**Camouflage of Surface-Dwelling Fishes**

Have you ever noticed that beautiful shimmer of a school of surface-dwelling fish? Or wondered why nearly all surface fishes are silvery in color? Well look no further; that’s the topic of this Aquarium department article!

Pictured here are some of our silversides swimming in our coral reef aquarium. The sunlight comes in under the pavilion roof early and late in the day, and sometimes we see them swimming through the light beams shimmering away. Also, if you observe the mullet also in the same picture or our lookdowns in our shipwreck aquarium (also pictured), you’ll notice that they are all silvery and highly reflective, especially the lookdowns.

The reflective part is the key, these fish use these highly reflective scales to bounce light off of them making it more difficult for predators to hunt them in the open ocean where they would otherwise be able to see much easier, in a sense, camouflaging them. In addition, some research has suggested that polarized light can also be reflected by these scales. Polarized light is light that oscillates repeatedly in only one direction, specifically perpendicular to the direction of the light source. Regular light oscillates in all directions. Polarized light is what makes shiny surfaces in the sun have a glare and why polarized sunglasses allow you to cut that glare. Polarized sunglasses are just limiting amount of those light waves coming to your eyes to increase how well you can see. But back to the fishes, this ability to reflect polarized light makes it near impossible for predators that can see polarized light to find their silvery prey!

Keep a look out for an upcoming Fish Friday post on our social media accounts with a video of the silversides shimmering away in our coral reef aquarium. Until next time, keep your fishy friends close and your anemones closer.

*By Bryan Danson, Aquarist*
Happy New Year from our entire Gumbo Limbo team! We have so much to look forward to in 2021 with a few milestones happening just as we kick off this year!

First, please join me in wishing our founder, Gordon Gilbert, a very happy 90th birthday! We simply would not be here without his vision, love, and refusal to take no for an answer! Mr. Gilbert, a former teacher at Boca High, realized that children learned best by actually doing science. He made it his mission to have a place where students could see for themselves the wonders of beaches, dunes, mangroves, and a coastal forest. He fought to protect Boca’s beachfront land from developers and helped to convince the City to buy the land to create public parks not just for our human residents, but for the birds, turtles, and all the other critters that call our beaches home. At Gumbo Limbo Nature Center, we hold true to his vision and take great pride in being able to keep his promises to future students.

Second, we have three key members of our Gumbo Limbo family that will be retiring in the first few months of this year. Collectively, these individuals represent over 80 years of experience and dedication to our Nature Center and will be sorely missed!

Debbie Wilson was one of the first employees hired at Gumbo Limbo. Over the years, she has been a program interpreter, gift store manager, volunteer coordinator, and educator, just to name a few! She cares for all of our animals and tends our plants as if they are all her babies. As the Visitor Hospitality Representative, Debbie is one of the very first faces you see as you enter our nature center. Debbie has a true heart for Gumbo Limbo and over the years has shared her love and knowledge with countless others. She never forgets a face and goes out of her way to make sure everyone has a special time while they are here.

Dr. Kirt Rusenko has been Gumbo Limbo’s Marine Conservationist since 1995. Prior to joining our team, he was a University professor and research scientist. Dr. Kirt has run the City’s Sea Turtle Conservation Program for 25 years, monitoring and protecting the five miles of Boca Raton’s beaches. Countless marine and environmental scientists got their first job in the field by starting as a Marine Turtle Specialist on his team and learning from the best. Kirt also took care of our aquariums for many years, helped start our sea turtle rehabilitation facility, and was even the manager at one time. Internationally recognized as one of the leading authorities on the importance of limiting artificial light at night, Dr. Kirt has helped develop policies and ordinances not just in the City of Boca Raton, but all over the world.

Finally, Darlene Rosa, Gumbo Limbo’s first (and so far, only) secretary, is also retiring after 25 years. Darlene is our proofreader, key master, and secret keeper. She manages schedules, budgets, uniforms, and diverse personalities (and manages to keep it all together!). She is our cheerleader and sometimes disciplinarian. When I started as the new manager in a new city, Darlene made me feel like a member of the family right away. She helped me learn my way around, introduced me to others, and showed me how to get things done.

Gumbo Limbo will not be the same without Debbie, Kirt, and Darlene. I know you will join me in wishing them all a happy, healthy, peaceful, and well-deserved retirement!

Here’s looking forward to a happy (and healthy) new year!
A Tale of Feathers - The Great Blue Heron

The great blue heron has always been one of my favorite birds. This is partially because of a fond family anecdote that comes to mind each time I see one.

My first childhood home in Southwest Florida was on a small neighborhood pond. Our resident great blue heron used this area to hunt and sunbathe. I vividly remember both the pond and the big blue bird, which my mom named “Harry” (short for heron). In many of my childhood photos you can spot him in the background. My siblings and I became familiar with his presence, and Harry became familiar with ours. One might argue that he became a little too familiar. Anecdote has it that on a cool winter afternoon, my mom opened the doors and windows to let the fresh air in. My dad sat on the couch watching a football game. His enamor with the game was not easily broken, but a nearly four-foot tall bird walking in front of the TV did the trick. Apparently, Harry saw the ajar door as a perfect entrance into our home. My mom remembers just how big this bird was up close. He was even taller than me and my five-year-old sister! With her quick wit, my mom was able to corral him back to the door. Harry got the message, and politely escorted himself back to the edge of the pond. We told the neighbors what had happened, and to our surprise, the same thing happened to them the week before. None of us had ever fed Harry. He was just a bold, fearless, and curious bird who made himself right at home with neighbors around his pond.

I can’t help but think of this story every time I see a great blue heron. To me, they spark special sentiments that remind me of home, but for many other birders, they are admired for their size and beauty. This species is the largest heron in North America. They thrive in a spectrum of environments, from Florida’s mangrove swamps to western desert rivers to the brisk coastlines of Alaska. They stand stoic, poised and taller than their other feathered friends. These hunters are patient stalkers that stand quietly in shallow water, waiting to strike at prey that swims near. Their diet typically consists of fish, frogs, salamanders, turtles, snakes, insects, and rodents. However, they have also been known to snack on other species of small waterbirds.

Great blue herons do not flock or hunt together but do nest in colonies. Their nests can be up to three feet wide, but are typically constructed high up in trees, putting them out of sight from both spectators and prey. Males and females are monogamous during breeding season but will choose a new partner the next year.

These birds will live for about 15 years but the oldest recorded survived to be 24. Harry may be gone by now, but his species continues to be largely stable. In fact, I have a resident great blue heron at a pond behind my current home. Each morning I get to admire his graceful behavior. This time I just have to make sure we don’t leave any doors open.

By Megan Barry, Exhibits Assistant
The 2020 sea turtle nesting season started like every other. March 1 arrived and our sea turtle conservation team began the daily task of surveying Boca Raton’s five miles of beach at sunrise, looking for sea turtle tracks in the sand left where they crawled up onto the beach overnight. During the first couple of months of each season, leatherback turtles are the first expected nesters. Loggerheads do not generally arrive until late April and green sea turtles normally begin nesting in late May and will nest well into September. After only a few weeks into the season, the coronavirus pandemic began, and our nature center and local beaches closed. Sea turtles, however, continued about their business nesting and our staff did not miss a morning covering our five miles.

We are often asked “how did the pandemic and beach closures affect sea turtle nesting?” It really did not have much of an effect at all. If anything, when the beaches were closed to the public, nesting sea turtles had more privacy. Consequently, we saw slightly fewer false crawls (non-nesting emergences) during that time. This resulted in a beach – or nesting - success of about 50%, meaning half of the time a turtle emerged from the ocean, she nested. This is a typical percentage for sea turtles, even on a non-urbanized beach. Because we are an urbanized beach, we normally see a beach success of only about 40% as sea turtles are easily disturbed by lighting and people on the beach at night. When the beaches reopened, we saw our false crawls increase and the beach success decrease to 38%.

It was a slightly above average year for total nests. Since 1988, Boca Raton has averaged 828 total nests per year. In 2020 we had 901 nests (756 loggerhead, 132 green, 13 leatherback). In addition, there were 1440 false crawls (1240 loggerhead, 197 green, 3 leatherback). Unfortunately, of the 901 nests, over one hundred were lost. About 80% of lost nests were due to storms and high tides, the other 20% were predators such as foxes and raccoons. We inventory, or excavate, as many nests as possible three days after they hatch. This season, we inventoried 586 nests (65%). On average, we found that 52% of the eggs in each nest hatched. The other 48% of eggs were either dead embryos that ceased to develop at some point, infertile eggs, or eggs lost to predators. The average clutch size of each nest was 98.2 eggs. So, 901 total nests x 98.2 = 88,478 total eggs, 46,009 of which hatched!

Sea turtle nesting season officially ended on October 31, but our team continued to monitor the beach through mid-November because the last nest of the season was still incubating and did not hatch until November 16. During the offseason our team reviews and verifies the season’s data and sends it to the Florida Fish and Wildlife Conservation Commission, who compiles all of the data from Florida in order to better understand statewide nesting trends and to make management decisions. We look forward to sunrise on March 1, 2021, when we will be back on the beach to do it all over again!

By David Anderson, Sea Turtle Conservation Coordinator
Nuts about Squirrels!

It’s safe to say we’re all ready to leave 2020 behind us and look forward to a brighter year. The month of January brings a plethora of optimism into the new year. Something we are looking forward to is National Squirrel Appreciation Day on January 21st! This holiday was originally created by wildlife rehabilitation specialist Christy Hargrove, to help encourage a different, kinder perspective towards squirrels. Florida is home to three species of squirrel: the eastern gray squirrel (*Sciurus carolinensis*), the fox squirrel (*Sciurus niger*), and the southern flying squirrel (*Glaucomys volans*).

The eastern gray squirrel commonly inhabits woodland and urban areas and is very active during the day. These squirrels hoard and hide food to enjoy later! Their memory is spot on, as they can remember the location of roughly 90% of their storage areas. Can you guess what their favorite foods are? The eastern gray squirrel enjoys a nutritious diet of bark, berries, seeds, and acorns!

The southern fox squirrel is one of the larger members of the family and can grow up to 27.6 inches long! Another special characteristic of these creatures is their very strong hind legs, which help them to leap from tree to tree. Just like the eastern gray squirrel, these guys love to feed on not just seeds and acorns, but also fungi, fruit, and flower buds. This species of squirrel is listed as ‘imperiled’ by the Florida Fish and Wildlife Commission, meaning that they are at risk. The main threat to the southern fox squirrel is habitat destruction; less than 20% of their original habitat remains.

The last native Florida squirrel is the southern flying squirrel. These small mammals are best known for their ability to...fly! Well, that’s only partially true. Flying squirrels can’t actually fly, but they glide really well! They are not capable of true flight like birds or bats. Their ability to glide comes from a flap of skin called the patagium. This flap of skin is connected from their wrist to their ankle. When stretched, this feature provides the flying squirrel with its ability to soar and glide between trees. Not only does the patagium help the squirrel to glide, but its tail helps too. These squirrels have a broad, flat tail that essentially helps them to steer. It’s believed that this adaptation formed as a result of their frequent long-distance leaping amongst the trees.

So why should we celebrate squirrels? Well, aside from being really cute, they are one of nature’s gardeners! The 10% of seeds that the squirrels are not able to recover and consume grow where they are hidden and become new plants. So, let’s thank squirrels for helping with seed dispersal, and contributing to nature’s success! Stay tuned to Gumbo Limbo’s upcoming programming to see what we have in store to celebrate these amazing animals on January 21st!

By Alyssa Saldarriaga, Science Educator
RESCUE MISSION: Cold Stunned Sea Turtles

Did you know that when temperatures drop like they did in December along the east coast of the US, the cold weather can stun sea turtles? Whenever these fast drops in temperatures occur, hundreds, if not thousands, of sea turtles can be found washed up on our shores ill, stunned, or even deceased.

Because sea turtles are reptiles that rely on external sources of heat to maintain their necessary body temperature, this prolonged exposure to colder temperatures can cause their heart rate and circulation to decrease and become lethargic. Cold stunning can also cause shock, pneumonia, frostbite, and can lead to death if the sea turtle cannot migrate to warmer water in time.

Fortunately, cold stunned sea turtles can be rehabilitated. With the help of our partners, we are able to utilize our Sea Turtle Rehabilitation Facility to place these cold stunned turtles in dry tubs, warm them up slowly, and—once they are evaluated and deemed healthy—will be released back into the ocean.

Fun fact: Did you know that Turtles Fly Too? These cold stunned turtles were rescued in Cape Cod, Massachusetts and received treatment at the New England Aquarium before being flown to South Florida to continue their recovery. This year, cold temperatures in the bay caused over 800 sea turtles to cold stun in the New England area. Sea turtle rehabilitation facilities around the country are stepping up to help care for the stunned sea turtles, and Gumbo Limbo’s Sea Turtle Rehabilitation Facility is thrilled to be a part of the national effort to save these endangered species.
January and February Virtual Programs

Appreciation Days at Gumbo Limbo
Join us on Facebook Live as we celebrate the well-known and the not-so-well-known National Appreciation Days!

Nutty Squirrels
January 21st is National Squirrel Appreciation Day. Join us for a live program honoring the mammal of the hour, the squirrel! Yep, you read that right! Tune in to learn some fascinating facts about these nutty rodents and you may leave with a new appreciation for these crafty critters. Thursday, January 21, 10:00 am

Wetlands and Wildlife
Join us for a live program from local wetlands where we will join in the celebration of National Wetlands Day. We will explore the site for wading birds, reptiles, and insects of the wetlands, and learn how to help researchers by documenting these animals where we see them, even in our own backyard. Tuesday, February 2, 11:00 am

Beachcombing Gumbo Limbo Style!
This self-guided adventure will give you both the knowledge and incentive to get out, enjoy the beach, find cool natural treasures, and help wildlife all at the same time. Available anytime on our website.

Little Wonders and Nature Detectives
Join us, at your convenience, for a virtual nature exploration. This prerecorded monthly program includes a nature lesson, story-time videos, and a free craft kit. New topics are released monthly (previous topics available anytime). January's topic is Shark and Ray Science. Call 561-544-8612 to reserve your free craft kit. Visit our website on (or after) January 16 and February 20 for the program links to our new lessons, craft demonstrations, and read-aloud story time videos! Ages 3-4 and 5-6. Free.

Night Explorers
Who’s afraid of the dark? Join our staff for a virtual tour of Gumbo Limbo after dark, monthly on Facebook Live as they share the side of Gumbo Limbo usually reserved for nocturnal creatures. We will visit the lighted aquariums in January to see what fish do when they think no one is watching, and we will take a dark paddle through the mangroves in February to search out swamp creatures of the night! Fridays; January 29, February 26; 6:00 pm

The Science of Nature
Join us monthly on Facebook Live for a naturalist guided lesson on coastal ecology topics. Recordings available of previous lessons. Recommended for ages 10-adult. Sundays; January 10, February 14; 10:00 am
Friends of Gumbo Limbo Corporate Coastal Stewards

As a distinguished member of the Friends of Gumbo Limbo Corporate Coastal Stewards program, you and your business will honor the mindset of stewardship for our coastal environment and seize opportunities to make choices to prioritize our sea coast’s health. Our inaugural group of Corporate Coastal Stewards will have increasing access and opportunities to join in on the fun that we look forward to recapturing once it is safe to do so.

Join in by sponsoring as one of three levels:

**LOGGERHEAD - $5,000 per year**
- Sea turtle nest sponsor
- Corporate plaque
- Corporate logo on all Friends of Gumbo Limbo events
- Welcome box
- Employee gift store discounts
- Virtual corporate event

**BEACHCOMBER - $2,500 per year**
- Corporate plaque
- Corporate logo on 2 Friends of Gumbo Limbo events
- Welcome box
- Employee gift store discounts
- Virtual corporate event

**HATCHLING - $1,000 per year**
- Corporate plaque
- Corporate logo on 1 Friends of Gumbo Limbo event
- Welcome box
- Employee gift store discounts

For more information or for how to join as a Corporate Coastal Steward, email Friends of Gumbo Limbo’s Executive Director John Holloway at john@gumbolimbo.org.

Our Newest Residents, Juvenile Lookdowns!

As we continue to educate the public from afar, we also want to do our best to take care of any animals that need our help or will be staying with us for care. So we'd like to introduce our newest residents! These juvenile lookdowns, a member of the jack family, are only about three inches long at the moment. They were born right here in Florida, and will be raised and taken care of by us here at Gumbo Limbo so they can live a long and healthy life! They will start their life in the mangrove exhibit, and, when they reach adult size, they will graduate to the shipwreck exhibit!

A Bar Mitzvah Project with a Purpose!

If you don’t know who Gavin Welkes is, you should! This young gentleman took the chance to make a difference this past year for his bar mitzvah project and dedicated his time to raising $1000 to donate to Gumbo Limbo Nature Center. As the Torah taught him about the ethical treatment of animals, he felt inspired by the work we do every day. We are so honored and humbled to have the dedication of our supporters, even ones as young as Gavin!

And again to you Gavin, mazel tov on your bar mitzvah!
2020 YEAR IN REVIEW

4,500+ pounds of food fed to our resident marine life

35 years of Gumbo Limbo Nature Center

SEA TURTLE PATIENTS TREATED

901 total sea turtle nests on Boca’s beaches

Total sea turtle eggs inventoried

90+ juvenile to adult

1,000+ hatchlings and washbacks

Launched the REFUSE campaign

Received and utilized our new sea turtle AMBULANCE

1,000+ marine life residents cared for, including fish, stingrays, eels, crabs, corals, and anenomes

EVENTS

GumboFest

Sea Turtle Day

Virtual Summer Camp

Luna’s Story Writing Contest

Virtual 10K Race

Troubled Waters, A Turtle’s Tale Premiere
Support Gumbo Limbo

Adopt A Turtle
It can be tough to find the perfect gift... but look no further! Consider giving the gift of charity to those you care about. Hatchling or resident sea turtle "adoptions" available at GumboLimbo.org/Adopt.

Membership
Become a Friends of Gumbo Limbo member today! Be kept in the loop about upcoming virtual programs and enjoy exclusive discounts and early access. Find the full list of member benefits at GumboLimbo.org/Membership.

Pave the Way
An engraved paver at Gumbo Limbo is a personalized way to show your support for our mission. Find out how you can help pave the way at GumboLimbo.org/Pave-The-Way.

The Gumbo Limbo Gift Shop
Friends of Gumbo Limbo has worked hard at a complete overhaul of our store, with a strong focus on sustainable and recycled products. We're thrilled to announce our new online store, where you can shop from the safety of your own home while still supporting Gumbo Limbo! ShopGumboLimbo.org. Once we are able to open again, you'll be welcome in a store that will allow appropriate social distancing measures to ensure your safety.

Get Social With Us!
#LoveGumboLimbo

Facebook
Gumbo Limbo Nature Center, Inc

Instagram
gumbolimbonaturecenter

Twitter
@GumboLimboNC

YouTube
Gumbo Limbo Nature Center

#LoveBocaRaton
Boca Raton Recreation
City of Boca Raton Government
We remain closed due to the COVID-19 pandemic. The Boardwalk is open 7:30 am - sunset with access from Red Reef Park West parking lot. Check gumbolimbo.org for updates.

General Information (561) 544-8605  ·  Volunteer (561) 544-8538
Friends of Gumbo Limbo (561) 544-8608  ·  Gift Shop (561) 544-8610
1801 North Ocean Boulevard, Boca Raton, Florida 33431

gumbolimbo.org

Suggested donation of $5 per person.
Your donations go to Gumbo Limbo Nature Center, Inc. to support Gumbo Limbo Nature Center, including, but not limited to, feeding the animals, purchasing supplies and services for the Sea Turtle Rehabilitation Program, and creating exhibits.

City of Boca Raton Recreation Services Staff

Administration & Operations
Recreation Services Director - Michael Kalvort, CPRE
Deputy Recreation Services Director - Michelle Zimmer, CPRP
Manager - Leanne Welch
Secretary - Darlene Rosa
Volunteer Coordinator - Rebecca Germany
Visitor Hospitality Representative - Debra Wilson
Environmental Program Coordinator - Kristin Child
Community Events Assistant - Kayla Caldwell

Aquarium
Senior Aquarist - Keith Herman
Aquarist - Bryan Danson

Education
Environmental Program Coordinator - Susan Elliott
Science Educator - Christie Collins
Science Educator - Alyssa Saldarriaga
Environmental Educator - Frankie Gorora

Exhibits
Exhibits Coordinator - Cory Keester-O’Mills
Exhibits Intern - Winston Miller

Facilities Maintenance
Maintenance Supervisor III - Reed Benardo
Custodian - Kevin Addison
Groundskeeper - Cary Boudreau

Sea Turtle Conservation
Marine Conservationist - Kirt Rusenko, PhD
Sea Turtle Conservation Coordinator - David Anderson
Marine Turtle Specialists - Lisa Esposito, Carlee Jackson, Kylea Perrin

Sea Turtle Rehabilitation
Sea Turtle Rehabilitation Coordinator - Whitney Crowder
Sea Turtle Rehabilitation Assistant - Caitlin Bovery
Sea Turtle Rehabilitation Assistant - Emily Mirowski

Gumbo Limbo Nature Center, Inc.

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Executive Director - John Holloway
Business Manager - Pam Mulcahy
Retail Operations Coordinator - Jean Deluca
Gift Shop Sales Associate - Brittnie Funez

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