

Curriculum Concept Guide

Imagine students gasping in awe as they are surrounded by sharks in a 40-foot suspended Shark Tunnel. Picture the amazement on students' faces as they stand within inches of massive hippos gracefully gliding underwater. Or the smiles and giggles from students as they reach their hands into cool waters to touch colorful sea creatures, sharks, and even hand-feed stingrays. All of this and more is possible during a field trip to Adventure Aquarium on the Camden, NJ Waterfront, where there's always more new things to see and do!

Broken down into four distinct "Zones," (A, B, C and D), Adventure Aquarium offers 200,000 square feet of sprawling, climate-controlled space, over two million gallons of water, and a diverse collection of 8,500 animals, ranging from hippos to horseshoe crabs, penguins to pipefish, seastars to storks, sharks to sea turtles and so much more.

Learning opportunities around every corner are designed to inspire students to better understand and gain appreciation for marine life, food chains, life cycles and ecosystems. Hands-on touch exhibits, multi-sensory displays, free live shows, guided tours and classes, and impromptu up-close animal experiences occur daily.

A field trip to Adventure Aquarium is cross-curricular exploring Science, Social Studies, English and Mathematics. Exhibits address New Jersey Core Curriculum Standards 5.1 and 5.3; Pennsylvania Academic Standards 3.1 and 3.3; Delaware Content Standards 1, 5, 6, 7, and 8; and National Science Benchmarks 5A, 5D and 5F.

The New Jersey Academy for Aquatic Sciences, Adventure Aquarium's education partner, offers a variety of educational programs and resources to enhance your group's trip. This **Concept Guide** is designed as a resource for your classroom.

How to use this guide:

- This guide is divided into "Key Concepts" to help you explore Adventure Aquarium by topics your class might be studying.
- Choose a key concept below and visit each coordinating Zone to find the species mentioned.
- For each concept, you will find animals or exhibits that provide live, up-close examples to enrich lessons taught in the classroom
- Connect your classroom lessons to your trip and create an unforgettable experience for your students!
- Please use this Concept Guide as a starting point for your class' adventure in learning at Adventure Aquarium.

**For more information, visit AdventureAquarium.com.
Call 800.616.JAWS to make a group reservation.**

Key Concepts

- **Habitats**

- A **habitat** is a place where an animal lives. In order for a habitat to be able to support the animals that live there, it needs to have enough food, water, air and space to meet the animals' needs. At Adventure Aquarium, there are many different types of habitats on display for you to explore with your students.
 - Coral Reef, Rainbow Reef, Zone A
 - **Coral Reefs** are home to large varieties of aquatic organisms. A coral starts out as a tiny polyp that attaches itself to a rock or substrate in the ocean. It then divides and multiplies clones of itself to form a community of polyps that act as one organism, or an individual coral. As more corals grow on the reef, it allows for greater diversity in color and textures for aquatic animals to protect themselves. Currently, coral reefs help support the lives of 25% of the world's marine organisms.
 - There are several Coral Reef exhibits at Adventure Aquarium. Our Rainbow Reef shows the diversity of animals found in a coral reef habitat. Notice the brightly colored fish darting back and forth through the exhibit.
 - Deep Ocean, [Ocean Realm Exhibit](#), Zone A
 - The **Deep Ocean** is much less explored than any other land habitat of the world even though it takes up over 70% of the Earth's surface. The ocean is very important to the success of humankind because it provides us with oxygen, protein, and livelihoods. The ocean houses organisms as small as bacteria and as large as the Blue Whale. There are currently 28 major animal groups found in the ocean compared to the 11 that are represented on land.
 - In our Ocean Realm Exhibit, many species of deep ocean animals, such as Hammerhead Sharks, Roughtail Stingrays, and sea turtles can be found.
 - African River, [Hippos](#), Zone D
 - **African Rivers** are populated by the third largest living land mammals that live today, hippopotamuses. These very territorial creatures can be found submerged in the rivers of Africa during the day, and found grazing along the river edge at night. The rivers' waters help the hippos keep cool and keep their skin from drying out. It also provides them a place to compete with fellow hippos, reproduce, and give birth to their young. Because hippos graze in similar areas each night and near the rivers' edges,

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- their feeding habits can sometimes form additional channels along the rivers due to the land depressions that result.
- Adventure Aquarium is home to two [hippos](#) – Button and Genny. They each weigh over 3000 pounds. They spend much of their day sleeping in the water, but you may find them bouncing, jumping or frolic in the underwater viewing area of their habitat. You'll also see many African Cichlids in the water, helping to keep the water clean!
 - Tide Pools, [Creature Feature](#), Zone C ([KidZone](#))
 - **Tidal pools** make for very unpredictable and difficult habitats. They are vulnerable to fluctuating water levels as the tides change. They can also be exposed to a wide range in temperature and weather conditions due to their location along the ocean's edge. Organisms that live in tidal pools, such as barnacles and seastars, need to be very hardy in order to survive.
 - Our Creature Feature exhibit contains many species of seastars – such as Bat Stars and Ochre Stars – snails, anemones, and crabs. These touchable critters are all invertebrates, meaning they don't have a backbone, and are covered by a rough protection exoskeleton.

Enhance your visit with a habitat-themed Educational Program such as "What's Your Habitat", "Life on the Reef", or "Sharks." Visit AdventureAquarium.com for more information.

- **Adaptations**

- An **Adaptation** is a feature or behavior that an animal has or does to help it survive in its habitat. Examples of adaptations include coloration, migration, camouflage and symbiosis. At Adventure Aquarium, many different types of adaptations are apparent in our animal collection.
 - Flashlight Fish, Zone C ([KidZone](#))
 - **Flashlight Fish** are capable of bioluminescence – they can produce and display light. By covering and uncovering internal pockets of bioluminescent bacteria, the fish can light up their bodies temporarily in their deep sea, dark habitat. These flashes of light help the Flashlight Fish confuse their predators so that they cannot be located.
 - Watch our Flashlight Fish blink in their dark exhibit. Your students can get up close to them by peering up through the bottom of the exhibit.
 - [Stingray Beach Club](#), Zone B
 - **Stingrays** have adapted for feeding on animals that live on the ocean floor. Their flattened bodies help them hide from predators and prey. Their mouths, which are located on their undersides, help them easily pick up and eat their prey items.

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Stingrays also have the additional sense of electroreception, which allows them to detect bioelectricity given off by any other animal that may be around them.

- The stingrays' "stinger" or barb, is made out of keratin, the same material as human fingernails. This allows us to trim the barbs of the animals in our Stingray Beach Club exhibit, where students can touch several species of stingray.
- Octopus, Zone D
 - **Octopi** have many defensive adaptations that help protect them from their predators. The skin of the octopus is made up of tiny cells that can change colors. They can manipulate their muscles to look like different textures as well. This aids in camouflage. Octopi also shoot ink at their predators to temporarily blind them.
 - The [Giant Pacific Octopus](#), the species on display at Adventure Aquarium, is the largest species of octopus, and can weigh about 33 pounds, with an arm-span of 14-feet across when full grown. Because octopi are very smart, your students may observe toys in the exhibit. These are to help keep our octopus from getting bored.
- Bowmouth Guitarfish, Zone A
 - [Bowmouth Guitarfish](#) (also called Shark Rays) have hard, spiky ridges along their body. These ridges can be located behind their eyes, along their neck, and along the pectoral fins. These ridges keep predators from biting at the fish and protect them from harm.
 - Adventure Aquarium is home to three Bowmouth Guitarfish, one male named Einstein and two females named Pearl and Opal. You can pick out "little" Einstein easily because females are larger than males.

Enhance your visit with an adaptation-themed Educational Program such as "Animal Wrappers", "Food Web Frenzy", or "Built for Change." Visit AdventureAquarium.com for more information.

- **Conservation**
 - **Conservation** refers to the protection of animals, fungi, plants and their habitats, and the protection and management of the biodiversity of Planet Earth. According to the Environmental Protection Agency "there are approximately 1300 endangered or threatened species in the United States today. Endangered species are those plants and animals that have become so rare they are in danger of becoming extinct. Threatened species are plants and animals that are likely to become endangered within the foreseeable future throughout all or a significant portion of its range."

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- **Sea Turtle, Zone A**
 - Of the seven species of **Sea Turtles** that live in our oceans, all of them are listed as either “Threatened” or “Endangered.” Sea turtles face a variety of threats in the wild, including becoming by-catch in fishing nets and lines, destruction of the beaches where they lay their eggs, and poaching for their meat for food and shells to make jewelry and clothing.
 - Adventure Aquarium is home to two species of sea turtle, [Green](#) and [Loggerhead](#), and both types are endangered and can be found off the coast of New Jersey. The largest of the three turtles is Bob, a Loggerhead, who is actually a female turtle! She got her name when she was the size of a cookie, and by the time we figured out “he” was a “she,” the name had already stuck.

- **Penguins, Zone B**
 - There are 17 species of **Penguins**, and 13 of them are listed as either “Endangered” or “Threatened.” All species of penguins are protected from hunting and egg collecting. However, there are other factors that cause penguins to remain endangered, including oil spills, pollution, habitat destruction, and careless boating.
 - Adventure Aquarium’s penguins are [African Black-footed penguins](#). These penguins are part of the Species Survival Program (SSP), a zoo and aquarium captive breeding and management program that tries to preserve species, most of which are “Threatened” or “Endangered” in the wild.

- **Bangaii Cardinalfish, Zone C (KidZone)**
 - Unlike most marine fish, the **Bangaii Cardinalfish** produces a very small number of eggs, which the males incubate in their mouths. After hatching, the embryos remain in the parent's mouth until they complete their development.
 - In the wild, the Bangaii Cardinalfish is found only in a very limited area of Indonesia. They are beautiful fish, very popular with collectors, and their small population is being over-exploited. The NJ Academy for Aquatic Sciences at Adventure Aquarium is working to research and conserve this species so they can be protected. To learn more, go to www.njaas.org/research/bangaii_cardinalfish

- **Green Sawfish, Zone D**
 - [Green Sawfish](#) are critically endangered in the wild. This is due to the fact that they are easily caught in fishing nets where removal without injury to the animal is difficult. They are also hunted for their “saw,” which is sold for souvenirs or used in traditional medicines.
 - Adventure Aquarium’s Green Sawfish can be found in the [Shark Realm](#) exhibit. Their long rostrum is used to help them stun their prey. They will swim through schools of

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fish, waving their saw-like nose back and forth, stunning animals that they will then scoop up off the bottom of the ocean floor.

Enhance your visit with a conservation-themed Educational Program such as "Penguin Fun", "Life on the Reef", or "Sharks." Visit AdventureAquarium.com for more information.

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