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GO WILD FISH VI

a publication of the Virgin Islands' Division of Fish & Wildlife, Department of Planning & Natural Resources

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The Virgin Islands' Division of Fish and Wildlife (DFW) preserves, protects, restores, promotes, and manages the fish and wildlife resources of the Virgin Islands for this generation and the next. We work within one of the most diverse Departments (Planning and Natural Resources) in the Government of the Virgin Islands; our work is similarly diverse. We have environmental education for recreational and commercial fishers, coordinate conservation actions for fish and wildlife, and regulate invasive and endangered species. The goal of the first publication of *Go Wild, Go Fish VI* is to provide a retrospective of the past six months with informative, easy-to-read articles that highlight our accomplishments. Ongoing work includes underwater surveys, wildlife control, supporting heritage fishing, exotic pets, and research on tree boas.

This year, we were thrilled to host in the Virgin Islands the first national meeting of the Southeastern Association of Fish and Wildlife Agencies (SEAFWA) in its 85-year history. We were able to cultivate regional partnerships, increase awareness of our work done locally, and leverage those partnerships for new federal funds. Federal dollars allow us to foster the community projects that you'll read about herein; we are grateful to our funders and to DPNR Commissioner Jean-Pierre Oriol for his support.

None of this work would be possible without the dedication and commitment of the DPNR-DFW staff. Thanks to all staff and kudos to the 2023 Employees of the Year!

St. Croix hosted the Southeastern Association of Fish and Wildlife Agencies (SEAFWA) Director's Meeting for the first time, from March 29 - 31, 2023

photo courtesy of Ross Melinchuk/SEAFWA

VI's Fish & Wildlife hosts national directors

Conservation leaders from across the nation converged on St. Croix in March as the territory hosted the Southeastern Association of Fish and Wildlife Agencies (SEAFWA) for the first time.

The Spring 2023 Director's Meeting brought together a majority of member states and territories including the Virgin Islands over the historic Transfer Day weekend from March 29-31, 2023, coinciding with the nonprofit's 85th anniversary.

"Our gracious hosts have provided an excellent meeting location in the historic Government House, one of the most beautiful locations that a Spring Directors' Meeting has been held in recent memory," a resolution of appreciation adopted by the body reads. "Dr. Nicole Angeli and her talented staff have planned and provided an excellent opportunity for the exchange of important information among attendees and stimulating discussions of items of mutual concern and interest."

Fellow directors from Puerto Rico, Florida, Texas, Georgia, Alabama, Mississippi, Louisiana, Oklahoma, South Carolina, North Carolina, Tennessee, Arizona, Virginia, West Virginia, Kentucky, and Missouri represented a wide scope of international and national agencies and initiatives.

Discussions hinged around "the balance of wildlife with the needs of the public and using the best science available to meet the challenges necessary for the sustained success of those renewable resources," according to the resolution.

The gathering provided a wealth of opportunities for updates from the Archery Trade Association's bowhunting equipment regulations; to reports from the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Convention of Parties; the Southeast Conservation Adaptation Strategy (SECAS); and the Association of Fish and Wildlife Agencies (AFWA).

By the second day, the group delved deeper into discussions surrounding the vast field of natural resources, to include the Recreational Boating and Fishing Foundation, and the Southeast Aquatic Resources Partnership, along with wrapping up the overall body's annual elections.

The meeting ended with natural and heritage resource tours led by the Division of Fish & Wildlife as the group took in some of the culturally important sites the Virgin Islands has to offer.

Special thanks to all who helped to make the event a success, including SEAFWA Acting President Robert Boyles; Executive Director Ross Melinchuk, Angelyn Mewborn, Chuck Sykes; Buddy Baker; Ryan Brown; Dan Forster; Dr. Amanda Sesser; Ron Regan; Dave Chanda; Dave Kostersky; Todd Ewing, and to our local sponsors Leatherback Brewery, Bioimpact, Inc., and Horsley Witten.

PROFILE

Employee of the Year 2023

St. Thomas-St. John District

RAYMOND PETERSEN, a maintenance technician with the Division of Fish & Wildlife, motivates staff for dirty jobs and long days, keeping a positive attitude, making jokes, and ensuring all staff feel safe and comfortable. He works hard every day to transform the space in Vessup Bay and the new rented office through encouraging our team to do hard work and working the hardest on the grimiest tasks. His vision for what we could be as a division serving the territory has him coming to work ready to be the change. Coming from the private sector, as a fisher, Raymond has a unique perspective that provides valuable guidance to our operations.

photo by Ayesha Morris

photo by Nicole Angeli, Ph.D.

St. Croix's endangered ground lizard is released back to its native home, again

For the first time in 50 years, the St. Croix Ground Lizard (*Pholidoscelis polops)*, is making its way home.

The indigenous lizard was last sighted in 1969 at Fort Frederik, a historic landmark located on the western end of St. Croix. Until recently, spotting it required a boat trip to a neighboring offshore cay to rummage along the beach or through inland vegetation.

Reaching a length of only 3.5 inches as a fully grown adult, the St. Croix Ground Lizard remains one of the world's most endangered reptiles. In 2008, fewer than 400 individuals were reported on three islands but with assisted translocation more than 10,000 are now on four islands.

The Division of Fish and Wildlife is now helping to prevent its extinction by returning the species to St. Croix. Successful translocations include the release of two sets of experimental populations retrieved from Buck Island back into their natural habitat.

"This project introducing small populations to enclosures for monitoring over the next year at the University of the Virgin Islands wetlands and the Sandy Point National Wildlife Refuge is the first small step towards recovering an indigenous species of the Virgin Islands," Department of Planning & Natural Resources Commissioner Jean-Pierre Oriol said.

The St. Croix Ground Lizards were released at Sandy Point National Wildlife Refuge and the University of the Virgin Islands wetlands.

The endangered species of St. Croix Ground Lizard (*P. polops*) is not to be confused with the introduced species of the Puerto Rican Ground Lizard (*P. exsul*) on St. Croix, found across the Puerto Rican Bank, inadvertently introduced to St. Croix in the mid-1990s in Estate LaGrande Princess, which has slowly expanded over the last 25 plus years. The Puerto Rican Ground Lizard is much larger than the St. Croix Ground Lizard and eats native lizards and insects.

To date the project is going well, with wildlife biologists tracking the lizards' progress with equipment such as pit traps. This project was organized by the Division of Fish and Wildlife and funded by State Wildlife and Endangered Species Grants with support from a wide range of collaborators including the University of the Virgin Islands, U.S. Fish and Wildlife Service, U.S. National Park Service, DPNR Coastal Zone Management Division, St. Croix Environmental Association, California Academy of Sciences, and Texas A&M University.

Jose Bermudez
photo courtesy of Jose Bermudez

Catching snakes is a charm for Jose Bermudez

Wildlife Control Operator

Jose Bermudez never leaves home without a machete. In fact, his vehicle, his wife's car, and the church bus are all strapped with the tool in case of an encounter with a red-tailed boa (*Boa constrictor)*.

Bermudez, who describes himself as a cowboy, farmer, pastor, and landscaper, has caught over 100 snakes. As a wildlife control operator, he has turned in at least 70 of the invasive reptiles to the Division of Fish and Wildlife after spotting them near his home in the St. Croix rainforest.

"Them snake love me. I never have to go looking for snake. They always come to me," he says. "You call. I haul."

Under the new Invasive Species Community Eradication Program - Wildlife Control Operator/Removal Agent program sponsored by the division, Bermudez is one of nearly 30 certified operators who helps the public handle nuisances, vermin, or invasive species such as red-tailed boas. He can earn $50 to $100 bounty for each one brought in dead for processing with its head and stomach contents intact, depending on whether it is over or under 4 feet in size.

Recently, Bermudez recalls driving eight congregants home from church when his wife flinched after a reptile attempted to enter the passenger side of the bus.

"I grabbed it with my right hand and passed it to my left hand," Bermudez said. When he stopped to let the first member off, he took a concrete block and hit it in the head.

Red-tailed boa

Other times he might use a lasso at the end of a stick to pin the snake, a flashlight in the eyes to blind it, or a weedwhacker in addition to the machete he keeps in his rubber boots.

A cat, two iguanas, and a rooster have emerged from the bellies of various red-tailed boas he has caught.

Red-tailed boas have been spotted on St. Croix from The Market; to Marley Projects; to Grove Place; to Food Town; to The Nature Conservancy, and wildlife control operators like Bermudez help to keep their numbers down.

If a person sees a snake, the individual should keep an eye on it, while making sure to keep a safe distance, especially staying away from its head. Then they can call for help from a certified wildlife operator such as Bermudez, who can safely and humanely euthanize the reptile.

To get certified to become a wildlife control operator or removal agent, the cost is a $25 educational fee and $25 annual permit fee.

For more information, visit ***dpnr.vi.gov/fish-and-wildlife/wildlife-resources/***

PROGRAM

Common invasive species, from top:
White-tailed deer (*Odocoileus virginianus*)
Mongoose (*Herpestes auropunctatus)*
Iguana (*Iguana iguana)*
Red-tailed boa (*Boa constrictor)*

Invasive species hurt economic and ecological resources in the USVI and methods to control those species include recruiting and certifying members of the public to assist with their control.

The certification program for Wildlife Control Operators and Wildlife Control Removal Agents is a management tool highlighted in the guidelines of the strategic 'USVI Invasive Species Action Plan' to mitigate the impacts of invasive species. The program was initiated on July 18, 2022.

Scarlet Ibis
photo by Victoria Beasley

Caribbean census counts dozens of VI waterbirds

Rare sightings of vibrant Purple Gallinule and an immature Little Blue Heron on St. Croix, coupled with a richly colored Scarlet Ibis on St. John were the highlights of the 2023 Caribbean Waterbird Census.

Division of Fish and Wildlife biologists Victoria Beasley, Sean Kelly, and Jahnyah Brooks participated in the census with community birders across the islands.

These efforts were made for the conservation of native and migratory waterbird species of the USVI and to strengthen the division's connection with the larger birding community throughout the Caribbean and beyond.

Over the past eight decades, about 250 bird species have been observed throughout the Virgin Islands.

For the latest Caribbean Waterbird Census held from January 14 to February 3, 2023, on St. John, Beasley conducted 8 surveys at 5 different locations with sightings of 226 birds representing 33 different species. The white cheeked pintail was the most popular bird spotted.

On St. Croix, from January 20 to 31, 2023, Brooks and Kelly surveyed two locations -- the Carambola Golf Course and Fredensborg Pond, where they observed 141 individual birds and 21 unique species. Cattle egrets and the Common Gallinule were among the most popular birds counted.

DFW plans to continue to take part in this annual bird survey event, to generate interest in birding within the community as well as to use this data to better conserve the avian species of this region.

— Sean Kelly, Ph.D. and Jahnyah Brooks. Victoria Beasley contributed to this report.


Purple Gallinule


Little Blue Heron
photo by Jahnyah Brooks

Yellow Warbler
photo by Jahnyah Brooks

Birding takes flight with multiple partnerships

Banaquit
photo by Claudia Lombard

Birding can often be elusive. One sets out into nature, peers through a pair of binoculars, and observes.

"It's like a game of 'Where's Waldo," says Jahnyah Brooks, wildlife biologist. "There's one, ooh. There's another one, ahhh."

But for him and others at the Division of Fish and Wildlife, these quiet explorations help create data scientists use to measure the health of bird populations in the region.

Monitoring bird species and conserving their habitats is a key focus of the subagency, and is done mostly through partnerships across the Caribbean with local organizations and federal agencies.

With grant funding targeted toward wildlife restoration, endangered species, coastal wetlands, and conservation, the division in currently involved with multiple birding and habitat protection projects.

These include mist netting at Sandy Point National Wildlife Refuge; offshore cay bird counts; roseate tern studies, baitfish bird resources; cay bioblitz; St. John bird baselines; the wetlands mitigation bank; Altoona Lagoon mitigation; Birds Caribbean workshops; national wetlands inventory; ecosystem models; the comprehensive land and water use plan; and the Southeast Conservation Adaptation Strategy.

In February 2023, the division was honored to present an overview of its ornithological work at a presentation hosted by the St. John Land Conservancy and the Virgin Islands Audubon Society.

DFW staff was pleased to contribute to the efforts of the U.S. Fish and Wildlife which manages Sandy Point National Wildlife Refuge on its mist-netting and bird banding project.

"Mist netting is the first step in the bird banding process, where birds get caught in a very fine-mesh net and are carefully removed before they are processed for banding. The birds' weight, wing length, tail length, beak/bill length, as well as any evidence of brooding is recorded," Brooks said. "Bird banding is a useful tool in the conservation of both native and migratory avifauna. Some birds that were frequently banded during our time there were, Yellow warblers, Caribbean elaenias, and Bananaquits."

Wildlife biologists are also currently monitoring the many offshore cays surrounding the Virgin Islands, paying close attention to the threatened roseate terns (*Sterna dougallii*) and their nests, as well as other populations of endangered, shore, coastal and pelagic birds such as brown boobies and brown pelicans.

The division is also studying the declining population of baitfish these birds usually feed on, including the ones commonly known as fry and sprat, or the dwarf round herring, false herring, and false pilchard, respectively.

Another highlight includes conducting more than 350 surveys over the last two years in and around St. John saltponds with wildlife biologist Victoria Beasley.

There are several ways the public can become involved in assisting the Division of Fish & Wildlife with the preservation of our local birds. They can participate in initiatives such as the Christmas Bird Count, Caribbean Waterbird Census, Offshore Cays, Black Birder's Week and Global Big Day.

— Jahnyah Brooks contributed to this report

Endangered prickly ash, a global conservation concern

St. Thomas Prickly Ash
photo by Thomas Heller

With its citrus aroma and underbelly of thorns, the St. Thomas Prickly Ash found in dry, undisturbed forests of the Virgin Islands, is a generally fussy plant.

Once uprooted, the federally protected shrub, which shoots out many stems from a singular base, has yet to be found to grow back. It produces seeds erratically, and those it does create have been unviable.

However, the endangered plant's habitat is at risk of being lost, says Thomas Heller, research leader of Kew Gardens Overseas Territories based in England.

"It is severely threatened by the rapid rate of development of these areas," Heller said. "We're very interested in the ecology of the species and how best to conserve it."

In 2019, Heller received a U.S. Fish and Wildlife Service grant to better understand the distribution, population genetics, and health of the St. Thomas Prickly Ash (*Zanthoxylum thomasianum*). Since then, he has worked with the Division of Fish and Wildlife, visiting sites and returning earlier this year to expand his research.

The plant was first recorded on St. Thomas in the 1870s on Flag Hill by Danish botanist Henrik Franz Alexander von Eggers. Today, populations of the plant have been found on private land on St. Thomas, within National Park boundaries on St. John, and in the British Virgin Islands.

This species is considered endangered under the International Union for Conservation of Nature (IUCN) Red List of Threatened Species. Since 1985, it has been listed under the U.S. Endangered Species Act and is currently up for review.

It can grow up to 20 feet tall, has a trunk up to 4 inches in diameter, with small, shiny leaves, rounded with a point and strikingly soft spines.

The plant is generally found on moderately sloping hillsides in dry forests with well drained soils, however, the distribution is still being mapped.

For Heller, the goal of his research is to analyze data collected with a vision to inform management decisions, such as longterm recovery plans.

Leaf samples provide information on genetic diversity and will help explain the relationships between species found in the greater Virgin Islands, including Virgin Gorda and Puerto Rico where the plant has also been found.

To conserve the plant for the future, Heller envisions the possibility of nurturing cuttings from the St. Thomas prickly ash in plant nurseries.

"The individual stems aren't probably thicker than your finger, for example."

He believes the plants that now exist must have taken hundreds of years to grow, and that they've become well-adapted to resisting storms.

St. Thomas Prickly Ash hails from a larger genus of *Zanthoxylum spp.* which include a species used to produce Szechuan pepper, aromatic smoke, and is rich in anticancer, antifungal, and antibacterial properties.

"It's such an inconspicuous tree," Heller said. "It's really overlooked by people."

— Lincoln Critchley, Ph.D. contributed to this report

PAPER

Amphibians boast long history in the territory

In the mid 1850s, Danish pharmacist and botanist Albert Heinrich Riise, whose name still adorns a famous alleyway in downtown St. Thomas, sent two frogs to Denmark as samples for study, sparking one of the earliest records of amphibians identified in the Puerto Rican Archipelago region.

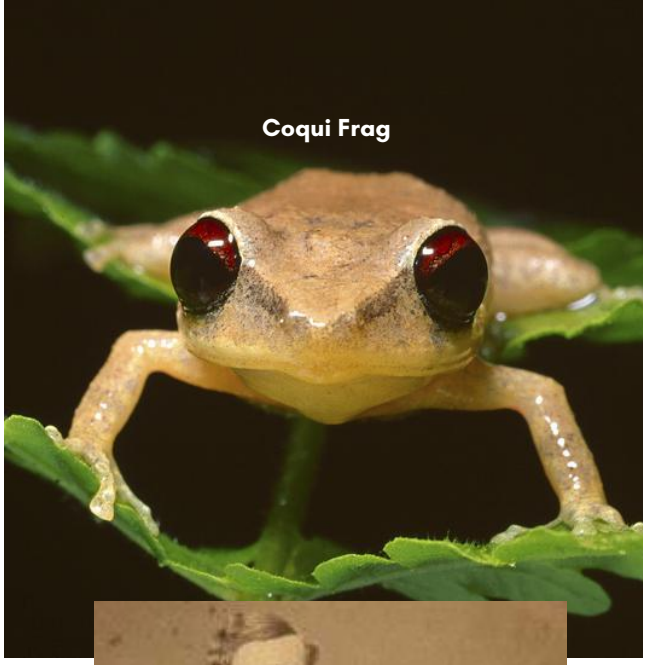
A highly collaborative paper entitled, "Amphibians and their History, Distribution, and Conservation in Puerto Rico and the Virgin Islands," delves into this history into our modern times. It is written and presented by Neftalí Ríos-López, Alberto R. Puente-Rolón, Sondra I. Vega-Castillo, Daniel Dávila-Casanova, and Nicole F. Angeli.

Angeli, who was trained under herpetologists Karen Lips, Lee Fitzgerald, and Kevin de Quieroz during her education, contributed to this body of research for the Virgin Islands species, as well as an appendix on the unknown role of mongoose in the decline of many species.

In the Virgin Islands alone, dating back to 1859, some of the species recorded include the native Antillean white-lipped frog (*Leptodactylus albilabris)*, mute coqui (*Eleutherodactylus lentus)*, the Virgin Islands coqui (*E. schwartzi)*, whistling coqui (*E. cochranae)*, red-eyed coqui (*E. antillensis),* and non-native Cuban tree frog (*Osteopilus spetentrionalis*) and cane toad (*Rhinella marina*).

Scientists like Riise wrote notes describing the chorus of melodic sounds heard after a heavy rain, then collected samples and shipped them off to zoological museums in Denmark and the Smithsonian, as did brothers Alfred and Edward Newton for St. Croix.

Factors such as loss of habitat, invasive species such as rats and mongoose, as well as droughts, hurricanes, rising temperatures and climbing sea levels, have had an effect on amphibian species in the Virgin Islands and surrounding region.



Additionally, birds such as the great egret, cattle egret, green-backed heron, little blue heron, greater Antillean grackle, and red-legged thrush are among the species that tend to prey upon several species of local frogs.

Ongoing partnerships with organizations such as the St. Croix Environmental Association, University of the Virgin Islands, U.S. Fish and Wildlife Service and others help to spread awareness on the protection of these valuable populations.

For persons interested in studying further, there are volunteer opportunities at frog walks conducted by the St. Croix Environmental Association, the Great VI Frog Count research project — which includes thousands of public recordings of frog calls, and opportunities to provide your own local records of all species of fish and wildlife to DFW via the citizen science project from the California Academy of Science and National Geographic called *iNaturalist*: https://www.inaturalist.org/check_lists/13080-Virgin-Islands-Check-List. Email us for more information.

Book available at: https://pelagicpublishing.com/products/the-conservation-and-biogeography-of-amphibians-in-the-caribbean

VI Tree Boa gains national attention

A non-poisonous snake found only in Puerto Rico and the U.S. and British Virgin Islands, the endangered Virgin Islands (VI) tree boa (*Chilabothrus grantii*) is at the center of a scientific research project led by the North Carolina Zoo, in collaboration with the US Fish & Wildlife Service, and the Division of Fish and Wildlife.

For zoo curator and herpetologist Dustin Smith, it is a step toward recovery and preventing the extinction of a snake that is grossly misunderstood.

"Snakes are underappreciated, undervalued, and honestly just disliked," Smith, who has studied reptiles for 25 years and also serves as project coordinator, said. "Unfortunately in the world, people are scared of things they don't understand."

As a species, the VI tree boa is docile and harmless to humans. It is a moderate-sized snake between 3 to 4 feet long, with a light brown back covered with dark brown blotches.

The zoo's research project includes a captive breeding program sanctioned by the Association of Zoos & Aquariums to support reintroduction of the species. At the end of 2022, seven baby snakes were successfully bred at zoo facilities in North Carolina, Fort Worth, and St. Louis.

Population monitoring, radio telemetry, genetic sampling, collection and housing for breeding, and reintroduction are some of the methods proposed.

Part of the initiative includes collecting wild snakes from offshore cays and St. Thomas and processing them for a range of genetic material.

Between 1986 and 2006, less than 150 boas were counted on St. Thomas by DFW and USFWS as a part of roadkill collection. Between 2016 and 2022, USFWS, NC Zoo, and DFW have surveyed the species across their range and on cays offshore of St. Thomas. Those studies indicated extirpation in parts of its recent range and possible loss of prey on offshore cays.

Additional activities include surveying sites over the next two years on Great Hans Lollik, Water Island, and Cayo Norte to look at areas within the historic range of the VI tree boa which have not yet been surveyed. The research partners will document the presence or absence of VI tree boas, their prey, and invasive species on those sites. These studies are part of a broader effort that involves the governments of Puerto Rico and the British Virgin Islands to reintroduce species.

"They (*VI tree boas*) need a voice, and I like being a voice for them," Smith said. "It's small, it has a very small range, is endangered, and needs a lot of attention."

Division offers path to exotic pet ownership

African Grey Parrot

Red-Eared Slider

"DFW continues to encourage the public to register their exotic animals free of charge and legally possess them in a responsible manner."
– Nicole Angeli, Ph.D.

More than three hundred persons enjoyed a chance to learn about the impact of invasive species on the natural environment of the Virgin Islands during Exotic Pet Amnesty Week, held from February 20 to 27 across all districts.

The event gives resident owners of exotic, non-native animals, from birds to snakes, the chance to register for a free permit from the Division of Fish & Wildlife without penalty.

Crowds visiting the Department of Planning & Natural Resources booth on the grounds of the 51st Virgin Islands Agriculture and Food Fair on St. Croix got an up-close view of some common invasive species in our region.

"We were excited to educate visitors who could interact with our educational animal ambassadors like Trouble, our invasive red-tailed boa. Guests to the tent also got a chance to help pick a name for our invasive red-eared slider, Sly," Dr. Nicole Angeli, Director of the Division of Fish and Wildlife, said. " We're excited to announce that Sly the slider is available for education events."

Pets such as turtles, parrots, parakeets, sugar gliders, eels, swordtails, conures, bettas, guinea pigs, ferrets, and chinchillas require retention permits. To bring exotic animals into the Territory or livestock such as chickens, ducks, and other farm animals, the VI Department of Agriculture issues importation permits.

Outside of Exotic Pet Amnesty Week, pet owners can continue to register their animals, by arranging to bring them in to the Division's offices in each district.

Pets must be brought in a secure carrier, otherwise photos should be brought instead. The initiative is funded through a grant from the Department of Interior.

For more information, call the office at 340-773-1082 or ***visit dpnr.gov.vi/fish-and-wildlife.***

PROFILE

Employee of the Year 2023

St. Croix District

ALFONSO GARCIA, an environmental specialist with the Division of Fish & Wildlife, is consistent and reliable while making work fun. He goes above and beyond for the division to make sure that any objectives from any grant are met, including digitizing databases for permits, grant tracking, and fishing outreach events.

photo courtesy of Alfonso Garcia

PROGRAM

Weekend archery lets community take a bow

Community members and visitors interested in taking up a bow and whizzing an arrow through the air toward a target have an opportunity to get trained in the art of archery, with instruction and practice opportunities offered by the Division of Fish and Wildlife on St. Croix.

The archery field is now open from 8 a.m. to 4 p.m. on Sundays at the Isaac Gateword James Park in Estate La Grange.

Introductory sessions are scheduled on 90-minute intervals beginning at 8:00 a.m., 9:30 a.m., 11:00 a.m., 12:30 p.m. and 2:00 p.m.

Intermediate and advanced archers may arrive and participate at any time.

To maintain a safe and enjoyable experience we ask that you please note:

• Pre-registration is not required for Sunday participation.

• All participants must have a current (2023) waiver form on file. Waiver forms may be completed at the time of participation.

• Dress appropriately, be aware that loose (baggy) clothing, large earrings, or long loose hair can get tangled in the bow string.

• We ask that you wear closed toe shoes and socks while on the field. This can protect your feet from flying objects and from fire ants.

• Please bring your own drinking water.

• Remember to bring a hat and sunscreen.

• If you are a new archer, please sign up and let us know how many are in your group so we can make sure equipment is available and ready for you prior to your arrival.

Additional practice opportunities are also available for competitive archers:

This year, the 2023 Summer Championships will be held on July 2, 2023 and the 2023 Winter Championships will be held on December 3rd at the La Grange Archery Field. Remember to sign up, in advance, to participate in the championship events. Contact the Division of Fish and Wildlife' archery program at 340-773-1082 x2224 for more information.

Archery is funded through federal funds from the Pittman-Robertson Act from the U.S. Fish and Wildlife Service to the Department of Planning and Natural Resources for archery across the Territory. The DFW archery program is free to the public.

Fisheries biologists Danielle Olive and Tia Rabsatt
photo by Raymond Petersen

PROGRAM

Mapping the sea, scientists study VI fish stocks

As the sun's early morning light peeks out over the horizon, Fish & Wildlife biologists Danielle Olive and Tia Rabsatt load up gear for another day underwater. Dive tanks and masks, wetsuits and flippers, scooters and water-resistant paper are placed into bins, carted, and hauled onto the Queen Conch, one of the division's marine vessels.

Captain Raymond Petersen steers the vessel out to sea, plots out the coordinates, and marks the site with buoys, as the pair of divers hook up to oxygen and drop themselves beyond the waves and into the ocean blue while the boat rocks up above, leaving a trail of bubbles. Today's task is to perform diver surveys on juvenile and adult populations on the East End that have historically housed stable lobster populations.

As part of the Southeast Area Monitoring and Assessment Program - Caribbean (SEAMAP-C), the division is conducting studies on finfish, lobster, and conch to acquire comprehensive independent data on fish population, size, frequency, and reproductive health over a five-year period.

Scientists from DFW and Puerto Rico's Recursos Naturales are currently collecting data on the Caribbean spiny lobster (*Panulirus argus*). During the next study of the traditional fish stock queen conch (*Strombus gigas*), the team will report data on populations based on benthic habitats and depth, age and number of conch found in different habitats. For the last study on finfish, scientists will conduct surveys at randomly selected sites using handline methods. They will use bait to catch various fish species then sample them for length, weight, gender, and gonadal condition.

The project is meant to provide data to help protect and restore fishery stocks and to support sustainable recreational and commercial fisheries. The five-year project which is federally funded to the tune of about $900,000, is set to continue until March 31, 2026. The data will be provided to the Caribbean Fishery Management Council, NOAA Fisheries, and the Division of Fish & Wildlife.

Ellsworth "Richard" Caleb
photo by Ayesha Morris

Ellsworth "Richard" Caleb spent half a century on the sea

Heritage Fisher

By light of moon and almanac predictions, Ellsworth "Richard" Caleb, 77, plans to make a catch. Hopping on his boat named Dusky, he goes out about three times a week depending on the weather looking for his favorite fish — yellowtail snapper and hardnose.

Late afternoon turns into the wee morning hours with his hook and line in tow. Before the night is done, he has caught enough to sell at restaurants such as French Quarter Bistro, T's Chicken Fry, and Arian's, as well as provide to his regular customers at the Gustav Quetel Fish Market in Frenchtown.

Caleb has been fishing full-time for 50 years, with serving as a part-time hotel chef sprinkled in between. He got into fishing in his native Antigua, learning under his father, Nathaniel Caleb, back when fishers would cut down tall trees in the bush to make *doggalog* - traditional rafts made with six logs and two pieces of wooden sticks in between.

"It's similar but a little more difficult than a canoe," Ellsworth said.

His father used take him out to fish, as the oldest child out of six siblings who was adept at swimming.

"You didn't have no GPS those kinds of days. Your memory got to be wonderful," he said "You take your little eye and see how it work out."

Part of the job entailed being out in the ocean, remembering landmarks where homemade traps were set, and recording two marks to the east and two marks to the west. Afterwards, a fisher moved to a different site to repeat, he said.

"You have a spying glass. You look overboard. You peep in it. If you see the ground is good, you throw it that area," he said.

Two days later, a fisher would put their recall to the test to return to pick up the traps.

"Your memory got to clocking good to be taking up and down mark and remember where it is," he said.

As Caleb got older, he started making his own fishing traps, going out into the woods in search of sticks from the birch berry tree when a dark moon was slated. Allowing them to dry, he then fashioned the traps out of chicken wire, loaded them on to about six traditional makeshift wooden *doggalogs*, and used hands or oars to set them out into the water.

They would float atop the water, and two persons could sit on either side.

At the age of 18 in 1964, he moved by himself to St. Thomas as the oldest son to help support his parents. He said the fish is more diverse here than in his southern village of Old Road, Antigua.

Caleb was the first fisher to get a Yamaha engine from Offshore Marine as a trial, before the company extended them for sale to the public.

With one tank of gas and a 22-footer carved from white cedar, his boat was selected for installation, and Offshore requested he provide the business a review of how it worked. That day turned into five years later and a departure from the physical exertion of powering the boat with oars. In 1989, Hurricane Hugo devasted the islands, lifting Caleb's boat from where it was housed at the back of the fish house never to be seen again.

"I had it on the back of the building over there, and it went flying," he said. "I didn't worry about it."

During his career, Caleb also had a stint building fishing traps, on the North Side.

"You make little or nothing," he said. "But I didn't worry about it. I say health and strength."

For Caleb, fishing is a way of providing food to the community, "to help the poor people them, to feed them," he said.

Challenges on the water include fighting with large hungry sharks in the deep for fish, sometimes losing a hundred hooks in the process. But the joys of fishing in the Virgin Islands rise above many.

"It is good. It is nice, because you learn a lot," he said.

Fisheries biologist Hilliard Hicks III and CORE treasurer Michael Funk
photo by Sam Orndoff

Sea predator turns into prey at Lionfish Derby

With exotic brown-and-white spines that fan out like a mane, the lionfish (*Pterois spp.)* is popular in the pet trade and healthy in the Indian-Pacific Ocean.

The invasive species with a voracious appetite goes after populations of juvenile fish and algae-eating parrotfish known to protect coral reefs. No historically co-evolved predator in the Caribbean eats lionfish, and they are arguably the greatest threat to our local seas.

Lionfish are native to the Indian-Pacific Ocean, and were first recorded in 2008 in the Virgin Islands. The female lionfish is known to reproduce all year long releasing roughly two million eggs.

For this reason, it was the focus of a unique fishing tournament, led by Caribbean Oceanic Restoration and Education Foundation (CORE) in partnership with the Division of Fish and Wildlife, meant to spread awareness and diminish their population in the region.

Activities started with a training workshop on May 13, 2023 at Cane Bay on St. Croix, followed by the 2023 St. Croix Lionfish Derby from May 26 to May 28 in St. Croix's territorial waters. The three-day event wrapped up with an awards ceremony at Leatherback Brewing Company.

The Division of Fish and Wildlife staff served as weighmasters at each port (Frederiksted, Molasses, Altona) for more than 40 participants coming off the water with 246 lionfish. The smallest fish was 0.23 oz and the largest fish was 29.1 oz.

For more information, visit:
www.corevi.org/2023derby

Regional model can now predict VI ocean patterns

Traveling the channel between St. John and St. Thomas, one can easily tell the point where the Atlantic Ocean and Caribbean Sea collide. Easy sailing turns into a choppy ride, as the current moves in multiple directions, and tranquil waters give way to testy waves that can heave a charter boat to and fro' over the open waters.

Understanding some of the causes in the turbulence in water passageways circulating between the Virgin Islands, Puerto Rico, and Hispaniola is the subject of "Numerical modeling of internal tides and submesocale turbulence in the U.S. Caribbean regional ocean," a recent paper published in a January 2023 edition of Nature.com's Scientific Reports. The 19-pager written by University of the Virgin Islands (UVI) marine and environmental studies post-doctoral researcher Sonaljit Mukherjee, is co-authored by UVI professors Doug Wilson and Paul Jobsis of the Center for Marine and Environmental Studies, and Division of Fish & Wildlife Chief of Fisheries Sennai Habtes.

The paper is a follow-up to work Mukherjee, Habtes, Wilson, and Jobsis did while Habtes was a professor at UVI.

The research was to develop a regional model to help understand how the patterns in the ocean work locally. Data from this model can be used to help managers better understand distributions of coral or fish larvae Habtes said, adding that the tool can be useful in understanding work performed by the regulatory division under the territory's Department of Planning & Natural Resources.

"This research helps to resolve the complicated flows around the USVI, which can go from deep to shallow very quickly, particularly on the southern shelf," Habtes said.

Eventually this type of data can help to answer many related questions such as how changes in ocean conditions and circulation may influence when and how Nassau groupers spawn, or how differences in the marine environment can affect fish stocks or coral, he added.

The development of this type of modeling system at the scale necessary for looking at waters surrounding the USVI takes time to develop and test.

Data on temperature, current, salinity, depth, chlorophyll levels, sea surface height, and velocity from physical instruments, such as buoys and gliders in the ocean or satellites in space, is used to assess the accuracy of the numerical model, a computer program known as the U.S. Caribbean Regional Ocean Modeling System (USCROMS). The system uses long term datasets of ocean conditions called climatologies to build a predictive model, that Habtes worked on with Mukherjee to develop.

The waterways between Anegada, Virgin Gorda, St. Thomas, Culebra, Puerto Rico, and Hispaniola, and the water from the Atlantic ocean that flows through them drive much of the circulation in the U.S. Caribbean.

Understanding the formation of internal tides, and the impact of seasonal heating and cooling on tidal transport and ocean turbulence in the passes between the islands at different depths, is the focus of the paper.

Among its findings are that ocean currents nearer the islands are three orders of magnitude stronger than those in the local deep ocean.

Additionally, the mixed-layer depth of the upper-ocean in the Caribbean Sea deepens to 70 m below the surface during the winter months from January to April, and shallows to 20 m during the subsequent summer months.

Twice a month, there is an increase in daily fluctuations in the tides as well as enhanced dissipation, a phenomenon associated with the tidal changes associated with the spring and neap tides each year.

The paper also concludes that there is stronger turbulence, velocity, and tidal oscillation around U.S. Caribbean waters during the winter versus the summer months and identifies areas along the southern shelf of BVI and USVI waters where there is highly turbulent water at depths of 100-400 m caused by tidal movements interacting with a steep sloping bathymetry, or contours of the ocean floor.

To read the paper in full, visit https://doi.org/10.1038/s41598-023-27944-2

Invasive seagrass may aid fighting conch growth

Halophila stipulacea, an invasive seagrass native to the Red Sea and Indian Ocean was first reported in the Caribbean in 2002, eventually making its way to the U.S. Virgin Islands by 2012.

This invader has been shown to influence seagrass faunal community structure, but the mechanisms mediating these changes are not well understood. Seagrass structure and density are known to affect predation risk for seagrass-dwelling invertebrates, and the morphology of *H. stipulacea* was significantly different than that of dominant native seagrasses.

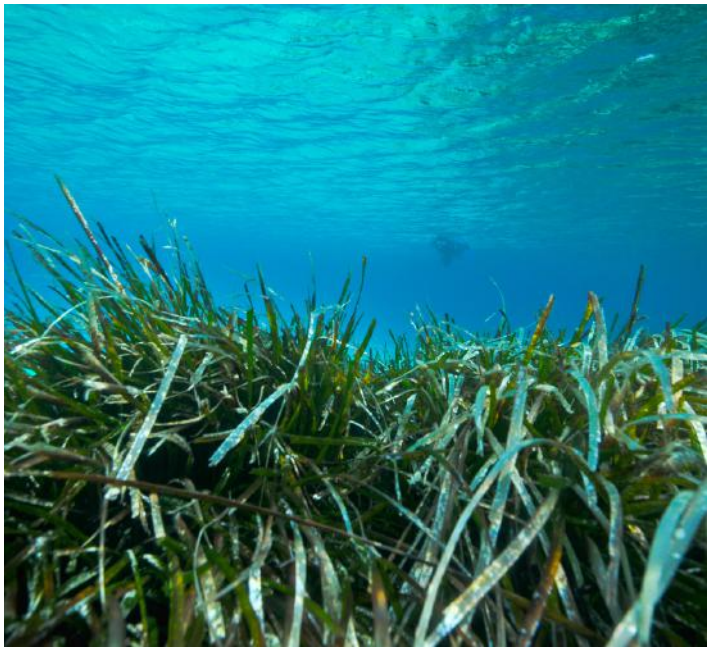
Two field tethering experiments were conducted to test the hypothesis that predation risk to animals differed among beds dominated by native, invasive, or mixed (native + *H. stipulacea*) seagrass.

The spider crab (*Omalacantha bicornuta*) and the fighting conch (*Strombus pugilis)* were used, representing two of the most abundant seagrass-dwelling groups in the Caribbean (crustaceans and gastropods).

There was no difference in survival among seagrass bed types for either crabs or snails.

For fighting conch, which were deployed for one month, mass changes showed positive growth in all categories with mixed beds having the highest growth rate.

Though *Halophila stipulacea* is changing Caribbean soft bottom communities, it could provide adequate habitat for ecologically and economically important species (*when it replaces native seagrasses)*.



Invasive seagrass

Fighting conch

— Submitted by Matthew Souza, Fish and Wildlife scientific research permit holder, who is working on the study along with Edwin Cruz-Rivera.

Reefsponsible

REEF RESPONSIBLE SUSTAINABLE SEAFOOD INITIATIVE

U.S. Virgin Islands Commercial Fisher Phonebook

REEF RESPONSIBLE

... see food sustainably

@reefresponsiblevi
reefresponsiblevi@gmail.com

New phonebook supports sustainable seafood

Red Snapper is among the sustainable seafood choices promoted in the Reef Responsible initiative.

Ama at Cane Bay, St. Croix, top, and Caribbean Fish Market, St. Thomas, below are examples of "Reef Responsible" restaurants throughout the territory.

Imagine enjoying a meal of savory conch fritters served with onion and roasted red pepper, or almond-crusted mahi drizzled with mandarin coconut broth, Caribbean salsa and coconut rice.

Under Fish and Wildlife's Reef Responsible initiative, locally harvested seafood caught by fishers and served up in Virgin Islands restaurants helps promote the responsible use of coral reef fishes and ensures their health for future generations.

The program considers the role that commercial and recreational fishers, restaurants, consumers, scientists and managers play in making sustainable decisions when they catch, sell, buy, and eat seafood.

With the 2023 release of the division's new U.S. Virgin Islands Commercial Fisher Phonebook, those decisions are made easier by offering direct contact information for more than 60 fishers and their fish throughout the Territory.

For anyone seeking potfish — a term that includes anything from snappers to grouper to hind — there is sustainable seafood to fit your culinary palettes. Phone books will be available upon request from DFW.

For more information, visit us on Facebook @reefresponsiblevi, or email reefresponsiblevi@gmail.com

PRE-REGISTRATION MEETING

FOR COMMERCIAL FISHERS
ST. CROIX DISTRICT

THURSDAY, JUNE 29, 2023

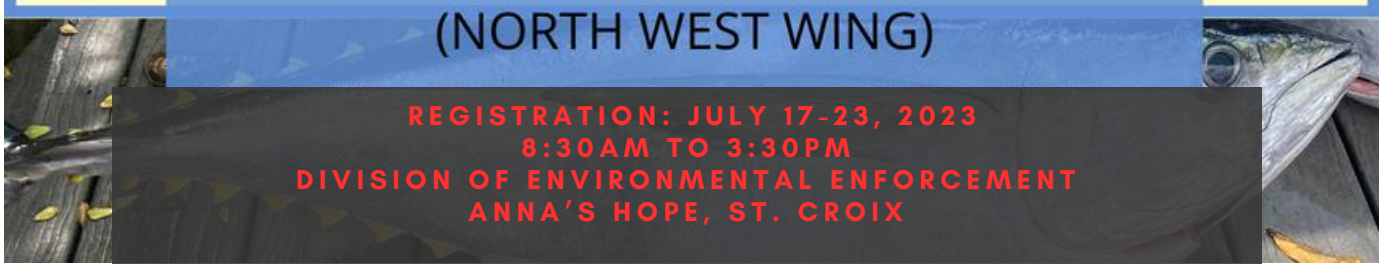
ITEMS TO BE DISCUSSED:

- CHANGES TO PORT SAMPLING PROGRAM
- COMMERCIAL CATCH REPORTS (CCRs) UPDATES
- COMPLIANCE
- RULES AND REGULATIONS UPDATES
- TRAINING & FISHERIES MANAGEMENT EDUCATION OPPORTUNITIES AND UPDATES
- DEE UPDATES

PREPARE FOR REGISTRATION WEEK - NOTARY AVAILABLE

REEF RESPONSIBLE RAFFLE PRIZES!

TIME: 6:00 - 8:30 PM
LOCATION: UVI GREAT HALL
(NORTH WEST WING)



REGISTRATION: JULY 17-23, 2023
8:30AM TO 3:30PM
DIVISION OF ENVIRONMENTAL ENFORCEMENT
ANNA'S HOPE, ST. CROIX

PRE-REGISTRATION MEETING

FOR COMMERCIAL FISHERS
ST. THOMAS/ST. JOHN DISTRICT

FRIDAY, JUNE 30, 2023

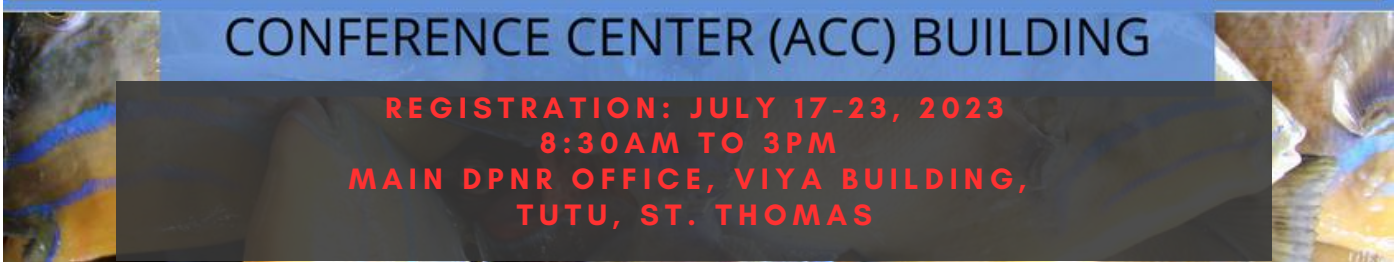
ITEMS TO BE DISCUSSED:

- CHANGES TO PORT SAMPLING PROGRAM
- COMMERCIAL CATCH REPORTS (CCRs) UPDATES
- COMPLIANCE
- RULES AND REGULATIONS UPDATES
- TRAINING & FISHERIES MANAGEMENT EDUCATION OPPORTUNITIES AND UPDATES
- DEE UPDATES

PREPARE FOR REGISTRATION WEEK - NOTARY AVAILABLE

REEF RESPONSIBLE RAFFLE PRIZES!

TIME: 6:00 - 8:30 PM
LOCATION: UVI ADMINISTRATION & CONFERENCE CENTER (ACC) BUILDING



REGISTRATION: JULY 17-23, 2023
8:30AM TO 3PM
MAIN DPNR OFFICE, VIYA BUILDING,
TUTU, ST. THOMAS

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