
SAFEGUARDING WILDLIFE
Building awareness and inspiring conservation action
THE FLORIDA AQUARIUM
Tampa Bay Times
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OUR BLUE PLANET

The United Nations calls it "a race we can win." The Florida Aquarium is fully engaged in the race to find scalable solutions with conservation programs and priorities that aim to address our changing climate and its effects on humans and wildlife. For example, scientific data shows that the past decade was the hottest on record, and we continue to see rising sea levels and experience dramatic swings in the weather locally and globally.

But there is hope! Conservation researchers, biologists and educators around the globe, including at The Florida Aquarium, are committed to positive, sustainable change.

Big solutions require partnerships between scientists, topical specialists, technology experts, government agencies, business and industry, and the community. Everyone plays a critical role in conservation! The Florida Aquarium is actively engaged in stewardship of the natural environment, working to build awareness and inspire action for species and habitat conservation.

Through outreach, education, conservation efforts and critical research, The Florida Aquarium is fulfilling its purpose. Through their commitment to saving marine wildlife, staff are making a tangible impact.

Critical conservation areas

The Florida Aquarium has prioritized several critical conservation areas of focus that align with their staff's expertise. Each priority is aligned across different departments and activities. They often include public engagement, community service and environmental stewardship. Aquarium staff believe in living their shared purpose and commit to participating in multiple priority-based activities annually.

Single-use plastic consumption

Because plastic waste is harming wildlife and wild places at record levels, the consumption of single-use plastics and flow of plastics reaching our waterways must be significantly reduced.

The Learning and Marketing departments managed a successful Skip the Straw Campaign with visitors and local businesses and are expanding their focus to make a greater impact. The Marketing department manages a Bead-Free Bay Campaign as part of Tampa's annual Gasparilla Pirate Festival and after the event, divers from the Marine Operations Department collect tons of beads strewn into the waterways. The Florida Aquarium organizes and participates in many community and beach clean-up events annually.

Safeguarding wildlife

Did you know that many animals now need to live in some level of protected care such as large reserves, National Parks, Marine Sanctuaries, and accredited aquariums and zoos, like The Florida Aquarium?

Understanding and meeting their health, wellness and population needs is of utmost importance. At The Florida Aquarium, the Animal Care and Health team supports the needs of animals both in their care and elsewhere. The Aquarium sends medical supplies to support the care of thousands of radiated tortoises seized from wildlife traffickers in Madagascar. It also sends staff and medical supplies to South Africa to assist with African penguin rescues.

While The Florida Aquarium leads a number of community programs, they also support and participate in important partnerships such as The Monterey Bay Aquarium's Seafood Watch Program. The Florida Aquarium's Development Department also raises funds to support wildlife in crisis situations such as Australian wildfire animal rehabilitation efforts.

Generating healthy habits

Since many terrestrial and aquatic habitats have been reduced, restoration efforts are required if humans are to restore a functional abundance and distribution of species.

The Florida Aquarium team has planted pollinator gardens at the conservation campus in Apollo Beach, and they also are involved with mangrove restoration projects. In addition, the Learning Team has led a program with Girl Scouts to help scouts earn badges for learning about the importance of mangrove habitats while growing progagules (mangrove seedlings) that can be used for future restoration projects.

Sustainable business operations

Since some business and operational practices around the world can impact wildlife and their habitats, organizations can strive to adjust their practices, products and activities to mitigate negative impacts as much as possible.

The Florida Aquarium has installed carpeting made of recycled fishing line in some gallery spaces that needed updates, and solar panels with educational signage are in view of Aquarium guests. The Aquarium's gift shop partner, Event Network, sells a line of items made with sustainable materials as well as from recycled plastic. In addition, food and beverage partner, SSA, has made a commitment to reducing the use of plastic, including eliminating single-use plastic bottles.

The Florida Aquarium leads two comprehensive conservation programs:

The Coral Conservation Program and Sea Turtle Conservation Program. Each is focused on a specific taxon, a scientifically classified group, and aligned with the aquarium's expertise.

The coral crisis

The Florida Reef Tract is the world's third-largest barrier reef, stretching about 360 miles along the southeastern Florida coast. Many factors are leading to the decline of this reef. Those include increasingly warmer and acidic water conditions, the dying off of key associated species and Stony Coral Tissue Loss Disease (SCTLD).

While the cause of SCTLD is still unknown, it now spans nearly the entire reef and has affected 22 species of stony corals. In order to save the Florida Reef Tract, immediate, multi-faceted and innovative actions must be employed.

The Florida Aquarium's Coral Conservation Program is addressing the coral crisis by focusing its efforts on several interconnected strategies designed to protect species that are approaching, or at the risk of, extinction in the wild. The Florida Aquarium's focus is on:

- Genetic banking of threatened staghorn and elkhorn coral.
- Rescue and genetic banking of healthy coral species before being affected by SCTLD.
- Cryopreservation of sperm for assisted reproduction.
- Laboratory-induced spawning.
- Collection of wild gametes.
- Collection of genetic bank gametes.
- Providing excellent care and welfare.
- Managing an algae-controlled habitat.
- Maintaining long-term health of archived adult corals.
- Selectively reproducing corals to promote diversity and resiliency.
- Raising healthy juveniles.
- Increasing genetic diversity and number of corals available for restoration.
- Outplanting coral juveniles onto the Florida Reef Tract.
- Enhancing reef and ecosystem resiliency through release of herbivores.

Source: The Florida Aquarium

CORAL REEFS

Coral reefs play a critically important role in the health of our planet's marine ecosystems. The Florida Aquarium is dedicated to caring for threatened species of coral and leading initiatives that will help restore the Florida Reef Tract. The aquarium's team of coral experts has made several ground-breaking, globally recognized advancements to sexually reproduce corals in a laboratory setting and increase their genetic diversity. A wide range of inherited traits within a species and its offspring improves coral care and husbandry techniques and scales up coral circulation rates to advance partnerships and coral resiliency research.

Sources: The Florida Aquarium; the University System of Maryland

GOING BEYOND THE TEXT

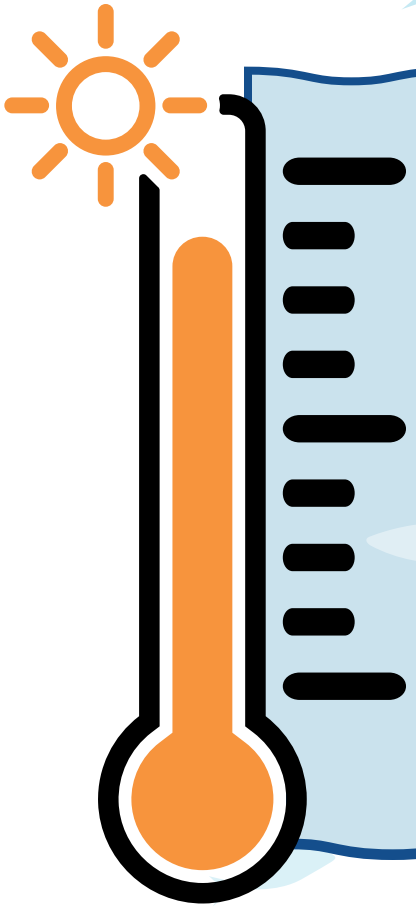
Learning new words

Reef, extinct, ecosystem, conservation… When you read new things, you often come up against some challenging vocabulary words. Most new vocabulary words are learned from context clues or good old-fashioned dictionary work. While you read this publication, be sure to highlight or circle words you don't know. Try to figure out the words' meanings by looking for clues in the sentences around them. Write down your best guess, and then look up the words in a dictionary. As a group activity, make a list of the words your classmates identified and see which ones stumped the class. Next, use these words for a news scavenger hunt and see if you can find these words in the Tampa Bay Times. The group that finds the most words wins the game.

Florida Standards: ELA.45.EE.2.1; ELA.45.EE.3.1; ELA.K45.EE.4.1; ELA.45.C.4.1; ELA.45.F.1.3; ELA.45.V.1.1; ELA.45.V.1.2; ELA.45.V.1.3

"An ecosystem is a geographic area where plants, animals and other organisms, as well as weather and landscape, work together to form a bubble of life."

— National Geographic Society



Sustained warm waters

According to Dr. Debborah Luke, senior vice president of conservation at The Florida Aquarium, corals have adapted to living in a certain ecosystem just like humans have. Due to climate change, the water temperature has continued to hit record highs more recently. While corals can withstand warmer waters to a degree, extended periods of high water temperature have been causing corals to bleach (see below).

Luke notes that each coral species is different, and each has its own tolerance for water temperature. Luke says, "We don't know what that timeframe is because we've never really studied how long you can heat the water before our coral dies. We are more involved in how we can make them breed and survive and thrive."

There are a lot of things that affect coral reefs, Luke notes, such as diseases and environmental factors. It is the same with humans. "We have diseases and we have different environmental conditions that are challenging to us," Luke says. "It is important that we do something to help, but it is also important that we think about what is causing the issues and what we can do about it."

Disease, then heat

Luke notes that before the heated water became a serious issue, Stony Coral Tissue Loss Disease went through Florida's whole coral reef. She says, "We have the third-largest barrier reef in the world. This year in Florida, this disease went through the reef and it worked its way from the north down to the south."

To try and save the coral reefs, the federal agencies that monitor animals — National Oceanic and Atmospheric Administration (NOAA) and the U.S. Fish and Wildlife Service — took an "unprecedented step, saw it coming and said, 'we're going to go out and rescue a lot of corals, as many as we can from every species that we can that are on the reef, because we're afraid that we're going to lose them all,'" Luke says.

Having partner agencies, like The Florida Aquarium, collecting different species of corals, and breeding them to replace those dying in the wild was the solution.

CORAL BLEACHING

Coral has a symbiotic relationship with algae, Luke explains. In other words, coral and algae have a close, interdependent relationship with each other. Corals are actually translucent. If they did not have algae in them, they would be clear. Luke notes that when corals are stressed, they "spit out the symbiont in them" and they turn white. The corals can stay that way for only a short period of time before they die. They need the algae to get the food they need.

Since April 2023, the National Oceanic and Atmospheric Administration (NOAA) has been monitoring a steady rise in ocean temperatures, which is resulting in unprecedented heat stress conditions for corals in the Caribbean basin, including waters surrounding Florida and the Gulf of America, formerly known as Gulf of Mexico. NOAA scientists have determined that these record-breaking warm ocean temperatures have stressed, bleached, and in some cases, killed corals within the 3,800 square miles of the Florida Keys National Marine Sanctuary.

GOING BEYOND THE TEXT

Everything is connected

Everything in the natural world is connected. As inhabitants of Earth, it is our job not only to realize that, but also to make an effort to protect the parts, which contribute to the whole. An ecosystem is a biological community of interacting organisms and their physical environment. In other words, an ecosystem is a community of living and nonliving things that work together.

Think about all the different parts of ecosystems and how they interact, like coral, algae and water temperatures. Think about how people fit into that ecosystem equation. With a partner, look for articles and photos in the Tampa Bay Times about your community. Make a list of all the parts of your ecosystem. Choose some of the most important parts and create a cartoon depicting your personal ecosystem.

Florida Standards: SC.45.E.7.2; SC.4.E.6.3; SC.45.N.1.1; ELA.45.C.1.3; ELA.45.C.1.4; ELA.45.C.2.1; ELA.45.C.3.1; ELA.45.C.4.1; ELA.45.R.2.2; ELA.45.R.2.3; ELA.45.R.2.4; ELA.45.V.1.1; ELA.45.V.1.3; ELA.45.F.2.1; ELA.45.F.2.2; ELA.45.F.2.3; ELA.45.F.2.4

RAINFORESTS OF THE SEA

Coral reefs are often referred to as the "rainforests of the sea," due to their incredible biodiversity and ecological importance. They provide essential benefits as part of marine ecosystems by sustaining habitats for marine life, shielding the harmful impacts of storms on coastal communities, and supporting local economies through tourism and fishing.

According to the National Oceanic and Atmospheric Administration, a large-scale heat stress and coral bleaching event is underway, impacting two ocean basins and multiple countries, including Mexico, El Salvador, Costa Rica, Panama and Colombia. Seven countries/territories/states in the Atlantic have confirmed bleaching as well, including Florida, Puerto Rico, the U.S. Virgin Islands, Mexico (both sides of the Yucatan), Panama, Belize and Cuba.

Throughout the Caribbean and Atlantic, sea surface temperatures are as high or higher than ever before in satellite records, and heat stress has developed five to six weeks earlier than ever seen in the record.

NOAA scientists and partners, including The Florida Aquarium, are employing various methods to restore Florida's Coral Reef, but it's a race against time.

Source: National Oceanic and Atmospheric Administration

Coral all stars

Boulder Brain Coral (*Colpophyllia natans*) spawns annually in August or September. The Florida Aquarium has settled more than 95,000 larvae of this species in the past four years.

Elkhorn Coral (*Acropora palmata*) spawns in July or August. At The Florida Aquarium, this is the most challenging to spawn.

Elliptical Star Coral (*Dichocoenia stokesii*) is a broadcast spawner, which means it releases either eggs or sperm into the water column to reproduce. Colonies spawn around the same time to increase chances of fertilization.

Great Star Coral (*Montastraea cavernosa*) spawns in August. Of all the corals at The Florida Aquarium, there are the fewest of this species.

Grooved Brain Coral (*Diploria labyrinthiformis*) spawns annually in April, May or June. This is the only coral species at the aquarium that spawns well before sunset.

Knobby Brain Coral (*Pseudodiploria clivosa*) spawns in August or September. This species typically spawns at 2 a.m. but lives in the aquarium laboratory where the time of sunset is shifted ahead by four hours.

Maze Coral (*Meandrina meandrites*) spawns in September or October. This species is closely related to Pillar Coral and is one of the most difficult to raise.

Mountainous Star Coral (*Orbicella faveolate*) spawns in August. This species was in the genus *Montastraea* until 2012.

Pillar Coral (*Dendrogyra cylindrus*) spawns in July, August or September. This species is nearly extinct in Florida. It was the first species to spawn in the laboratories at The Florida Aquarium.

Ridged Cactus Coral (*Mycetophylli lamarckiana*) is a brooding coral species, meaning that it internally fertilizes and releases fully developed larvae over many nights and months.

Smooth Flower Coral (*Eusmilia fastigiata*) spawns annually in August or September. This brooder species of coral releases free-swimming larvae which becomes visible in the coral polyps' tentacles prior to release.

Spiny Flower Coral (*Mussa angulosa*) has a unique reproduction style. It produces fully developed larvae like a brooding coral but also spawns eggs and sperm into the water like a broadcast spawner.

Staghorn Coral (*Acropora cervicornis*) is the first species The Florida Aquarium raised from larvae.

Symmetrical Brain Coral (*Pseudodiploria strigose*) is documented to have two different spawning groups, one 30-70 minutes after sunset and one 220-270 minutes after sunset.

Sea turtles

Keystone species

Did you know that sea turtles are an important keystone species with critical roles in maintaining species diversity and the health of our oceans? In other words, sea turtles are a species on which other species in an ecosystem largely depend. If that species were removed, the ecosystem would change drastically.

There are seven species of sea turtles. The flatback lives only in Australia. The rest — the green, hawksbill, Kemp's ridley, leatherback, loggerhead and olive ridley — are found in many places, including U.S. waters.

Sea turtle populations are being negatively impacted by many human-related factors. Ingestion of or entanglement in plastic pollution is a significant threat, and entanglement from fishery longlines, gill nets, trawls and discarded personal-use fishing gear are also key issues affecting sea turtles.

Guests can tour the property around the sea turtle hospital in Apollo Beach November through April.

Nesting areas are being greatly impacted by habitat degradation arising from coastal development and increasingly extreme weather events, and imbalanced hatchling sex ratios are now frequently documented due to changes in beach temperatures. As a result, sea turtles are protected under the U.S. Endangered Species Act and are greatly in need of our help!

GOING BEYOND THE TEXT: Working together

We all need to work together to protect our environment. Conserving water, recycling and protecting our wildlife are important for the future of Earth. Look for articles in the Tampa Bay Times that show or focus on examples of people, groups or organizations working to protect the environment. Make a list of those involved and the actions they are taking. Select one of the environmental groups or issues you have read about and do some research about it.

Then think about what actions you can take to protect the environment. Share your ideas and what you have learned by writing a blog post or short essay that incorporates the information you have learned.

Florida Standards: SC.5.E.6.6; SC.5.E.7.2; SC.4.P.8.2; ELA.45.C.1.3; ELA.45.C.1.4; ELA.45.C.2.1; ELA.45.C.3.1; ELA.45.C.4.1; ELA.45.R.2.2; ELA.45.R.2.3; ELA.45.R.2.4; ELA.45.V.1.1; ELA.45.V.1.3; ELA.45.F.2.1; ELA.45.F.2.2; ELA.45.F.2.3; ELA.45.F.2.4

Look at them Go!

The role of The Florida Aquarium

- Serves as a leader in sea turtle rehabilitation.
- Manages a Responsible Pier Initiative.
- Provides outcome-driven conservation and engagement platforms.
- Serves as a center of excellence in animal care and welfare.
- Utilizes state-of-the-art diagnostic and treatment technology.
- Provide pre-release deep-dive foraging-readiness testing.
- Meets rehabilitation capacity needs for stranded sea turtles.
- Maximizes the sea turtle intake/release ratio.
- Utilizes satellite telemetry to track movements and behavior patterns of released sea turtles.

The Florida Aquarium is tracking several of our rehabilitated sea turtles after their triumphant return to the open ocean. Equipped with satellite tracking tags, these turtles are providing critical information about sea turtle rehabilitation

Since 1999, The Florida Aquarium has led extensive sea turtle rehabilitation efforts, visitor and community education, and conservation platforms to advance sea turtle protection. Over a 20-year period, the aquarium received 200 sea turtles, and while not all could be deemed releasable due to the nature of their injuries or illnesses, 180 were successfully released!

In 2019, the Sea Turtle Rehabilitation Center opened at The Florida Aquarium's conservation campus in Apollo Beach. In the first year, The Florida Aquarium Animal Response Team managed the care of 21 sea turtles, initiated new foraging-readiness testing for release candidates in its deep-dive tank, and released 14 animals.

In 2020, aquarium staff also initiated a study to better understand how micro-plastics are impacting the sea turtles in their care. These advancements facilitate their capability and capacity to respond to increasing sea turtle rescue and rehabilitation needs, conduct vital health research to improve sea turtle care and husbandry techniques, and scale up the number of sea turtles returned to their natural habitat.

All sea turtle rehabilitation work conducted by The Florida Aquarium is done with the approval of the Florida Fish and Wildlife Conservation Commission (FWC) under conditions not harmful to marine turtles and authorized under conservation activities pursuant to FWC MTP-25-179.

Sea turtle species

The seven sea turtle species that grace our oceans belong to a unique evolutionary lineage that dates back at least 110 million years! Sea turtles fall into two main subgroups: the unique family *Dermochelyidae*, which consists of a single species, the leatherback, and the family *Cheloniidae*, which includes six species of hard-shelled sea turtles.

1 Leatherback turtle

The largest of the sea turtles, leatherback turtles can reach more than six feet in length and nearly 1,410 pounds in weight. During their long migrations, leatherbacks regularly dive to depths greater than 3,281 feet in search of gelatinous zooplankton to eat. The leatherback is rapidly declining in many areas of the world. Leatherback turtles are the most unique sea turtles in the world! As the only living member of the *Dermochelyidae* family, they are quite different from the hard-shell sea turtle species.

2 Loggerhead turtle

Loggerhead turtles are named for their large heads, with jaws powerful enough to crush an adult queen conch. Like most sea turtles, loggerheads are famed for their vast migrations. As a species that may travel thousands of miles across ocean basins, loggerheads are threatened by worldwide habitat loss and incidental capture by fishermen.

3 Green turtle

The green turtle has the most numerous and widely dispersed nesting sites of the seven species, and was once highly sought after for its body fat – a key ingredient in the popular delicacy, "green turtle soup." Although it has become illegal to trade them in many parts of the world, green turtles and their eggs continue to be consumed.

4 Flatback turtle

The flatback turtle is the least studied of the sea turtles and has one of the smallest geographic ranges. The only endemic sea turtle species, flatbacks nest solely along the northern coast of Australia, and live solely on the continental shelf between Australia, southern Indonesia, and Papua New Guinea.

5 Kemp's ridley turtle

The Kemp's ridley turtle is the smallest of the sea turtles and has an extremely restricted range, nesting only along the Caribbean shores of northern Mexico and in Texas. Fifty years ago, the Kemp's ridley was near extinction. Although this species now shows signs of recovery, fishing nets and coastal development continue to threaten the species, and much work remains to be done to protect this species.

6 Olive ridley turtle

In one of nature's greatest spectacles, known as arribadas (the Spanish word for arrival), olive ridley turtles come ashore simultaneously by the hundreds and thousands to nest. Though they are the most abundant of sea turtles, olive ridleys are increasingly threatened by trawling and coastal development.

7 Hawksbill turtle

Named for its sharp, pointed beak, the hawksbill turtle feeds primarily on reef sponges, invertebrate organisms whose bodies contain tiny indigestible glass needles. The hawksbill has a beautiful, translucent shell, which has long been exploited for use in tortoiseshell jewelry. Though international trade of tortoiseshell has been prohibited, illegal trafficking continues.

For more information about sea turtle conservation, go to flaquarium.org/conservation/sea-turtle-conservation-program.

Source: The Florida Aquarium

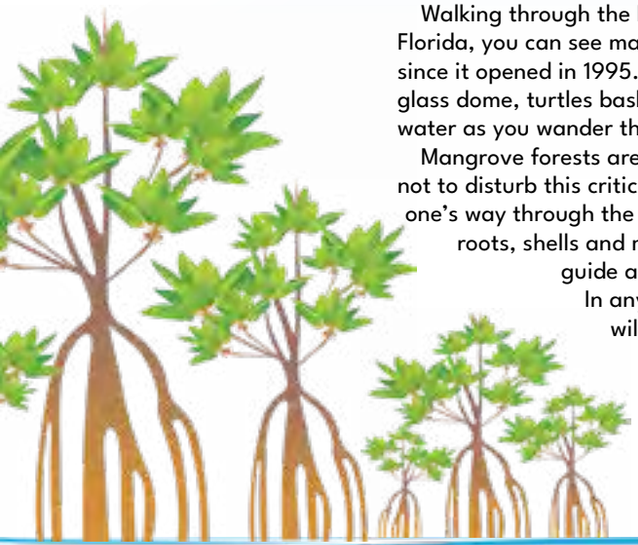
"A habitat is a place where an organism makes its home. A habitat meets all the environmental conditions an organism needs to survive. For an animal, that means everything it needs to find and gather food, select a mate and successfully reproduce."

National Geographic Society

THINK ABOUT IT

Although some habitat loss — the reduction in the amount of space where a species lives and survives — is caused by environmental factors, humans have altered Earth for thousands of years. Industrialization and population growth have led to an increase in our overall land use, which, in turn, has led to disturbance of some critical habitats worldwide. That is why habitat restoration is necessary in many parts of the world. Habitat restoration is the focused recovery of an area to recreate a functioning ecosystem.

Source: University of California Regents



Mangrove tunnel

Walking through the Mangrove Tunnel in the aquarium's Wetlands of Florida, you can see mangroves that have been at The Florida Aquarium since it opened in 1995. Birds soar overhead in the iconic 80-foot-tall glass dome, turtles bask in the sun and freshwater fish dart through the water as you wander the Wetlands of Florida.

Mangrove forests are ecological wonders! People should be careful not to disturb this critical wildlife habitat. In fact, attempts to wander one's way through the vegetative web could result in a tumble amid the roots, shells and muck, so it's best to tour with a knowledgeable guide and to ensure it is a safe area open to visitors. In any event, people should not disturb this critical wildlife habitat.

The Florida Aquarium's Mangrove Tunnel offers visitors a close-up view of this marvel of nature's environmental engineering. It also showcases one of the aquarium's original habitats.

Source: The Florida Aquarium

Florida's natives

One of Florida's true natives, mangroves thrive in salty environments because they can obtain freshwater from saltwater. The red mangrove tree is a salt excluder, blocking absorption of salt at their roots. Black and white mangroves are salt excreters, managing excess salt through their leaves.

Florida has an estimated 600,000 acres of mangrove forests that contribute to the overall health of the state's southern coastal zone and beyond. These forests are ecosystems that trap and cycle organic materials, chemical elements and important nutrients. Mangrove roots act not only as physical traps but also provide attachment surfaces for various marine organisms. Also, many of these attached organisms filter water through their bodies and, in turn, trap and cycle nutrients.

Mangroves provide protected nursery areas for fish, crustaceans and shellfish. They also provide food for a multitude of marine species such as snook, snapper, tarpon, jack, sheepshead, red drum, oysters and shrimp.

Many animals find shelter in the roots and branches of mangroves. Mangrove branches are rookeries, or nesting areas, for beautiful coastal birds such as brown pelicans and roseate spoonbills.

Source: Florida Department of Environmental Protection

Red, black and white

Worldwide, more than 50 species of mangroves exist. Of the three species found in Florida, the red mangrove is probably the most well-known, and it is the one featured at The Florida Aquarium. It typically grows along the water's edge. The red mangrove is easily identified by its tangled, reddish roots called "prop-roots." These roots have earned red mangroves the nickname "walking trees," as the mangroves appear to be standing or walking on the surface of the water.

The black mangrove usually lives in slightly higher elevations upland from the red mangrove. The black mangrove can be identified by numerous finger-like projections, called pneumatophores, that protrude from the soil around the tree's trunk.

The white mangrove usually grows in the highest elevations, farther upland than either the red or black mangroves. The white mangrove has no visible aerial root systems. The easiest way to identify the white mangrove is by the leaves. They are elliptical, light yellow-green and have two distinguishing glands at the base of the leaf blade where the stem starts.

Source: Florida Department of Environmental Protection

Meet Stephen Schwanebeck

Stephen Schwanebeck is The Florida Aquarium's senior horticulturist, caring for a vast collection of Florida native plant species found in and around the aquarium; most notably the mangroves and large native trees within the Wetlands dome. Through habitat restoration, Schwanebeck is also helping to create a world-class conservation site at the Aquarium's Apollo Beach campus.

Schwanebeck notes that it is important to make connections and find the living relationships within a habitat. For example, oysters grow on mangrove roots. Then oysters filter the water. The water becomes cleaner and is healthier for other living inhabitants. "One follows the other. You have the mangrove habitat. You have the oysters, which clean the water, and clean water means better life," Schwanebeck says.

"If you provide the habitat, which can be mangroves, then you provide a place for a spoonbill or a woodstork to make its nest and lay eggs and be protected. Then the spoonbills and woodstorks have a place to mate and carry on their species. You can even relate that to the human connection and the fishing industry. If you do not have healthy mangroves where fish can reproduce and their juvenile fish can grow up, those juvenile fish aren't going to be there in the future."

Schwanebeck says, "It's all connected. You can find relationships in everything and how each one is valuable, and they all play a role with each other."

Provider of mangroves

The Florida Aquarium provides mangroves for different entities, such as Tampa Bay Watch, Keep Pinellas Beautiful, Keep Tampa Bay Beautiful and the Tampa Bay Estuary program, that are looking to do habitat restoration or specifically mangrove restoration projects, Schwanebeck says. "We will collect the mangrove propagules — the seeds of the mangrove — and we will grow them out and we will provide them to anyone who is looking to do habitat restoration in the Tampa Bay area. If we can, we will also provide volunteers for that restoration."

Mangroves are a keystone species, Schwanebeck says. Mangroves support living entities from underwater to the water level and even the canopy's top. Underwater, you'll find oysters, crabs and crustaceans. Above that, on the water line, are mangrove crabs and mangrove snakes. Then, up in the canopy, mangroves provide habitat for shoreline nesting birds, where they can build nests and raise their young. Then, all the fish use the mangrove root system as habitats to lay their eggs where juvenile fish can hatch and thrive. Mangroves truly start the cycles of valuable food webs!

It's all connected

Mangroves provide all sorts of habitat for any species you can think of along the shoreline.

Endangered species that use mangroves include the American alligator, American crocodile, sea turtles, manatees and woodstorks. If you have a healthy mangrove ecosystem, you would have a healthy seagrass ecosystem nearby, which sea turtles rely on.

Schwanebeck notes it is important to plant native Florida plants in your ecosystem: around your school, yard and gardens. Native plants would have adapted to the Florida environment already and don't require the human inputs, such as watering, pesticides and fertilizers. When you have native plants, there are native insects, which boost the health of the bird and fish populations.

WHAT CAN YOU DO?

- Use less plastic.
- Ask your science teachers and parents if you can create a pollinator garden.
- When traveling to close destinations, walk or use your bicycle instead of riding in a car.
- Spend time outside to appreciate the nature all around us!
- Get involved in volunteer opportunities.
- Plant a tree.
- Participate in native habitat planting.
- Participate in mangrove planting with one of the organizations mentioned above.
- Encourage others to plant native species.

GOING BEYOND THE TEXT: **Planting natives**

Schwanebeck says planting native Florida plants in your own yard is a good place to start your goals of habitat restoration. Research three native plants: firebush, cabbage palm (state tree) and Coreopsis (Florida native wildflower). See how much information you can find out about these three Florida natives on the internet. What do they look like; what type of animals do they attract; where do they grow; when should they be planted; why should you plant them; how should they be planted. Using the articles in the Tampa Bay Times as models, write a newspaper article focusing on one of these plants that you would like to grow at your school or home. Next create a PowerPoint or Prezi presentation showing the basics points about this plant to share with your class.

Florida Standards: SC.4.L.17.4; SC.5.L.17.1; SC.4.L.16.1; SC.4.L.17.1; ELA.45.EE.1.1; ELA.45.EE.4.1; ELA.45.EE.5.1; ELA.45.EE.6.1; ELA.45.C.1.3; ELA.45.C.1.4; ELA.45.C.1.5; ELA.45.C.2.1; ELA.45.C.3.1; ELA.45.C.4.1; ELA.45.R.2.3

Ocean plastics pollution

Plastic collecting in our oceans and on our beaches has become a global crisis, notes the Center for Biological Diversity. Billions of pounds of plastic can be found on the world's ocean surfaces. "At current rates, plastic is expected to outweigh all the fish in the sea by 2050. Plastics pollution has a direct and deadly effect on wildlife. Thousands of seabirds and sea turtles, seals and other marine mammals are killed each year after ingesting plastic or getting entangled in it."

Marine debris impacts the ocean, animals and people. Animals have been eating, or ingesting, plastic and other marine debris for a long time. The ingestion of plastic by wildlife was first observed in 1966, when researchers found plastic container lids and toys in dead Laysan albatross chicks. More than 700 species, including seabirds, fish, turtles and marine mammals, have been confirmed to eat plastic. That number will likely increase over time as wildlife continues to encounter human trash.

The animals eat plastic because debris items may be mistaken for food and ingested, or may be accidentally ingested when mixed with or attached to an animal's natural food. Since many plastics float, break into small, easily eaten pieces, and are colorful, they are more likely to attract hungry animals than other types of marine debris.

Eating plastic may lead to loss of nutrition, internal injury, intestinal blockage, starvation and even death. We know that ingested plastic is harmful to animals, and research is still being conducted to figure out all the effects, especially to communities and wild populations.

Plankton, shellfish, birds, fish, marine mammals and sea turtles from all parts of the globe and from various depths of the ocean have been confirmed to ingest plastic debris. The amount and type of plastic they eat often relates directly to the animal's feeding behavior. Animals that filter their food from water or soil, otherwise known as passive eaters, may unintentionally eat microplastics with their food. Animals that are active feeders, that search for and capture their food, ingest plastic not only accidentally while feeding, but also as debris inside of their prey.

Source: National Oceanic and Atmospheric Administration

THINK ABOUT IT

Plastics may absorb pollutants that are in the water around them, or release chemicals that are added to plastics during production to make them colorful or flexible. These chemicals may enter the body of an animal if ingested. Whether an animal eats the plastic itself, or eats an animal that has already eaten plastic, there could be possible health impacts on marine wildlife.

Although some animals may be more likely to eat plastic than others, this material can stay in their bodies for a long time and may even travel through the food web. An example of how plastics can move through the food web starts with algae. Algae can stick and grow on floating microplastics. Filter feeders like oysters, scallops and mussels then eat the algae and the microplastic at the same time. From there, the little bits of plastic may travel all the way up the food chain, from blue crabs to small fish that are eaten by large predators such as larger fish, sharks and dolphins.

Source: National Oceanic and Atmospheric Administration

We hold the solutions!

Because plastic waste is harming wildlife and wild places at record levels, the consumption of single-use plastics and flow of plastics reaching our waterways needs to be reduced.

We've picked out a few tips to help you reduce plastic use:

- Bring reusable bags when shopping, including produce bags.
- Give up gum or choose gum made from plastic-free gum bases.
- Replace dish soap with a bar or refillable option.
- Pack reusable cutlery, drinkware and containers in your lunch.
- Purchase food items with the least amount of packaging.
- If traveling, bring your own snacks and meals in your own containers to avoid the waste of take-out containers.
- Use reusable containers instead of single-use plastic storage items (such as plastic wrap, single-use sandwich bags).
- Replace plastic bottles with glass or stainless steel alternatives.
- Avoid using plastic straws that wind up in the landfills. Instead, carry a reusable straw or skip the straw altogether.
- Avoid using disposable cups and water bottles; instead use a reusable mug or bring your own travel cup.
- Recycle used contact lenses and packaging.
- Find alternatives to disposable wipes.
- Refuse Styrofoam whenever you can, or skip using it altogether. Throughout its life cycle, polystyrene (Styrofoam) can harm people, communities and the planet.

For more tips and information, go to https://plasticfree.ecochallenge.org/challenges

Source: Ecochallenge.org

TAKE THE CHALLENGE

We spend our lives surrounded by fabrics and textiles. By making deliberate choices about the fabrics we bring into our lives and how we care for them, we can drastically reduce our plastic and environmental footprints. When available, purchase clothing and bedding made with natural fibers, such as cotton, linen or wool, rather than synthetic fibers. Just remember to always use what you have first! The only thing worse than a single-use item is a "zero-use item."

Source: Ecochallenge.org

GOING BEYOND THE TEXT

Healthy communities, healthy planet

Before we can make better choices for the planet, we need to understand where we are now. Our individual actions have the power to make waves in our communities. Use your time to engage with your local community and create sustainable change. Think globally, act locally and be an agent of change. Choose one of the ideas below for an advertising and social media campaign to help your environmental ecosystem. Use the advertisements in the Tampa Bay Times as models to create a poster-size ad for one of these actions. Share your poster with your class.

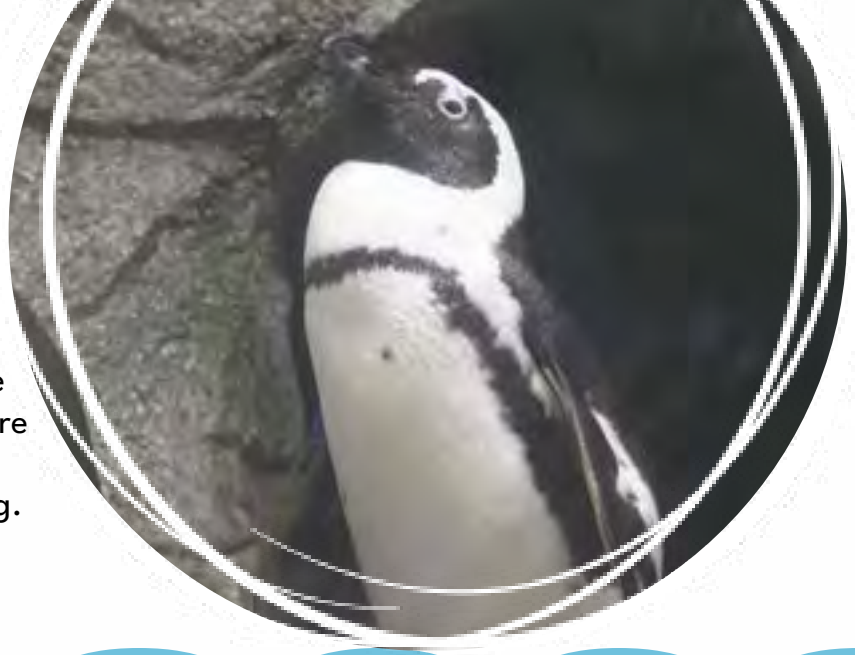
- Complete a waste audit — including recyclables and compost — to understand how much waste you create and where you can reduce the most.
- Estimate your ecological footprint and from the results brainstorm and take action on ways you can reduce your annual footprint.
- To eliminate waste, buy only what you need.
- Learn about plastic production. Plastic production, not just disposal, pollutes communities and harms people. Learn about the impacts of plastic production on humans, animals, communities and the environment.
- Learn about plastic disposal. The numbers 1-7 on plastics tell us a lot — and can help us be better recyclers. Learn what these numbers mean and which types of plastics are accepted for recycling in your area.
- Say no to Styrofoam. Throughout its life cycle, polystyrene (Styrofoam) can harm people, communities and the planet. Refuse Styrofoam whenever you can, making sure to kindly let people know why you are asking for alternative packaging.
- Become a recycling pro. Contamination prevents what is recyclable from being recycled. Research which materials are accepted by local haulers or drop stations in your community and recycle only those items.
- Tour a waste management facility to learn about our local waste and waste recovery streams.
- Keep your community clean by picking up litter and/or participating in a beach, highway, river or other cleanup effort.
- Write letters, emails or sign petitions to advocate for plastic-free and planet-friendly policies.

For more tips and ideas, go to https://plasticfree.ecochallenge.org/challenges

Source: Ecochallenge.org

Florida Standards: ELA.45.EE.1.1; ELA.45.EE.2.1; ELA.45.EE.5.1; ELA.45.EE.6.1; ELA.45.C.2.1; ELA.45.C.3.1; ELA.45.C.4.1; ELA.45.C.5.1; ELA.45.F.1.3; ELA.45.V.1.1; VA.45.C.2.1; VA.45.C.2.2; VA.45.C.2.3; VA.45.F.1.1; VA.45.F.3.2; VA.45.S.1.2; VA.5.S.1.3

Endangered penguins



Did you know the African penguin population is disappearing? In the 1900s, there were more than a million breeding pairs. Today there are less than 400. #NOOW (Not On Our Watch) is an African penguin survival campaign. Learn more at africanpenguinnotonourwatch.org.

PENGUIN FACTS

- African penguins live off the South African coast and the Namibian coast and are not found anywhere else in the world.
- Their lifespan is approximately 14 years, but they can live up to 30 years.
- African penguins are known to mate for life and also to share parenting duties.
- They can dive underwater for up to 4.5 minutes to depths of more than 100 meters (~328 feet) while trying to catch small fish such as anchovies and sardines, although they mostly feed between 20 and 30 meters (~65-100 feet).
- African penguins swim around 10 kilometers (km) per hour (~6 miles per hour) and can travel 30 to 70 km (~18-44 miles) during a feeding trip while feeding their chicks.
- Male and female African penguins look almost identical. It is only possible to tell the gender by by doing a DNA test or by observing a female laying eggs.
- The spot pattern on an African penguin's chest and belly is unique to each bird, like human fingerprints are unique to us. These spot patterns can be used to identify individual birds.

March of the penguins

"Our visitors love the African penguin, and we are asking them to turn that passion into action," said Dr. Debborah Luke, Senior Vice President of Conservation at The Florida Aquarium. "We are looking to engage our community to help raise awareness about the plight of this beloved bird. While walking together, we hope others stand up and take notice of what is needed to protect the endangered African penguin."

The population of African penguin breeding pairs has declined 99% over the past century and this special species, found only in South Africa and Namibia, is expected to be functionally extinct in the wild within 12 short years.

The #NOOW campaign, backed by the Two Oceans Aquarium Foundation, The Florida Aquarium, Georgia Aquarium and Australia's Zoos Victoria, is on a mission to raise awareness and encourage lawmakers to protect African penguins, who are true ambassadors for South African tourism and ecologically vital.

Your help is needed in the effort to save the African penguin from extinction. As the population of this imperiled species continues to rapidly decline, it has become increasingly important for us to take action now. Help raise awareness of the global impact of this matter by contacting the South African Ministry of Forestry & Fisheries using the following link: africanpenguinnotonourwatch.org/email-the-minister.

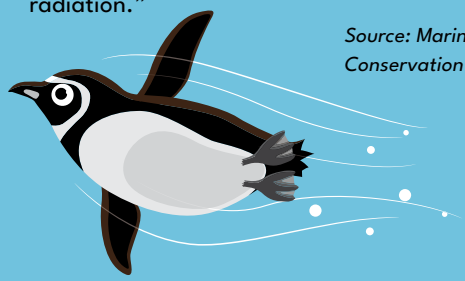
Penguin adaptations

Did you know penguins are "waterproof?" The small muscles at the base of their feathers bind the feathers — which are waterproofed by a waxy substance — tightly to their bodies.

The wax is distributed from the base of the tail to the tips of the feathers as the penguins groom themselves, a behavior known as preening. "Their feather muscles used to grip the feathers to the body are also used to hold their feathers out so that a warming layer of air can be trapped between their body and the feathers," according to the MarineBio Conservation Society.

African penguins have developed unique adaptations to life in the temperate zone. The temperate zone is the area between the Tropic of Cancer and the Arctic Circle or between the Tropic of Capricorn and the Antarctic Circle, but penguins only live in the southern hemisphere and are not found above the equator. "Penguins limit their daytime activities at breeding sites on land to early morning and early evenings to avoid too much sun. They also build their nests where there is protection against too much solar radiation."

Source: MarineBio Conservation Society



Structural and behavioral adaptations

Animal adaptations

An adaptation is defined as any inherited trait that helps an organism, such as a plant or animal, survive and reproduce in its environment.

According to the National Geographic Society, "Any number of characteristics can vary among individuals of a given species — some may be larger, hairier, fight off infections better or have smaller ears. These characteristics are largely determined by their genes, which are passed down from their parents and subsequently passed down to their own offspring."

Adaptations come in physical and behavioral forms, such as speed, strength, behavior and appearance. If those traits are helpful to the animal, individuals with those traits will produce more babies than those without. Over generations, the number of individuals with advantageous traits (adaptations) will increase until those traits become more common attributes of the species.

Source: National Geographic Society

An adaptation can be physical or behavioral. An example of a physical, or structural, adaptation is the way some plants, such as succulents, have adapted to life in dry, hot deserts. Seasonal migration is an example of a behavioral adaptation. For example, gray whales migrate thousands of miles every year as they swim from the cold Arctic Ocean in summer to the warm waters off the coast of Mexico for winter. Penguins being waterproof is a structural adaptation.

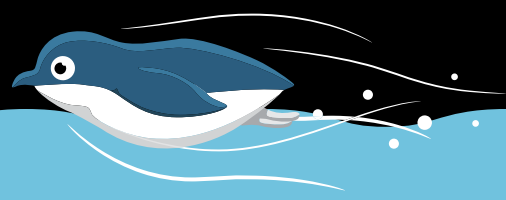
Adaptations often develop in response to a change in an organism's habitat. Sometimes, an adaptation or set of adaptations develops that divides one species into two. This process is known as speciation.

Another type of adaptation is sympatric speciation. Sympatric speciation happens when species share the same territory. An example of this is the hundreds of varieties of cichlids that live in Lake Malawi in Africa. Each species of cichlid has a unique, specialized diet. One type of cichlid may eat only insects, another may eat only algae, another may feed only on other fish.

Coadaptation occurs when organisms adapt with and to other organisms. For example, hummingbirds have adapted long, thin beaks to extract the nectar from certain flowers. When a hummingbird goes to feed, it picks up pollen from the anthers of the flowers, which is deposited on the stigma of the next flowers the hummingbird visits. In this relationship, the hummingbird gets food, while the plant's pollen is distributed.

Another type of coadaptation is mimicry. This occurs when one organism has adapted to resemble another. For example, the mimic octopus has behavioral as well as structural adaptations. This species of octopus can copy the look and movements of other animals, such as sea snakes, flatfish, jellies and shrimp.

Source: National Geographic Society



GOING BEYOND THE TEXT: Power of partnerships

There are many people and organizations dedicated to the survival of the African penguin, including The Florida Aquarium. The goal of #NOOW (Not On Our Watch) is "to create a movement and raise awareness about the need for urgent action to reverse the decline of the African penguin population in the wild." Through this campaign, the partners are calling for support to ensure that "wise decisions concerning the future of the African penguin are made by the relevant authorities."

We all need to work together to protect our environment. Conserving water, recycling and protecting our wildlife are important for the future of Earth. Look for articles in the Tampa Bay Times that show or focus on examples of people, groups or organizations that are working to protect the environment.

Make a list of those involved and the actions they are taking. Select one of the environmental groups or issues you have read about and do some research about it. Then think about what actions you can take to protect the environment. Share your ideas and what you have learned by writing a blog post or short essay that incorporates the information you have learned.

Florida Standards: ELA.45.EE.1.1; ELA.45.EE.2.1; ELA.45.EE.5.1; ELA.45.C.1.3; ELA.45.C.1.4 ELA.45.C.1.5; ELA.45.C.3.1; ELA.45.C.4.1; ELA.45.F.1.3; ELA.45.F.1.4; ELA.45.R.2.2

MORPH'D

A UNIQUE STORY OF SURVIVAL

From the colorful to the camouflaged, from the slightly slimy to the super smooth, each animal in the MORPH'D gallery tells a unique story of survival. You'll learn the shocking truth about electric eels and paddlefish, see through the eyes of a mudskipper or four-eyed fish, discover toxic tales of poison dart frogs, and so much more! Located in the Aquarium's new Mosaic Exhibit Hall, MORPH'D is an interactive experience featuring utterly engaging and resilient species with unique adaptations.

"The overall goal of the MORPH'D exhibit/gallery is to highlight animals that have unique adaptations that allow them to survive," notes Tristin Ware, Director of Learning at The Florida Aquarium. "Within the gallery we use two themes — behavioral adaptations and physical adaptations. Since all living things have adaptations, the Aquarium selected animals that are more unique, that you do not see everywhere, and that are new to us!"

Paddlefish

Discus

Axolotl

GOING BEYOND THE TEXT: Animal adaptations

Animals and plants have special adaptations to allow them to thrive in their natural environment. Just like humans, animals need food, water, shelter and a safe place to have their offspring in order to survive. Over thousands of years, these animals adapt and change to live successfully in their habitat.

Species of the same animal can even be adapted to live in different parts of the world. For example, African elephants have bigger ears than Asian elephants, as ears are used to cool the elephant down, and African elephants live in a hotter part of the world. Penguins in Africa have different adaptations than penguins living in Antarctica.

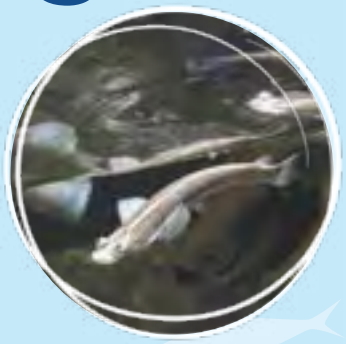
With a partner, choose one of the animals on this page to research. Make sure you answer the who, what, where, when, why and how points of the animal and its adaptation. Using the articles in the Tampa Bay Times as models, write a newspaper article about the animal you chose. Create a PowerPoint or presentation to go along with your article. Share your presentation with your class.

Florida Standards: SC.45.CS-CC.1.2; SC.45.CS-CP.1.3; SC.45.CS-CP.2.1; SC.45. CS-PC.1.4; SC.5.L.15.1; SC.5.L.17.1; SC.5.N.1.1; ELA.45. EE.1.1; ELA.45.EE.2.1; ELA.45.EE.3.1; ELA.45.EE.4.1; ELA.45.EE.5.1; ELA.45. EE.6.1; ELA.45.C.1.1; ELA.45.C.1.3; ELA.45.C.1.4; ELA.45.C.1.5; ELA.45.C.2.1; ELA.45.C.3.1; ELA.45.C.4.1; ELA.45.C.5.1; ELA.45.F.1.3; ELA.45.F.1.4; ELA.45.R.2.2; ELA.45.V.1.1; ELA.45.V.1.3

An adaptation is a physical or behavioral feature of animals that helps them better survive in their environment. In other words, an adaptation is something on their body or something animals do with their bodies that helps them find food, water, mates and shelter.

—Smithsonian National Museum of Natural History

Check out these animals living in the MORPH'D gallery.



Anableps, also known as the four -eyed fish, are a freshwater species. Four-eyed fish do not actually have four eyes. They have two large, bulbous eyes located on the top of their head. These eyes are split horizontally into two lobes by a thin layer of epithelial tissue, which allows the two eyes to function almost as if they are four eyes. This allows the fish to have good vision not only below the surface but also above the surface.

Archerfish have laterally compressed/ thin bodies with a pointed mouth. Their dorsal fins are located past the midway point of their backs just before their rounded tails. Typically they have silver bodies with markings that vary depending on species. Only three of seven species of archerfish are known to shoot water from mouth to hunt prey.

The **Asian arowana** is sometimes called the Asian bony tongue or dragonfish. The Asian arowana has large scales that are brightly colored. They have a long, narrow body, and they also have two barbels that stick out from the lower jaw. They can leap out of the water to catch prey on land and in the water.

Axolotl are generally up to 12 inches in length. In their natural habitat, they are mostly grayish brown in color. Typically, axolotls that are lighter pink in color are found in human care. External gill stalks protrude from either side of the head, and a long caudal fin extends from the back of the head to the end of an eel-like tail.

Bird poop frogs are one of the smallest frogs in the genus of Theloderma. They have pattern of splattered black or brown and white on the dorsal side that resembles bird feces. Bird poop frog is not the only common name that is used. More common names that are used are hill garden bug-eyed frog and pied warty frog.

Discus fish have a flat and round body, with large, extended fins. Their colors can vary from red, blue and green to brown. Discus fish are able to change colors slightly based on environment and other factors. They have patterns on their body that can include horizontal stripes or wavy lines.

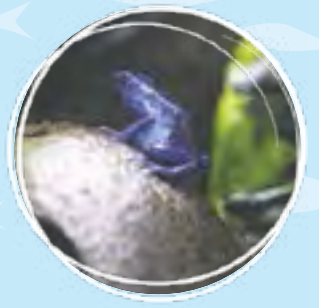
Epaulette sharks have a cream-colored or brownish body with small dark spots. They are small and slender, and they have a short, rounded snout with nasal barbels on the underside. An identifying characteristic is a large, black eyespot located on each side of the fish above the trailing edge of the pectoral fins. They can go without oxygen for more than an hour without suffering any negative consequences.

Chameleons are typically brightly colored and known to be true masters of camouflage. They can radically change skin color, which has typically been attributed to blending in with their environment. It is now hypothesized that they can change color in response to psychological or physiological stimuli and to communicate with each other.

Mandarinfish, or mandarins, are small, brilliantly colored tropical fish. They are predominantly blue in color with orange, red and yellow swirling lines over the body. Eyes are typically a bright red. They have large pelvic fins used for "walking" along the reef. Mandarins depend on coral reefs for habitat.

Mudskippers range in color from light to dark brownish green. The eyes of the mudskipper stick out from the top of its head followed by a tall dorsal fin. Since mudskippers are amphibious fish, they are able to transfer oxygen through their skin as well as getting oxygen from air trapped in their gill chambers when they are on land.

Paddlefish are a blueish-gray to black on the back, grading to white on the underside. They have a long, flat blade-like snout almost one third of its body's entire length. They have a shark-like body with a deeply forked tail. They eat by swimming through the water with their mouth wide open, scooping up plankton. The paddlefish is the only member of its family left on the planet.



Poison dart frog species are no larger than an inch. There are over 175 species of poison dart frogs, and they can be a variety of colors. The poison that is produced is secreted from the skin of poison dart frogs, meaning there are no central poison glands. The poison contains batrachotoxin, which is a type of neurotoxin.

The Florida Aquarium

Under the leadership of President and Chief Executive Officer Roger Germann, The Florida Aquarium is a 501c (3) non-profit organization that is actively engaged in stewardship of the natural environment as a conservation-based attraction with mission programs that include conservation, research, education and outreach. With a focus on delivering world-class animal care to thousands of animals, The Florida Aquarium welcomes visitors to experience a wide variety of aquatic and terrestrial animals with the goal of building awareness and inspiring action for species and habitat conservation.

During a visit, guests can explore complex ecosystems, engage with interactive and informational exhibits, or even search for dolphins in Tampa Bay aboard the Bay Spirit II. The Aquarium lives its shared purpose to save marine wildlife through conservation efforts that include groundbreaking research and rescue efforts that support sea turtle conservation and that help to restore Florida's coral reefs.

For more information about The Florida Aquarium, go to flaquarium.org.

About NIE

The Tampa Bay Times Newspaper in Education program (NIE) is a cooperative effort between schools and Times Publishing Co. to encourage the use of newspapers in print and electronic form as educational resources — a "living textbook."

Our educational resources fall into the category of informational text, a type of nonfiction text. The primary purpose of informational text is to convey information about the natural or social world. NIE serves educators, students and families by providing schools with class sets of the Pulitzer Prize-winning Tampa Bay Times plus award-winning original educational publications, teacher guides, lesson plans, educator workshops and many more resources — all at no cost to schools, teachers or families.

In 2024-2025, NIE provided more than 10 million e-Newspaper licenses and nearly 200,000 print newspapers to Tampa Bay classrooms. For more information about NIE, visit tampabay.com/nie or email ordernie@tampabay.com. Follow us on Facebook at facebook.com/TBTNIE.

NIE is a member of Florida Press Educational Services (FPES), a 501(c)(3) nonprofit organization of Florida newspaper professionals whose mission is to promote reading and critical thinking, particularly for young people.

Tampa Bay Times NIE newspaper in education
tampabay.com/nie

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Florida Standards

The material in this publication incorporates the following Florida Standards. **Science:** SC.45.CS-CC.1.1; SC.45.CS-CC.1.2; SC.45.CS-CC.1.3; SC.5.E.7.5; SC.5.E.7.6; SC.5.L.17.1; SC.5.N.1.1; SC.5.E.6.6; SC.5.E.7.2; SC.4.P.8.2; SC.4.E.6.3 SC.4.L.17.4; SC.5.L.17.1; SC.4.L.16.1; SC.4.L.17.1 **Language Arts:** ELA.45.EE.1.1; ELA. 45.EE.2.1; ELA.45.EE.3.1; ELA. 45.EE.4.1; ELA.45.C.4.1; ELA.45.F.1.3; ELA.45.V.1.1; ELA.45.V.1.2; ELA.45.V.1.3; ELA.45.C.1.3; ELA.45.C.1.4; ELA.45.C.2.1; ELA.45.C.3.1; ELA.45.R.2.2; ELA.45.R.2.3; ELA.45.R.2.4; ELA.45.F.2.1; ELA.45.F.2.2; ELA.45.F.2.3; ELA.45.F.2.4; ELA.45.V.1.1; ELA.45.V.1.3; ELA.45.EE.5.1; ELA..45.EE.6.1; ELA.45.C.2.1; ELA.45.C.5.1; ELA.45.V.1.1; ELA.45.C.1.5; ELA.45.F.1.4; ELA.45.R.2.2 **Visual Arts:** VA.45.C.2.1; VA.45.C.2.2; VA.45.C.2.3; VA.45.F.1.1; VA.45.F.3.2; VA.5.4S.1.2; VA.45.S.1.3

GOING BEYOND THE TEXT

Conservation initiatives

According to the Florida Fish and Wildlife Conservation Commission, the best way to help imperiled species survive is to participate in beach and park or roadside cleanups in your area, volunteer your time to educate others, and contribute to organizations that administer management, educational and research programs. Look in the Tampa Bay Times for articles about conservation and how you can help make your community environmentally sound. Using ads in the newspaper as models, create an ad or public service announcement to promote a conservation initiative. Think about the dynamics of the ads you see in the Times (images, words, placement of items, colors). Think about ways to draw people's attention to your ad and message. Next, design an ad for the print edition of the newspaper and for the website. How is the ad in the print edition going to be different from the website version of the ad? Write a fully developed paragraph showing the differences in the ads and what your main point of the ads is. Share your ad and the information in your paragraph with your class.

Florida Standards: ELA.45.C.1.3; ELA.45.C.1.4; ELA.45.C.2.1; ELA.45.C.3.1; ELA.45.C.4.1; ELA.45.R.2.2; ELA.45.R.2.3; ELA.45.R.2.4; ELA.45.V.1.1; ELA.45.V.1.3; ELA.45.F.2.1; ELA.45.F.2.2; ELA.45.F.2.3; ELA.45.F.2.4