

Kids' pages

Are you ready to learn about the bay?

Fall 2021



Got a Question? Ask a Scientist!

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Mark your
calendars!

Planting at MacDill

Bell Creek Academy is growing native marsh plants in their on-site plant nursery as part of their commitment to our *Bay Grasses in Classes* (BGIC) program.

This spring, the high schoolers will plant their hard work along coastlines to help restore the bay.

Would you like to plant, too? Join us for a community planting day at MacDill Air Force Base on December 7. Visit tampabaywatch.org to learn more and register!



Q How do animals blend into their habitat so well?

A Camouflage is the ability of an organism to blend in with its environment. Also known as “cryptic coloration,” camouflage is used to mask an animal’s location, identity, or movement, oftentimes to avoid predators or sneak up on prey.

There are many ways a creature can camouflage. The most common method is with color. This includes strategies like color-matching, disruptive coloration, mimesis, and even active camouflage.

Color-matching is simply matching the surrounding background colors, much like a green tree frog blending in with leaves. In the estuary, sharks and mid-level fish like snook and redfish display a color-matching strategy called countershading, or dark-colored on top with a light underbelly. It’s advantageous because, when seen from above, they blend in with the darker bottom below; from below and looking up, unsuspecting prey may not notice them because their lighter belly blends in with the sunlit water.

Disruptive coloration involves using stripes or patterns to break up the body shape or outline, mostly to confuse predators. A great example is the sheephead we have in the bay.



A variegated sea urchin self-decorating using seashells.

With **mimesis**, animals use color and shape to look like an object in nature, or even another animal! Think of the classic stick bug. When disguising as another animal, the organism doing the camouflaging is usually trying to look like something poisonous or venomous, like how the non-venomous king snake looks very similar to the venomous coral snake. The best way to tell the difference is to look at the pattern sequence of the infamous red, yellow, and black colors.

Active camouflage is when animals change their color to match changes in the environmental backdrop. Most famously, animals in the cephalopod family, such as octopuses, squid and cuttlefish, have skin pigments that reflect light to change their color.

Creatures can also use **physical structures** to better blend in with their surroundings, with strategies like self-decoration, commonly seen with sea urchins that use shells to blend in with the sandy bottom.

Sources: Project Learning Tree, Smithsonian Ocean, National Geographic, Wikimedia Commons.

Expand Your Mind!

Meet & Greet: Masters of Disguise



STRIPED BURRFISH

Chilomycterus schoepfii

Burrfish form a fairly round shape and are yellow-green to brownish in color, with large dark splotches and dark wavy stripes along their bodies, which is where the common name is derived. They are solitary, nocturnal hunters, using their darkly-striped bodies to camouflage within the seagrass beds and coastal lagoons while they await prey. To catch prey, they lunge out by forcing water through restricted openings in their gills, which propels their body forward.

Sources: UWI St. Augustine, National Aquarium, FishBase, Canva



ARROW SHRIMP

Tozeuma carolinense

The arrow shrimp is a type of a cleaner shrimp native that can be found along the Atlantic coast from Massachusetts, around the Gulf of Mexico and within the Tampa Bay estuary, and down to Brazil. It's most commonly found living amongst vegetated areas like seagrass beds. These shrimp are small and translucent, usually with pink or reddish tints, but will assume the color of its background. They will swim in a vertical direction to camouflage among seagrass blades.

Sources: Texas A&M, SeaLifeBase, GulfBase; Photo courtesy Texas Parks and Wildlife Department, (Brenda Bowling), 2021.



PLUMED SCORPIONFISH

Scorpaena grandicornis

These venomous fish are in the Scorpaenidae family along with the lionfish and several rockfish species, and can be identified by the plumed projections over eye. Ranging from North Carolina to Brazil, scorpionfish live in seagrass beds, grassy bays and channels with soft bottoms. Most scorpionfish, such as the stonefish, wait in disguise for prey to pass them by before attacking. To capture their prey, scorpionfish use a suction feeding strategy by rapidly expanding their mouth and creating a powerful vacuum-type force to draw their prey into their jaws.

Sources: FishBase, Smithsonian Tropical Research Institute



Our education programs get kids into the bay!

Camouflage Across the Ocean

CONSERVATION
CORNER

The peppered moth is a famous example of how camouflage within a species can change in response to environmental changes. Back in the 1800s, England's peppered moths were usually a pale gray color to blend in with lichen growing on tree bark. Less common was the black-colored peppered moth, a color that happened naturally from genes passed down from parent to offspring. The problem facing darker moths was inability to camouflage, meaning more likely to be eaten by birds and other predators and less likely to survive to breed. However, during the Industrial Revolution, in the 1800s and into the 1900s, factories were built, which produced dark smoke and sooty air pollution from burning coal that covered the surrounding countryside. Trees that had historically been light and covered with lichen were now dark and the lichen had been killed. The pale moth form was now more obvious to

predators, while the darker form was better camouflaged and more likely to survive to reproduce. The dark color was caused by a mutation in the DNA of one moth, and that modification turned out to be beneficial and ultimately passed to all its offspring. In the span of 50 years, the black moths came to outnumber the pale forms, with populations in areas around English cities as much as 98% dark moths.

In the most recent 50 years, most industrial countries have significantly reduced their pollution and as such, the number of dark moths are dropping as the forests become cleaner.



Sources: *EA* Arizona State University, butterflyconservation.org; Wikimedia Commons

Fun Facts

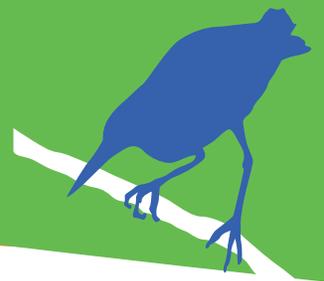
-  Cephalopods have thousands of color-changing cells (chromatophores) just below the surface of their skin used to change color.
-  The lettuce leaf nudibranch, a two-inch Caribbean sea slug, has special organs which undergo photosynthesis, providing a green camouflage color and also energy!
-  At less than one inch fully grown, the Barbigant's pygmy seahorse has only two known color morphs—pale grey/purple or yellow—and spend their lives perfectly matching the soft corals on which they live.
-  Variegated sea urchins use shells and debris not only for camouflage, but to protect against the intense UV rays of the tropical sun.
-  In addition to changing their color, trumpetfish also change their swimming styles to mimic swaying sea rods, often hovering upside-down to stalk prey.

Sources: *Smithsonian Ocean*, *Project Seahorse*, *UWI St. Augustine*

Did You Know...



In addition to chromatophores, squids and octopuses also have a second layer of cells called "iridophores" that can reflect light at different wavelengths depending on which angle you view them. Top-down, they could appear one color, but from the side they could look completely different! Sources: *Nature.com*; *Canva*.



Fun Activity for Home: Camouflage Seek and Find

Practice your skills at camouflaging in your home or classroom! Create a fish that is successfully "hiding in plain sight" using its surroundings to blend in.

Materials:

- Blank paper
- Scissors
- Colored pencils
- Markers
- Crayons
- Tape or sticky tack

Instructions:

1. On the blank paper, draw an outline of a fish. Repeat as many times as there are participants.
2. Cut out the fish along the outline.
3. Spend ten minutes allowing all participants to walk around the room to find a hiding spot on a flat surface where they plan to camouflage their fish. Using the coloring materials, have participants color their fish to best match the location of their hiding spot. Be sure to keep each fish a secret while coloring it so that others don't know where it will be hidden. Spread up around the classroom or area so that each person has room to be creative without peeking at others.
4. Once everyone has colored their fish, have everyone leave the room and one at a time, under supervision in the spirit of fairness, tape each fish in their designated camouflage area. There are some rules: 1) no taping fish behind a closed door or cabinet because that is just hiding, not camouflaging 2) No taping fish to areas others cannot reach 3) no taping fish underneath another object. The idea is that it's "hiding in plain sight."
5. Once all fish are hidden, have all participants come back into the room and search for the camouflaged fish. This game can even be a fun competition to see which fish lasts the longest, followed by a discussion about what characteristics that fish has to be so successful.

