corals, while others hide in small holes in the coral, coming out only to feed.*
- Coral reef animals tend to be brightly colored. Why do you think they have such a variety of colors?
  - *Coral reef fish use their color to hide, or camouflage. They want to blend in with the brightly colored corals in the reef. Corals get their color from the algae that live inside of them. Different corals produce different colors, and the fish reflect this variety of coloration.*

Zone D – West African River Experience and Jules Verne Gallery

African River Experience – The African River Experience is home to our Nile Hippopotamuses, Button and Genny, as well as a variety of birds and fish. In this habitat, the animals interact in several ways. Hippos are considered a "keystone" species, meaning they are very important to their habitat. A hippo's paddle-shaped tail is specially designed for spreading fertilizer (hippo poo!), which gives nutrients to plants and other animals.

The fish in the exhibit help keep the water clean by feeding on the hippo's waste. They also help the hippos by feeding on parasites on their skin and cleaning their mouths of bits of food.

- Why don't the hippos eat the fish in their exhibit?
  - *Hippos are herbivores, meaning they eat only plants.*
- Why are the hippos' ears, nostrils and eyes located on the top of their heads?
  - *Hippos spend a large part of their day in the water. Nostrils on the top of their heads allow them to stay mostly submerged but still able to breathe. Eyes and ears on the top of their heads allow them to see and hear predators that might swim by without expending the energy that it would take to fully emerge from the water.*

Octopus – The Giant Pacific Octopus is one of the largest species of octopus. It is found in cave habitats, is solitary, and can live between 3-5 years in the wild. It eats a variety of crustaceans including shrimp, crabs, and lobster. They can change color and even texture using special cells in their skin that help them to blend in to their habitat. They prefer living in caves, and can squeeze into a hole about the size of their eye, which is about the size of a golf ball.

- What special feature does an octopus have that helps it cling to the rocks, its food, and even the glass in its enclosure?
  - *Octopus' arms are covered with tentacles that help them stick to things. These tentacles are sensitive and help the octopus feel around its habitat. An octopus' brain extends into the top portion of each arm.*
- Sometimes you'll see toys in the octopus exhibit. Why do you think that they're there?
  - *Octopi are very smart and can even solve puzzles. We give our octopus toys to keep it engaged and active.*

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Don't Miss:

Touch Exhibits

- Please Note: Touch exhibits close for 15 minutes every hour to give our animals a well-deserved break. If the exhibit is closed upon your arrival, please check with a cast member at the exhibit to see when it will be re-opened.
- Review with your students prior to arrival the best way to touch our animals. For all exhibits, we encourage a "two-finger" touch, gently on the animal's back. Listen for more tips from cast members at the exhibit.

Touch-A-Shark – Our touchable sharks are bottom-dwelling carpet sharks. These species have flat teeth, like your molars, that are good at crushing the shells of the animals that they eat, such as crabs, snails and clams. They are nocturnal (active at night) and most never grow larger than three feet.

Gill's Grotto – In Gill's Grotto there are three touch exhibits to experience. Here you can touch small sea stars, cleaner shrimp, anemones, and other coral reef dwellers as well as horseshoe crabs and lobsters.

Stingray Beach Club – Touchable stingrays glide past this multi-level exhibit, with touch areas for both tall and small visitors.

Creature Feature – This touch pool is teeming with creatures from the rocky shores of the Pacific Northwest. On the second floor of Adventure Aquarium, next to Irazu Falls, students will have the chance to see and touch slick, slimy and all-around cool invertebrates, such as several species of exotic and colorful seastars (including the beautiful Purple Ochre Star), anemones, crabs, snails and so much more.

Shows and Feedings – *please check your show schedule for times and locations*

Hippo Feed and Talk – Watch as our biologists provide a Q & A and toss treats to Nile Hippos, Button and Genny.

Meet the Divers! – Meet members of Adventure Aquarium's dive team and find out what keeps them moving through the water.

Ocean Realm Odyssey – Hear from an Adventure Aquarium cast member, as they introduce you to the inhabitants of Ocean Realm, including sea turtles, Shark Rays, Great Hammerheads and more!

Penguin Feeding & Talk – Penguins eat 20 percent of their body weight in one sitting! Watch it happen live during one of our daily feeds and hear our biologists talk about these fascinating creatures.

Secrets of Shark Realm - Learn from a cast member all of the secrets of our second largest exhibit and the sharks that inhabit it.

After Your Visit – Questions to Ask and Things to Do:

1. Ask students to pick their favorite animal from the Aquarium. Have them draw or describe the habitat that the Aquarium has created for them. Compare it to where the animal lives in the wild. Are the animal's needs for survival met in their exhibit?

2. Since predators kill and eat other animals for food, they are usually thought of as needing to be fast, or to have sharp teeth or claws to get their food. Many of the animals in Creature Feature (Zone C), like the sea stars and anemones, are predators, but don't have any of these advantages. Find out how they get their food.

3. Design a habitat for an animal of your choice, making sure to include all the requirements for survival. What can you include in your own backyard to make an attractive habitat for useful animals like frogs, toads, bats, and birds? See the Worksheet on Page 12 or have your students build a diorama.

DESIGN YOUR OWN HABITAT

Habitat checklist:

- ✓ Shelter
- ✓ Food
- ✓ Water