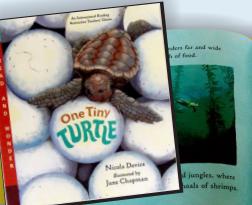


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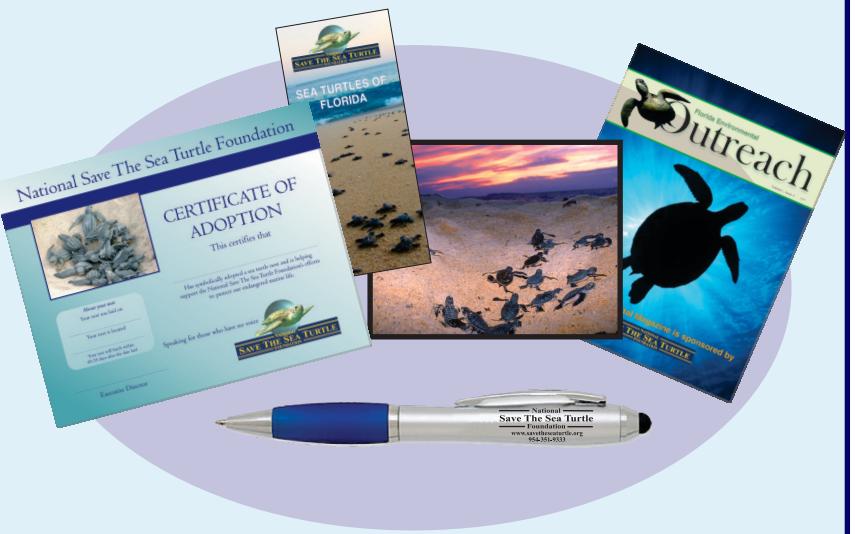


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Hunters set to stalk Alligators for first time in Florida Wildlife Preserve

By Zachary Fagenson

Wildlife officials on Friday will open a Florida nature preserve for the first time to a handful of alligator hunters who waited more than a decade to stalk the large reptiles in the Everglades.

Eleven hunters, selected at random from 1,203 applicants, will each be allowed to take two alligators from the nearly 150,000-acre Loxahatchee National Wildlife Refuge.

Animal rights activists plan to stage protests at the entry to the park when the hunters arrive.

The U.S. Fish and Wildlife Service this year approved the hunt after more than a decade of debate.

Florida has held alligator hunts in parts of the state since 1988 to help curb growing populations, however this hunt will be inside a wildlife sanctuary that is one of the last remaining pieces of the northern Everglades.

Hunters will be allowed to search for alligators only at night to avoid run-ins with bird watchers or hikers. The Florida Fish and Wildlife Conservation Commission requires alligators be hooked or ensnared then killed with a bangstick, a pole that shoots a shotgun shell or bullet into the animal's brain.

A license costs \$272 for hunters who are Florida residents and \$1,022 for others, according to the commission.

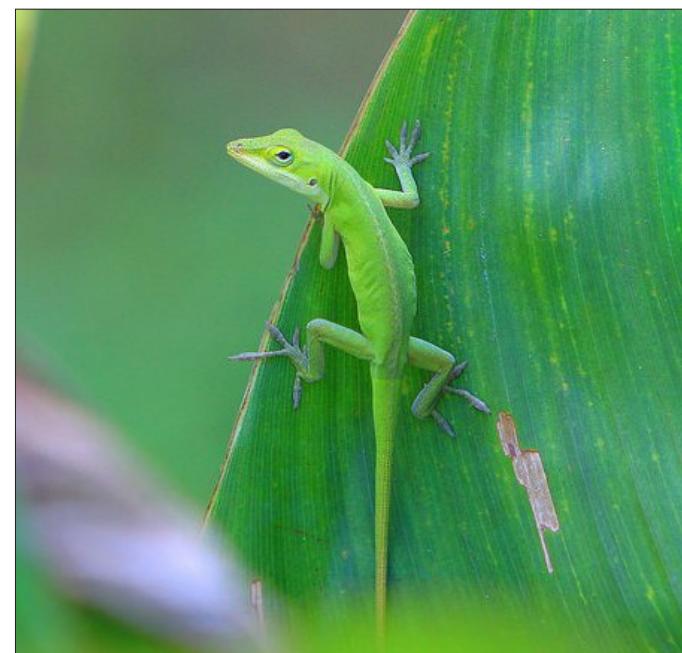


"There won't be any people out there shooting with pistols or rifles," said Rolf Olson, a refuge official with the U.S. Fish and Wildlife Service.

Nick Atwood, a campaign coordinator for the Animal Rights Foundation of Florida, said: "Refuges should be places where animals are protected from harm and not hunted for fun or profit."

He said the method used to kill alligators often leaves them conscious and suffering for a long time before they die.

Olson said refuges have long been places where hunters, including former President Theodore Roosevelt, roamed on a controlled basis. Recent surveys of the refuge pegged the alligator population between 2,000 and 3,000, and Olson said removing less than two dozen would have a limited effect.



Wildlife Spotlight: Green Anole

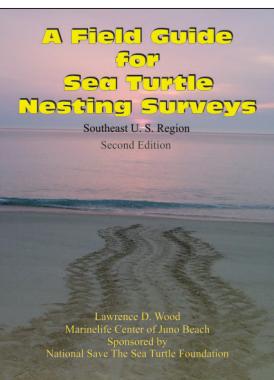
The green anole, the only anole native to the United States, is one of the first reptilian residents to greet most visitors to Florida. Anoles are agile climbers and they are commonly spotted basking on the sides of buildings and fence posts or clinging to shrubbery. Rarely longer than eight inches from nose to tip of tail, this slender lizard is found in a wide variety of habitats in every county in the state. Its range extends throughout the southeast, from North Carolina to Texas. Contrary to their name, green anoles are not always green. Though not true chameleons, they can change colors from green to gray, brown or tan. The males in most of Florida have a colorful reddish flap of skin attached to their throats. This dewlap, or throat fan, is extended during courtship and territorial displays and is accompanied by head bobbing. In May and June, females lay one or two leathery eggs, 1/4 - 3/8" long, and bury them in moist soil or leaf litter. Hatchlings about 2.5 inches long emerge in approximately six weeks.

Green anoles are active during the day and feed on live insects, including insect eggs and pupae. They are, in turn, eaten by birds, snakes, cats, and occasionally other lizards. As a defense, the anole's tail breaks off easily and continues to thrash about for a short while, distracting predators and giving the anole time to escape. The tail grows back in a few weeks.

About 120 years ago, a Caribbean lizard called the brown anole began to colonize south Florida and Mexico. Today, this non-native is very common in south Florida and in urban areas throughout the Peninsula. It is expanding its range into other southeastern states. The brown anole is similar in size to the green anole, but is never green. Its other distinguishing features include darker spots or bands and a light stripe down the center of the back. The two species share diet and habitat preferences, and scientists are studying the effects of the brown anole on the native green anole populations.

The new Sea Turtle Nesting Manual is here!

Ten years ago, the *National Save the Sea Turtle Foundation* sponsored the first edition of "A Field Guide for Sea Turtle Nesting Surveys", authored by long-time Juno Beach turtle biologist Larry Wood. The manual was originally designed as a 'take-to-the-beach' picture guide to help volunteers identify turtle crawls, but gradually took the form of an all-purpose, user-friendly manual to help nesting-beach managers and their trainees meet the challenges of sea turtle conservation, from basic crawl identification to data collection and nest protection. Since then, it has been used by many organizations both in and out of the State of Florida, and it has been great to get such positive feedback from so many sea turtle professionals and volunteers that have found it helpful to their work.



Lawrence D. Wood
MarineLife Center of Juno Beach
Sponsored by
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The 10-year anniversary of the Field Guide prompted the development of the new, updated "Second Edition", which contains the latest contact information for various agencies and sea turtle rehabilitation centers in the region. This edition is also being made possible by the National Save the Sea Turtle Foundation, and is available through their website. For information on how to acquire copies, contact the Foundation at 954-351-9333.



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National Save The Sea Turtle Foundation Teams up with Inwater Research Group To Form an International Education Program

Back in April, the *National Save The Sea Turtle Foundation* contributed \$31,350 to Inwater Research Group (IRG) of Jensen Beach, FL. The grant was awarded to IRG for the sole purpose of beginning an education department within the organization.

"We want to be able to support the community through free education," said Rebecca Mott, Education Program Manager heading up the department. "Our goal is to translate what we do as researchers on a day-to-day basis and make it applicable to the public," she continues.

One of the avenues the organization sought to tackle this endeavor was by creating dynamic and free lesson plans for K-12 teachers that align with state science standards. The lesson plans get students out of their seats, working solo or in teams to problem solve and learn about marine conservation in a hands-on way. Lessons were developed to put students in the role of biologist and to cater to myriad learning styles. Teachers were able to request the curricula best suited for their class and have it delivered free of charge to their doorstep.

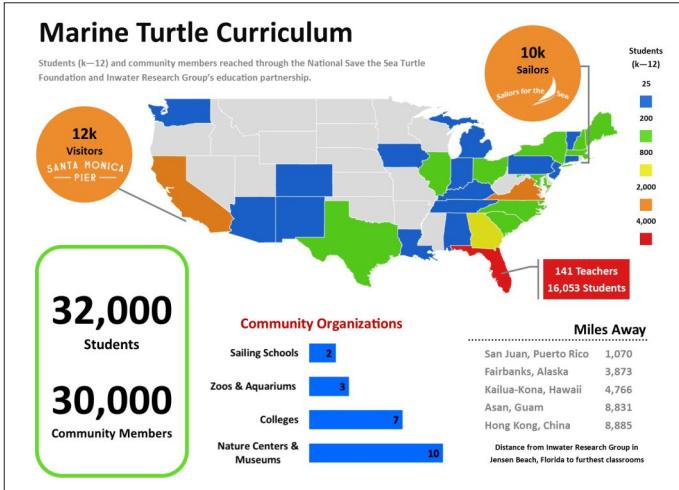
What both organizations thought would be a local effort, quickly became something much bigger. Not only did teachers from all over the U.S. request the lesson plans, but educators from as far reaching as Hong Kong, Guam, and Egypt expressed interest. To date, the curricula has been sent to 33 states, 5 countries and reached more than 33,000 students.

"I have one student with autism that thought today was the best day of his life," said Mrs. Zavala, teacher at Hamlin Charter Academy in West Hills, CA. She has been implementing the free lesson plans over the past couple of weeks. "I've never seen so much excitement over learning," she added.

In addition to the lesson plans, IRG is now offering free classroom outreach presentations to local schools. This will allow the organization to bring sea turtle biology and information directly to students. Biologists and educators will be available for career days, science nights, public events, lectures and more, by request. For more information on the education programs now offered through the grant, please contact Rebecca Mott at rmott@inwater.org or visit inwater.org/education.



(L to R)
Sam Cassaro, Ronnie Chase, Kelly Flanagan, Bill Muller, Eileen Nesdale, Wayne Kurian, Mike Bresette, Rebecca Mott, Jonathan Gorham, Sue Speciale and Frank Wojcik.



Infographic displaying the reach of the grant-funded curricula.



Kindergarten class from Hamlin Charter Academy in West Hills, CA shows their post-lesson excitement for sea turtles.

MANGROVE RESTORATION STUDY UNDERWAY IN ROOKERY BAY RESERVE

NAPLES – Rookery Bay National Estuarine Research Reserve has entered into a research partnership with the U.S. Geological Service (USGS) to conduct a long-term study of a mangrove die-off area near Goodland. USGS awarded funding to this project for a minimum of three years to assess the 225-acre hydrologic restoration, partially underway, at Fruit Farm Creek.

Fruit Farm Creek is a mangrove-forested site located within the boundaries of the Rookery Bay Reserve, near Goodland on the Southwest Gulf coast of Florida. Construction of State Road 92, initiated in 1938, greatly altered natural tidal flushing to mangrove wetlands in the area. In particular, incoming flow from higher tides inundates the forest but cannot readily be flushed out, creating a "bathtub effect" that holds the water for longer periods than these forests would normally experience. Summer rains compound this effect. Following the heavy, flooding rains from Hurricane Andrew in 1992, the area has experienced a slow, steady die-off of approximately 65 acres of mangroves.

The reserve has partnered with the Coastal Resources Group, the U.S. Fish and Wildlife Service, the Conservancy of Southwest Florida and the city of Marco Island to conduct the initial assessment of the area's hydrology and produce a plan for restoring the affected mangrove forests.

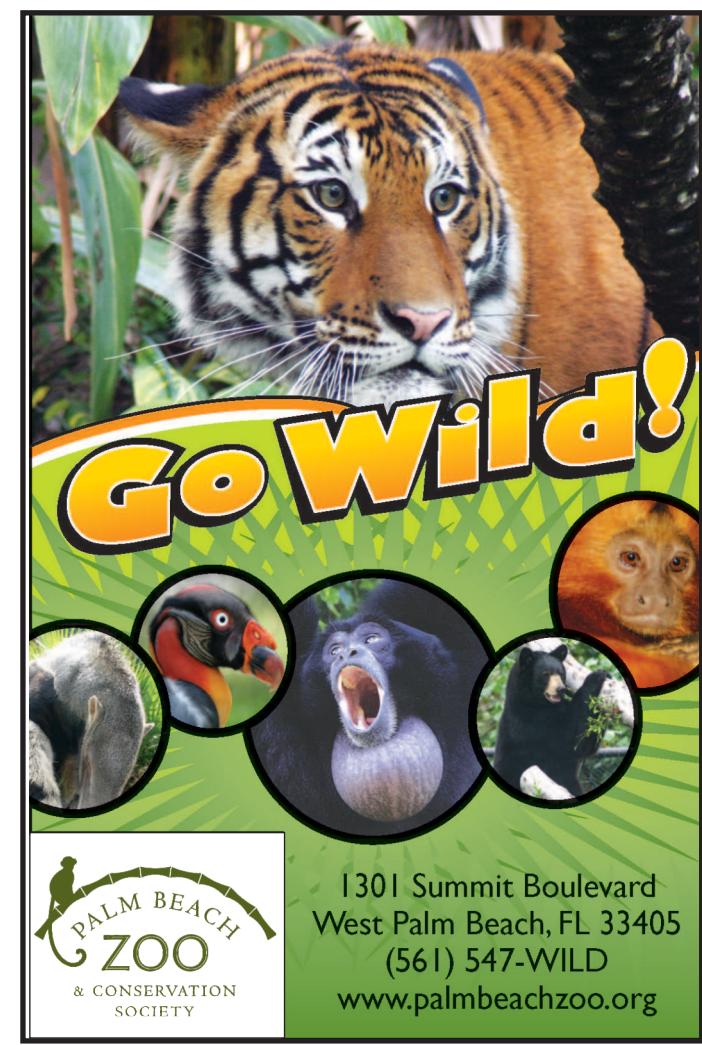
"We have examples of how hydrological restoration works in other locations," said Kevin Cunniff, research coordinator for Rookery Bay Reserve. "A long-term assessment of forest community change and recovery over the next decade will provide invaluable information regarding the resiliency of our mangrove wetlands and the cost/benefits of restoration."

USGS has just installed 12 Rod Surface Elevation Tables (RSETs) in order to monitor surface elevation change associated with mangrove forest recovery within the study plots, which span a gradient of dead, degraded and intact forest. Initial assessments of the forest canopy, sediment conditions and plant/animal communities will begin early in 2015. Three reference area study plots, also including RSETs, will be established on the south end of Horrs Island adjacent to Fruit Farm Creek in November 2014. Long-term data collected will provide information on trends in forest canopy structure, sediment chemistry and nutrient cycling, and benthic faunal community and food-web structure.

In August 2013, a series of small trenches were excavated to re-establish tidal connection to one acre of a four-acre die-off area. Within one year, the return of normal tidal flushing has produced a dramatic response — mangrove seedlings are taking root and many of the characteristic fish, crabs, snails and other species have moved in. The project partners are still seeking additional funding to restore flushing to the remaining 224 adjacent acres. It is on the list of projects under consideration for federal funding through the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast Act.



Nicole Cormier (left), an ecologist with the US Geological Survey's National Wetlands Research Center in Lafayette, Louisiana, holds a stainless steel rod in place while it is being driven into the sediment at Fruit Farm Creek near Goodland.



Sea Turtle Skeletons Hold Clues for Conservation



Photo By: Mike Beauregard/Creative Commons.

Not all sea turtles look this scary. This is a skeletal replica of Archelon ischyros, a species of turtle that lived 75 million years ago and reached 4 meters in length.

Where have you been all these years?

That's a question scientists have been asking sea turtles for a long time. After the turtles hatch and waddle into the sea, they're pretty much off the radar until they turn up as juveniles on beaches that might be half a world away. But thanks to new technology, scientists are finally getting some answers.

One of those new technologies involves skeletochronology. "Just like trees have annual rings, so do the bones of sea turtles," said Cali Turner Tomaszewicz, a scientist at NOAA's Southwest Fisheries Science Center in La Jolla, California. "And you can analyze those rings to get all kinds of information about the animal's life history."

The rings are most visible in the humerus bones, which form the upper arms of humans but in sea turtles are found in the flipper. Turner Tomaszewicz collects the bones from the bodies of sea turtles that are found dead on beaches in Northern Mexico and California. She works mainly with Eastern Pacific green turtles and North Pacific loggerheads, both of which are listed as endangered under the Endangered Species Act.

"The animal does have to be dead for us to get at this data," Turner Tomaszewicz said. "Even though their death is unfortunate, we can still learn something from them afterwards."

After collecting a humerus bone, Turner Tomaszewicz brings it to the lab and, using a high-precision, diamond-studded circular

saw, cuts two adjacent cross sections, each exactly 3 millimeters thick. "They look like wooden nickels," Turner Tomaszewicz said. She also cuts a 25-micron-wide slice at the same location and stains it with dye that makes the annual rings visible. Using the stained slice as a blueprint, she then programs a computer-driven micro-drill to extract tiny tissue samples from the thicker slices, with each sample coming from a different annual ring.

Chemical Signatures Reveal an Animal's History

You are what you eat, and so the chemical composition of each annual ring reflects the animal's diet during that year of its life. North Pacific loggerheads, for instance, start life in the Pacific Ocean after hatching on beaches in Japan. They eventually cross the Pacific to spend their juvenile years near the coast of Southern California and Baja California in Mexico. Those different environments leave distinct chemical traces in the annual rings.

Turner Tomaszewicz analyzes the tissue in each ring using a technique called stable isotope analysis. That technique is based on the fact that chemical elements, including nitrogen, carbon, and oxygen, come in two varieties: heavy and light. Conveniently for scientists, the near-shore environment is richer in heavy nitrogen than the open ocean, and that difference shows up in the tissues of the animals that live there.

"By analyzing the annual rings, we can see during what years a turtle was in its oceanic phase and at what age it settled into its near-shore habitats." And this analysis has yielded some surprising results. It turns out that loggerheads spend up to two decades—much longer than previously thought—off the North American coast before returning to their nesting beaches in Japan.

Scientists have also recently started tracking baby sea turtles using satellite tags, which give precise information on an animal's whereabouts. But the tags usually fall off after several months. Isotopic analysis gives less precise location data, but covers a greater time period.

"By analyzing the skeletal tissue, we get a very refined retrospective view of an animal's ecology in each year of its life," said Jeff Seminoff, who heads the Marine Turtle Ecology and Assessment Program at NOAA's Southwest Fisheries Science Center. "That allows us to prioritize protection efforts in the habitats that are most important to these species."



In Loving Memory Helena Schaff

The National Save The Sea Turtle lost their best friend, our dear Board Member, Helena Schaff, passed away Friday, September 19, 2014. Helena served on the Board for 12 years. She managed the Foundation's special events. Her volunteer participation in all of our Education, Protection and Public Awareness Programs was outstanding. We will all sincerely miss Helena's enthusiasm, dedication to marine life and especially her friendship.

U.S. FISH AND WILDLIFE SERVICE PROTECTS TWO PINE ROCKLAND PLANTS

By Ken Warren, USFWS

VERO BEACH, FL – The U.S. Fish and Wildlife Service is announcing endangered species status for two plant species only found in South Florida—the Florida brickell-bush and Carter's small-flowered flax. This protection becomes final on October 4, 2014, 30 days after publication in the Federal Register.

Both plants are only found on the Miami Rock Ridge in South Florida. Most of the historical pine rockland habitat on the Miami Rock Ridge has been developed or converted to agriculture, and much of the remaining areas are degraded due to inadequate fire management and proliferation of non-native, invasive plants. Another potential threat to both plants is sea level rise.

Current populations of these plants are between 2,150 to 3,700 plants for Florida brickell-bush, and about 1,300 plants for Carter's small-flowered flax. Compared to their historical ranges, the current ranges of both plants have shrunk significantly.

These two pine rockland plants have been candidates for federal listing since 1999. Both plants were proposed for listing as endangered under the Endangered Species Act (ESA), with a critical habitat designation on October 3, 2013. The final rule on the critical habitat designation is pending. The decision to add these plants to the Endangered Species List is based on the best scientific information available.

The listing of these two plants is part of the Service's efforts to implement a court-approved work plan under a Multi-District Listing Agreement aimed at addressing a series of lawsuits concerning the agency's ESA listing program. The intent of the agreement is to significantly reduce a litigation-driven workload. For more information, please see

The ultimate goal is to recover listed plants and wildlife so that they no longer need protection under the ESA. The next step is to develop recovery plans that provide guidance for the Service and its conservation partners to address threats to the plants' survival and recovery.

Federal landowners must comply with provisions of the ESA to protect these plants on their land. It is unlawful to remove from federal lands plants that are listed as endangered under the ESA, or to import, export, or sell such plants without first consulting with the Service.

The Service offers willing landowners a number of voluntary and non-regulatory conservation programs to help these plants survive as they live and work on their lands. Landowners



Florida brickell-bush and Carter's small-flowered flax interested in helping the Service recover the Florida brickell-bush and Carter's small-flowered flax, or who would like more information about the potential implications of the listing should contact Mr. Ken Warren, South Florida Ecological Services Office, 1339 20th Street, Vero Beach, Florida, 32960, by telephone at 772-469-3909, ext. 323, or e-mail at Ken_Warren@fws.gov.

Non-profit organizations, government agencies, and private landowners have partnered with the Service to manage and restore pine rocklands on public and private lands. For example, since 2005, the non-profit Institute for Regional Conservation has been conducting pine rockland restoration activities in urbanized Miami-Dade County, funded through various Service-sponsored grants and other sources.

Many new turtle gifts to choose from
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Miami Wildlife Dealer Convicted in Illegal Rhinoceros Trafficking Deal

Wifredo A. Ferrer, United States Attorney for the Southern District of Florida, and Dan Ashe, Director, U.S. Fish and Wildlife Service (FWS) announced that Gene Harris, 76, of Miami, pled guilty yesterday to the sale and purchase of, the offer of sale and purchase of, and the intent to sell and purchase horns of a black rhinoceros (*Diceros bicornis*) with a market value in excess of \$350.00, and to the transport, receipt, acquisition, and purchase of said wildlife, knowing that the wildlife was possessed, transported, and sold in violation of the Endangered Species Act.

Harris faces a possible sentence of up to five years in prison, a term of supervised release of up to three years, and a criminal fine of up to \$250,000. U.S. District Judge Marcia G. Cooke who accepted Harris's guilty plea.

According to case records and a joint factual proffer submitted to the Court, at the relevant times, Harris was engaged in the retail sale of wildlife products, including taxidermy mounts from locations in Miami-Dade County and Laredo, Texas. Further, Harris engaged in the arrangement, brokerage, and purchase/sale of wildlife on a private basis, of various wildlife specimens, specifically including black rhinoceros (*Diceros bicornis*) horns.

In the proffer, it was agreed that between June 2011 and July 2011, Harris engaged in a series of telephone conversations from Miami with a customer in California to discuss and arrange for the sale of black rhinoceros horns to the customer by a resident of Phoenix, Arizona. Harris reserved airline seats and a hotel room to facilitate his travel from Miami to Phoenix in July 2011. On July 23, 2011, Harris personally drove the customer, to the home of a Phoenix couple who were in possession of a full black rhinoceros shoulder mount, including the two horns of the taxidermied mount. At that meeting, the mount was purchased by the customer for approximately \$60,000 in cash, and the rhinoceros horns pried from the head mount. To conceal the nature of the transaction and make it appear that the transaction was solely an intra-state deal, a false invoice was prepared, listing a third-party Arizona resident, also brought to the home by Harris, as the buyer. Harris was paid a "finder's fee" by the California customer of approximately \$10,000 for his services in locating the seller and arranging the deal.



Harris admitted to the Court that based on his prior familiarity with the California-based buyer, and his experience in the industry, he knew that the rhinoceros horns in question would be and in fact were, transported to California and thereafter exported from the United States without compliance with the laws and regulations governing such transactions.

Trade in rhinoceros horn has been regulated under the Convention on International Trade in Endangered Species of Wild Fauna and Flora ("CITES") since 1976. CITES is a treaty providing protection to fish, wildlife and plants that are or could become imperiled due to the demands of international markets.

Rhinoceros are characterized by their enormous size, leathery skin and horns. Rhinoceros horn is a highly valued and sought after commodity despite the fact that international trade in it has been largely banned and otherwise highly regulated since 1976. Libation cups and other ornamental carvings are particularly sought after in China and other Asian countries as well as in the United States. The escalating value of these items has resulted in an increased demand for rhinoceros horn and helped to foster a thriving black market, including modern carvings being sold as antiques. Most species of rhinoceros are extinct or on the brink of extinction as a result of this thriving black market and export activity.

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First Federally Permitted Offshore Mussel Aquaculture Project Soon to get Underway

Providing local seafood and jobs while ensuring that risks to sea turtles and whales are minimized

The first shellfish aquaculture project permitted in federal waters off the U.S. east coast is expected to begin operating next spring. Scientists and fishermen are partnering on this project to grow blue mussels within a 30-acre area in Nantucket Sound. They hope to create new jobs in the region and satisfy consumer demand for local seafood, without posing risks to vulnerable marine life such as whales and sea turtles.

NOAA Fisheries supported research in New Hampshire, Rhode Island and Massachusetts to test the technology for this project. Scientists found that mussels grow rapidly and have a high survival rate using this technology. For the current project, the New England District of the U.S. Army Corps of Engineers authorized installation of the structures needed to grow the mussels. NOAA Fisheries provided technical advice to the Corps, during the project design, to help minimize risks to whales, sea turtles and other marine life.

Scott Lindell, a scientist at the Marine Biological Laboratory in Woods Hole, helped develop the project proposal. According to Lindell, the Corps only authorized the use of three mussel lines, at first, to ensure that the technology can withstand rough weather so there is minimal risk to marine life. Over time, partners could deploy up to 25 mussel lines, if the initial tests are successful.

Each mussel line consists of a 480-foot long 1-inch thick horizontal polysteel rope (head rope), which is suspended in the water column to a depth of 20 to 30 feet using anchor lines and buoys. Mussels are then hung vertically, in "socks" from the head rope, roughly three feet apart. Mussels grown from seed (small mussels captured from the area) reach a marketable size (about 2 inches) in about a year.

Project Benefits

"With all human activities we know there are some environmental risks, but when properly located and operated responsibly, aquaculture projects like this can benefit society and the marine ecosystem," said John Bullard, regional administrator, NOAA Fisheries. "For instance, they provide locally produced seafood and jobs, and help to improve water quality."

When grown in nutrient-rich offshore waters, farmed mussels filter their food directly from the water column. This eliminates the need to add food to the system. As filter feeders, mussels draw nutrients from the surrounding water, which can improve water quality.

An added benefit of offshore shellfish aquaculture is that it can increase domestic production to meet U.S. demand for shellfish. Currently, most U.S. shellfish production is limited to marine and estuarine waters near shore. However, user conflicts and limited space are significant barriers to increased shellfish production in state waters. Currently, about 85 percent of the demand for premium fresh mussels in the U.S. is imported from Canada, producing a trade deficit of \$20 million a year.



Commercial fisherman and project applicant, Domenic Santoro, sees this as a way to help other fishermen facing reduced numbers of wild fish. "It's a new business opportunity that provides U.S. jobs to meet consumer demand, so we don't have to rely so much on imports."

Reducing the Risk to Whales, Turtles and Other Marine Life

To help minimize the risk to protected species such as sea turtles and whales, NOAA Fisheries recommended protective measures during the development of this aquaculture project. For instance, phased project implementation and regular monitoring by trained observers enables the agency to assess potential risks to protected species before the project expands.

"We believe whales and other marine creatures will be able to see the gear in the water so they can avoid it," said David Alves, aquaculture coordinator for the Greater Atlantic Regional Fisheries Office. "Because there is little slack in the tensioned lines, which are used to anchor the gear to the bottom, there are no free floating ropes that could entangle marine life."

This project supports a key priority under NOAA's Marine Aquaculture Policy, which is "to support restoration and commercial shellfish aquaculture initiatives to restore shellfish populations, provide locally produced food and jobs, help improve water quality and restore and conserve coastal habitat."

Time to shatter some shark myths, don't you think?

MYTH: Sharks don't get cancer.

FACT: Sharks can get cancer, and other types of disease, but it is thought that they might have lower incidence of disease than other animals. This myth is based on sharks having skeletons of cartilage, which has led to a demand for shark cartilage products. Learn more from the Pharmaceutical Intelligence.

MYTH: All sharks need to swim constantly to breathe.

FACT: Sharks need to move water over their gills to absorb oxygen from the water. To do this they can either swim through the water (ram ventilation) or pump water over their gills (buccal pumping). Some species, like nurse and angel sharks, pump water over their gills and spend most of their time on the ocean floor. Other species, like hammerhead sharks must swim continuously to ventilate their gills.

MYTH: Sharks feed at night.

FACT: In general, shark feeding is not synchronized with any particular time of the day. While some sharks hunt more actively during the night, like some reef sharks, other sharks feed during the day and/or around the clock. Highly visual predators like the white shark often feed during daylight hours. Most sharks are opportunistic predators and will feed when the opportunity arises.

MYTH: All sharks are apex predators.

FACT: Apex predators, also known as alpha, super, top or top-level predators, are predators with few to no predators of their own, residing at the top of their food chain. Not all sharks are apex predators. Depending on the species, sharks can occupy multiple trophic levels. While species like tiger sharks occupy the top of the food chain and are considered apex predators, other species like bonnethead sharks are found in the middle of the food chain.

MYTH: All shark species are in peril.

FACT: Not all shark species are in trouble. In fact, under fishery management plans implemented by NOAA Fisheries, spiny dogfish and Gulf of Mexico blacktip sharks have been fully rebuilt from being over fished. A number of other sharks are not subject to over fishing such as the north Atlantic population of blue shark, U.S. south Atlantic population of Atlantic sharpnose shark, and bonnethead sharks. Evidence also suggests that both white shark and thresher shark populations are increasing. Learn more for the Southwest Region and highly migratory species research.

MYTH: Any shark caught in shallow water is called a sand shark.

FACT: There is no such shark species with that accepted common name. Some of the species that are often called "sand sharks" by beach goers include sandbar sharks (*Carcharhinus plumbeus*), sand tiger sharks (*Carcharias taurus*), and smooth dogfish (*Mustelus canis*).

MYTH: Sharks have poor vision.

FACT: Sharks eyes have a tapetum lucidum, a layer of mirrored crystals located behind the retina. This enables sharks to see even in dark or murky water and up to ten times greater than humans in clear water.

MYTH: White sharks are killing machines.

FACT: These sharks are not the killing machines that Hollywood has made them out to be. White sharks are large predators, but they do not target humans for prey and don't have any malicious intent. Much like lions in Africa and other wild animals, white sharks

they can be unpredictable, but they deserve our respect and should be treated with caution. Some disturbing images of thrill seekers free swimming with white sharks at Guadalupe Island has had long time researchers in that zone cringing at thought of an attack that could jeopardize future access and research efforts. Learn more from the Pharmaceutical Intelligence.

MYTH: All sharks are large.

FACT: Many shark species are rather small. Most dogfish do not grow larger than 3 feet. The smallest known shark, the dwarf lanternshark, has a maximum size of only 8 inches.

MYTH: We don't protect sharks in the United States.

FACT: The United States has some of the strongest shark management measures worldwide. NOAA Fisheries directly manages the federal shark fisheries in the Atlantic Ocean and Gulf of Mexico and works with U.S. regional fishery management councils to conserve and sustainably manage sharks in the Pacific Ocean. By conducting research, routinely assessing stocks, working with U.S. fishermen, and implementing restrictions when necessary, NOAA Fisheries sustainably manages shark populations. Learn more about U.S. shark conservation.

MYTH: The United States is changing its laws to allow shark finning.

FACT: Absolutely not. In the United States, federal law prohibits "shark finning," the process of removing shark fins at sea and discarding the rest of the shark. In fact, this practice has been prohibited by federal law since 2000 and shark conservation was further strengthened in 2010 when Congress passed the Shark Conservation Act. The Shark Conservation Act requires that all sharks in the United States, with one exception for smooth dogfish in the Atlantic, be brought to shore with their fins naturally attached. Learn more shark conservation in the United States and abroad.

MYTH: If you cut off the fin of a shark, it will grow back and the shark will survive.

FACT: If a shark has its fin removed and is consequently returned to the ocean, under almost all circumstances the shark will not survive. Unlike salamanders or sea stars that can regrow limbs that have been cut off, sharks do not possess any regenerative properties that would allow them to regrow their fins.

MYTH: Sharks can't hear very well.

FACT: Hear this—sharks have an excellent sense of hearing, with ears located inside their heads on both sides rather than external ears like humans. Sharks can hear best at frequencies below 1,000 Hertz which is the range of most natural aquatic sounds. This sense of hearing helps sharks locate potential swimming and splashing prey in the water. They also use their lateral line system to pick up vibrations and sounds.

MYTH: Sharks don't lay eggs; they only give live birth.

FACT: Of the approximately 400 species of sharks, about 40 percent lay eggs. This is called oviparity. When the eggs are laid, they are in a protective egg case which sometimes washes up on the beach and is commonly called a "mermaid's purse." The egg case has tendrils allowing it to attach to a substrate such as corals, seaweed, or the ocean bottom. In some species, such as the horn shark, the egg cases are pushed into the bottom or into crevices between or under rocks. Some shark species that do lay eggs include bamboo sharks, carpet sharks, Horn (bullhead) sharks, swell sharks, and many types of catsharks.

Scientists Recently Mapped the Migration Routes of Baby Loggerhead Sea Turtles

It took four scientists and one manicurist to make this breakthrough possible.

Loggerhead sea turtles begin their adventure at a very early age. After hatching, they waddle off the beach into the surf and begin a journey that takes them clear across the ocean. Many loggerheads from the U.S. Atlantic coast turn up a few years later in the Canary Islands off West Africa. But how they get there, and what they encounter along the way, has long been a mystery.

Biologists had referred to this period of time as the sea turtles' "lost years." But those years are no longer lost to science. Kate Mansfield, who was doing her postdoctoral research at NOAA's Southeast Fisheries Science Center at the time, led the team of university scientists that tracked the turtles' migrations.

"What is exciting is that we provide the first look at the early behavior and movements of young sea turtles in the wild," said Mansfield, who is now a biologist at the University of Central Florida.

They did that by attaching satellite tags to 17 young loggerhead sea turtles. The small, solar-powered tags allowed scientists to map the animals' migrations. The tags also beamed back data on the environmental conditions the turtles encountered along the way.

The Keratin Connection

Scientists have been using satellite transmitters to track the migrations of marine animals for years. To track adult sea turtles, scientists glue the transmitter to the animal's shell. But baby sea turtles start so small and grow so quickly that their fast-expanding shells quickly shed whatever scientists attach to them.

The solution to that problem came from an unlikely source. Marisol Marrero is a nail salon technician at Not Just Nails in Boynton Beach, Florida. One of the authors of the study, Jeanette Wyneken of Florida Atlantic University, is an occasional customer.

During one of her visits to the nail salon, Wyneken explained the difficulty in attaching satellite tags to the baby sea turtles. Sea turtle shells are made out of a protein called keratin, the same stuff that fingernails are made of, so Wyneken asked Marrero for advice.

"Have you considered using an acrylic base coat?" asked Marrero, referring to her technique for attaching artificial nails at the salon. The rest is history.

[Listen to the The Keratin Connection podcast to hear from Mansfield and Marrero about how this breakthrough happened]

A Few Surprises

Scientists had long assumed that Atlantic loggerheads hitch a ride on the North Atlantic Gyre, a circular system of currents that flows clockwise from North America to Europe and Africa, then flows back near the equator. That would explain how the young turtles made their way to the Canary Islands. But the satellite tags revealed that many turtles hop off the gyre to swim in the Sargasso Sea, which occupies a calm area inside the gyre. The sea is named for sargassum, a seaweed that collects there and, like a forest in the middle of the ocean, offers shelter and habitat to a diversity of marine creatures.

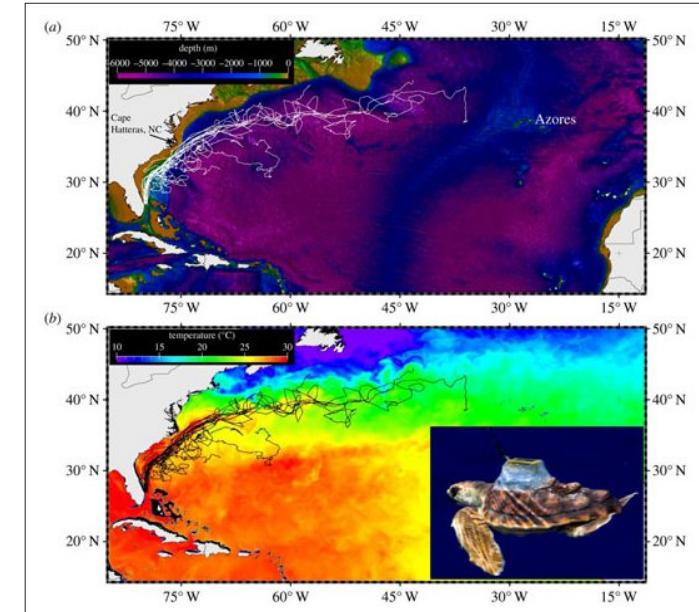
Temperature sensors on the satellite tags indicated that when in the Sargasso Sea, the turtles experienced warmer water temperatures than would be expected based on data from remote

sensing satellites and data buoys. This may be due to the brown sargassum absorbing more of the sun's energy than the open water around it. The scientists speculate that young sea turtles might detour into the sargassum habitat to warm up. Since the animals are cold-blooded, warmer water would accelerate their growth and help them to outgrow predators more quickly.

"Understanding what these animals are doing during their early life history is critical to better managing the species," said Mansfield.



Along with Dr. Kate Mansfield, this sea turtle is about to make history. It is one of the first baby sea turtles to be outfitted with a satellite tag. Dr. Mansfield and her colleagues recently developed the first successful method for attaching satellite tags to baby sea turtles. This has allowed scientists to map the turtles' migration routes and to develop more effective conservation strategies. Credit: Jim Abernethy (used with permission)



These maps show the migration routes of neonate loggerhead sea turtles that were captured using satellite tags attached to the animals' shells. Top image shows tracks overlaid on bathymetric data. Bottom image shows tracks on a map of sea surface temperature. Map Credit: Mansfield et al. 2014, Proceedings of the Royal Academy of Sciences; Photo inset by Jim Abernethy



Abundant life is just beyond your porch

Media contact:
Jessica Basham Therriault

Fall weather is settling in, and many animals have begun or will soon start foraging for winter. But it is still quite warm in the Sunshine State, and wildlife is frisky and abundant, especially in your backyard.

Take a walk outside. Look in bushes, shrubs, grass, on flowers, in and under potted plants and on the walls of your house. And, don't forget to look up. Birds are perched in trees and soaring in the sky.

How many critters can you find?

While on my own backyard safari I saw a peculiar moth that didn't look like a moth at all. At first glance, it looks like a hummingbird but smaller and doesn't have a beak. It hovers over flowers and flutters its wings a million times a second just like hummingbirds, has a proboscis or antennae that sucks nectar out of flowers, more than two legs and an insect-like body. I didn't view it for long because it zoomed off quicker than I could say hummingbird moth!

The backyard is an oasis of life. And, just because the sun goes down doesn't mean the critters go to sleep. Nighttime brings the sounds of raccoons shuffling leaves while foraging for food, crickets chirping and frogs croaking as the human world drifts off to sleep. In certain seasons, dusk brings the tiny flashes of fireflies.

For the Love of Sea Turtles



Make a list of the animals you find. In my yard, I have fluttering zebra longwings and three zebra longwing caterpillars, Eastern black swallowtails, two big golden orb weavers, a vulture gliding above, chattering squirrels, crickets, black swallowtail butterfly caterpillars chewing my parsley plant, snails and the list goes on.

Can you identify a unique fact about the animals on your list? For example, zebra longwing caterpillars' main food source is the passionflower vine. Young caterpillars chomp and chew on the vine until it's time to transform into the beautiful adult yellow-and-black striped longwing that flutters in your garden, looking for nectar plants that feed them.

Safety tip: While searching, be sure not to handle or touch anything if you aren't sure if it is harmless. If searching under logs, be sure to roll the log toward you in case there are any slithering creatures living underneath. Rolling it toward you allows any snake (usually the small, harmless ringneck, redbelly, earth or brown snakes) to slither away from you. Wear bug spray, since skeeters are still biting, and have fun!

LOGGERHEAD MARINELIFE CENTER

Exhibit Hall

Aside from being a fully functioning marine turtle hospital and rehabilitation facility, the Loggerhead Marinelife Center is proud to have a 1200 sq ft exhibit hall boasting over 40 engaging and hands-on exhibits, displays, and aquatic systems. Visitors can enjoy learning about the world's sea turtles, those that call the waters off of our coast home, the roles they play in balancing our ocean ecosystems, and the threats that they face throughout their lives.



**Florida
Oceanographic
Society**

sea turtles benefit from generous donation

Funding from the
National Save the Sea Turtle Foundation
supports sea turtle health at Coastal Center

Much like humans, the resident sea turtles at the Florida Oceanographic Coastal Center benefit from wellness exams to ensure proper health.

Florida Oceanographic Society received funding to purchase equipment for their non-releasable sea turtle program thanks to a donation provided by the **National Save the Sea Turtle Foundation**. The equipment includes exam lighting, a hoist, and a scale.

"The use of this equipment during regularly scheduled check-ups of our resident sea turtles is necessary to ensure both their health and the accuracy of assessments," explains Brittany Biber, Florida Oceanographic's aquarium and life support manager.

The Florida Oceanographic Coastal Center has committed to the life-long care of four sea turtles - three greens and one loggerhead. Due to injuries and environmental stress, they are unable to regulate their buoyancy in the water and therefore have been deemed non-releasable by the State of Florida. Special diets, vitamins and medication are necessary to keep them healthy.

Visit the Coastal Center, located at 890 N.E. Ocean Blvd. on Hutchinson Island in Stuart to learn more about these amazing creatures. Daily sea turtle programs, feeding programs for the game fish lagoon and stingray touch tank occur seven days a week on the 57-acre property. Visitors can enjoy guided trail walks through the coastal swamp and hammocks, as well as additional exhibits and educational displays that inspire environmental stewardship of Florida's coastal ecosystems. Admission is \$12 for adults, \$6 for children, and free for members and children under 3. For program times and additional information, visit FloridaOcean.org or call 772-225-0505.

About Florida Oceanographic Society

Florida Oceanographic Society is a non-profit organization founded in 1964 with the mission to inspire environmental stewardship of Florida's coastal ecosystems through education and research. Their Coastal Center is a 57-acre marine life nature center located on Hutchinson Island in Stuart, between the Indian River Lagoon and the Atlantic Ocean. As a leading state- and nationally-recognized environmental organization, Florida Oceanographic offers educational programs for all ages and conducts advocacy, research and restoration programs that lead to healthy coastal ecosystems. Learn more at FloridaOcean.org or call 772-225-0505.



About the National Save the Sea Turtle Foundation

The National Save the Sea Turtle Foundation is a non-profit Florida corporation incorporated in 1987 for the preservation of marine life. The foundation, located in Fort Lauderdale, concentrates its efforts on endangered species, oceans and waterways. For more information, visit SaveTheSeaTurtle.org or call 877-887-8533.

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ANOTHER GOOD YEAR FOR SEA TURTLES NESTING IN FLORIDA

Media contact: Brandon Basino

In 2014, loggerhead turtle nest numbers remained high and leatherback turtle nesting reached a new record in the state according to FWC research scientists.

"Sea turtles face many important threats at sea and on land, which need to be addressed for the recovery of these charismatic and endangered species, but the results of the 2014 nesting season in Florida are encouraging and provide a positive outlook for the future", said Dr. Simona Ceriani, FWC research scientist.

The monitoring program on sea turtle nesting in Florida is an outstanding collaboration involving more than 2,000 individuals with diverse backgrounds who share a common passion for sea turtles. The extensive data collection from more than 800 miles of beach is made possible with the authorized surveyors from conservation organizations; universities; federal, state and local governments; and hundreds of private citizens.

The FWC and partners perform two annual surveys: a statewide survey that began in 1979, which documents nearly all sea turtle nesting in Florida, and an index survey, which pools data from select beaches that have consistent monitoring during a specific 109-day window to detect trends in nesting.

Loggerhead nest counts in 2014 were slightly higher than in 2013. Loggerhead nest numbers in Florida show a complex pattern: nest counts have increased, then decreased, then increased again. Despite the variable pattern, the overall trend in this species' nest numbers is positive.



Sea Turtle Hatchling on his way to the ocean

Green turtle nesting trends show an exponential increase over the last 26 years, although counts in 2014 were much lower than last year. This was expected because green turtle nesting patterns tend to follow a two-year cycle with wide year-to-year fluctuations. Green turtle nest counts set two consecutive high records in 2011 and 2013.

Although nesting at a much lower level than loggerheads, the nest counts for leatherback turtles reached a new record high in the state in 2014, showing a slight increase over the previous high in 2009. The trend in leatherback nesting shows an exponential increase over the last 26 years.

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Frank Wojcik
Executive Director,
National Save The Sea Turtle
Foundation
Cuts the Ribbon for
the Grand Opening of the
Refurbished and Redecorated
FAU Marine Research Laboratory
at Gumbo Limbo.



L to R, Susan Hanie, Mayor of Boca Raton - John Kelly, President FAU - Frank Wojcik, Executive Director, National Save The Sea Turtle Foundation - Gary Perry, Provost FAU - Jeanette Wyneken, Professor, Biological Sciences

Providing funds for a much-needed upgrade of the lab was yet another way the *National Save The Sea Turtle Foundation* could continue its support of FAU's sea turtle research. The foundation has been providing financial assistance to the laboratory and to Gumbo Limbo since 2000, mostly in the form of scholarships for specific studies by FAU's marine biologists and graduate students. Frank Wojcik estimates the foundation has contributed \$80,000 for renovations since 2013. Over the summer, the refurbished lab was re-dedicated with a ribbon cutting ceremony, fresh paint, new cabinets, stainless steel lab tables, office furniture, overhead lighting, a refrigerator, and washer, dryer and a complete overhaul of the Observation Deck.

Glaciers, Migrations, and a Remarkable Bird Named Smile

David S. Addison
The Conservancy of Southwest Florida

Having worked with sea turtles for many years, I'm always pleased when someone reports a flipper tag from one of the loggerheads we study on Keewaydin Island, recovered from a distant location. More recently, I've been conducting shorebird surveys and, in the process, began to notice the occasional color-banded bird. Knowing how much I appreciate hearing about some of our tagged loggerheads, I always make sure to report the color-bands to the banders. So far, I've been lucky enough to gaze in wonder at piping plovers from South Dakota, snowy plovers from north Florida, a red knot from Argentina, and American oystercatchers from as far away as Massachusetts and Virginia. The stories their bands tell are compelling, so much so that at times, their travels seem fictional. But, that's the reality of lives lived on the wind. This is one of those stories.

Biologists who study shorebird migration use multi-colored or coded bands to track the movements of individual birds. Attached to their legs, these plastic bands identify where and when a bird was captured. Reports of re-sightings by researchers, birders or casual observers help scientists learn about the birds' movements over weeks, months or even years. The accumulated data also illustrate their habitat needs, population demographics, and more. Florida's beaches and intertidal flats are great places to watch shorebirds and perhaps spot one with a band. I've been fortunate to have spent a lot of time looking for shorebirds and, once I got an eye for the bands, I started seeing marked birds regularly, particularly in the spring and fall when red knots, piping plovers, snowy plovers and American oystercatchers are migrating. Some use Florida as a waypoint to refuel and rest before moving on; others remain in the State for the winter.

Because of their populations are at risk, these above-mentioned species are regularly color banded. Other species, like semipalmated plovers whose populations are considered more stable, are not regularly color banded so I was quite surprised when I saw a color-banded semipalmated plover on Marco Island in mid-September 2010.



Credit: David Addison
Figure 1. Smile resting among beach vegetation in October 2013.

I reported the sighting and later received an email from a delighted Canadian wildlife biologist who informed me that the bird was one of eight that were color-banded on their nesting grounds in late June 2010 at Fish Island, which is located in the Mackenzie River Delta in Canada's Northwest Territories.



Credit: Kim Jones, Canadian Wildlife Service
Figure 2. Gravel pad and vegetation on Fish Island in the Mackenzie River Delta where semipalmated plovers like Smile nest.

That bird, named Smile, was on a nest which contained four eggs when it was banded (both males and females incubate). I immediately thought, "What are the odds of ever seeing this bird even once, let alone twice?" So I filed the sighting away figuring that was that and never would I see this bird again. Over a year later in mid-April 2012, I was walking along the same 300-meter stretch of beach on Marco Island when I again spotted Smile, busily pulling thread-like sea worms from the sand. Thinking that perhaps this semipalmated plover had a travel schedule, I made sure to check the same area in the fall around September 15. Sure enough Smile was back again!

The next spring I saw Smile again on April 15, 2013, and once more in the fall around September 15. I didn't see Smile in the spring of 2014 and began to wonder if perhaps this little bird's time had run out. I was back out looking for Smile in September, 2014, without high expectations, but among a flock of about 15 semipalmated plovers, I spotted Smile's now familiar light green over white color bands. A semipalmated plover is a mere wisp of feathers that weighs around 45 grams and has a wing-span of 27 centimeters. It gave me pause when it occurred to me that over the

four years since I first saw Smile its migratory travels equate to flying around the world and then some. We can't know all the



Credit: Kayla Nuyaviak, Canadian Wildlife Service

Figure 3. Smile's left wing gets the once over during the color banding process.

places Smile stops to refuel and rest, but I'd be surprised if most of us wouldn't like to have some of this little bird's genes.

After I found out where Smile was banded, I checked Google Earth to locate Fish Island within the vast northern Canadian wilderness. It turned out that the island is one of many that are located among the multitude of branches of the Mackenzie River as it snakes its way towards the Arctic Ocean.



Figure 4. Canadian shorebird research team's camp on Fish Island.

It's not a day hike from anywhere. Satisfied, I didn't give it much more thought until this summer when my wife and I visited Jasper National Park in the Canadian Rockies. We were standing at the foot of the Athabasca Glacier, which is one of the many that are part of the immense system of glaciers that form the Columbia Icefield. Indeed, these aren't just any glaciers. The interpretive signs I read along the trail to the glacier stated that meltwater from the Columbia Icefield gives rise to three great river systems that flow into three oceans: the Pacific through the Columbia, the Atlantic through the Saskatchewan and, surprise,



Credit: David Addison
Figure 5. Toe of Athabasca Glacier in Jasper National Park in the Canadian Rockies, June 2014.

the Arctic through the Athabasca, which flows into Great Slave Lake from which the Mackenzie River rises. As I watched an ice-cold stream of meltwater from the Athabasca Glacier begin its journey of over 3,000 kilometers to the Arctic, my thoughts turned to a great river, an island in the middle of a wilderness, a 300-meter stretch of beach in Florida and a tiny bird that is a living link between those distant places. Conceptualizing the ways in which ecosystems are connected is one thing; having a glacier, a river and a beach tied together by the unlikely coincidence my chance sightings of a tiny, color-banded plover reminded me in a most profound way of the threads, however small, that connect us all. It was a sense-of-place moment that I won't ever forget. I often think, as I am now, about how lucky I was to have encountered that bird and to have seen it again this fall. Rest assured, I will be looking for Smile again in mid-April 2015.

Do Not Disturb – Migrating shorebirds desperately need to eat and rest. When you see them feeding or just standing still sleeping or preening, enjoy watching them, but please don't disturb them. It's a matter of life or death.

Acknowledgements: I thank Lindsay Addison for her insights about shorebirds and her editorial comments. I also greatly appreciate Mike Salmon's comments and suggestions.

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