

# VIRGIN ISLANDS NATIONAL PARK

SEA TURTLE PROGRAM

2020 SEASON REPORT



Willow Melamet

The Virgin Islands National Park (VINP) Sea Turtle Program, funded by the Friends of the Virgin Islands National Park, wrapped up the 2020 season with great success. The aim of the program is to conduct island-wide nesting surveys on St. John, foster awareness for sea turtle conservation through education outreach, and aid in the development and implementation of sea turtle conservation plans.

This year, the program was expanded to include two coordinator positions, which greatly impacted the efficiency of the program. The program was proud to triple a devoted volunteer base, implement nest protection strategies, collaborate with neighboring programs and organizations, conduct a variety of education outreach programs, and detect the highest number of nesting activities on St. John in over a decade.

## Which turtles call St. John home?

Sea turtles have been swimming the world's oceans for over 150 million years. Today, there are seven recognized species of sea turtles; all of which are threatened, endangered, or critically endangered by national (Endangered Species Act) and international (International Union for the Conservation of Nature) classifications. Four of the seven species have been known to nest in the U.S. Virgin Islands: hawksbills, greens, leatherbacks, and loggerheads. Hawksbills, greens, and leatherbacks have been documented nesting on St. John.

### **Hawksbill (*Eretmochelys imbricata*)**

Hawksbill sea turtles contribute to the majority of nests on St. John, laying around 20-30 nests per year. While these turtles can nest year-round, the peak of the nesting season is from August to November in the Virgin Islands. During this time adult female hawksbills will return to their natal beaches and deposit between 3-5

nests at 13-14 day intervals. Each nest contains around 100-200 ping-pong sized eggs that incubate for around 55-75 days.

This is the smallest of the sea turtles in the USVI; reaching between 24-35 inches and averaging 100-150 pounds. This turtle gets its name from the narrow and pointed beak that resembles a hawk's bill and is found near reefs, feeding predominantly on sponges.

Hawksbill sea turtles are internationally listed as Critically Endangered and nationally listed as Endangered, mostly due to human induced threats. Aside from the common threats of all sea turtles, global hawksbill populations have been severely reduced due to overharvest for their desirable shells.



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### **Green (*Chelonia mydas*)**

Green turtles are commonly found along the shores of St. John foraging on seagrass beds. The average length of an adult is around 40 inches and can weigh between 200-500 pounds. Due to an herbivorous diet, this turtle gets its name from the greenish color of their fat. Green sea turtles were first documented nesting on St. John in 2017.



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Green turtles are internationally listed as Endangered, nationally listed as Threatened, and are unfortunately still commonly poached for their meat and eggs. Green turtles are also susceptible to fibropapillomatosis, a contagious disease resulting in tumors. The presence of green turtles with tumors in the USVI has increased in recent years.

### **Leatherback (*Dermochelys coriacea*)**

Leatherback sea turtles are the largest of all turtles. Adults can exceed 6 feet in length, weigh more than 2000 pounds, and feed primarily on jellyfish. Leatherbacks, unlike other sea turtles, do not have a hard shell--hence the name. Their flexible carapace gives them the ability to dive to depths greater than 3900 feet.

Leatherbacks have historically been known to nest on St. John. Trunk Bay was named after the large 'trunk-like' turtles using the area as a nesting ground. In recent years the occurrence of leatherback nests have been infrequent.



Leatherbacks are internationally listed as Critically Endangered and nationally listed as Endangered. These turtles face a variety of threats ranging from entanglement in fishing gear, plastic ingestion and harvest of eggs.

## Beach Monitoring



Regular beach monitoring for sea turtle nesting activity was conducted by 99 trained volunteers from late June–November, in which 47 beaches were monitored between 1 and 7 days a week. Beach patrols were conducted during the early hours of the morning and consisted of walking the length of the assigned beach looking for signs of sea turtle crawls, nest depredations, hatching activity, stranded turtles and unusual activity. With such a robust volunteer team this season daily to near daily monitoring was maintained throughout the season and several volunteers continued to monitor well into February.

In addition to beach monitoring, volunteers regularly collected trash on their patrols and have documented 170 beach cleanups.

## Nesting Activities

Sixty-two hawksbill nesting activities were documented between August 4th and December 24th on 10 nesting beaches, yielding 34 confirmed nests, 23 false crawls, and 5 possible nests. False crawls are events where the turtle comes up but does not nest, and possible nests are sites that were observed to show some signs of a nest but were not confirmed due to potential negative impacts of confirming sites with unknown lay dates, lack of depression upon possible emergence, and/or inability to locate the egg chamber due to absence of signs.



## Nesting sites

A noteworthy success of this season's beach monitoring program was the documentation of nesting on a few beaches that have not yet been recorded or have not been recorded in recent history. We were also able to expand our efforts to include Lovango Cay. Table 1 shows the number of nesting activities by beach for the 2020 season.

**Table 1. Nesting activities by beach on St. John and Lovango Cay for the 2020 nesting season.**

Beach	Number of false crawls	Number of confirmed nests	Number of possible (unconfirmed) nests
Francis	2	5	0
Turtle Bay, Caneel	2	4	0
South Lovango	5	3	3
Windswept	0	1	0
Cocoloba	8	1	0
Western Reef	1	4	0
North Lovango	1	2	2

Denis	0	4	0
Europa	4	4	0
Newfound	0	5	0
Jumbie	0	1	0
<b>Total</b>	<b>23</b>	<b>34</b>	<b>5</b>

### Screening

All of the confirmed nests were screened against predators using a 36" x 36" metal screen with 2" x 4" openings. These screens are used to deter predators, primarily the invasive small Indian mongoose, from digging into the nest, but allow hatchlings to easily escape through the openings. In several cases, both dog and mongoose tracks, as well as evidence of digging, have been observed around the periphery of the protective screens. Only one nest was partially depredated this season, in which the mongoose crawled under the edge of the screen in the vegetation. Extra efforts will be taken in the future to ensure there are no gaps or points of entry in the screens. Screening nests has proven to be an effective method to increase nest success rates. Paired with eradication efforts and frequent monitoring, we aim to protect all nests from depredation.



### Relocations

Historically, several nests have been lost to sea water inundation as well as beach erosion. Between 2015 and 2018, several nests were either lost entirely, or negatively impacted by inundation. Due to these losses, the program obtained a permit to relocate nests in 2019. This season, the program was proud to successfully relocate six nests. Nest relocations follow a strict set of criteria to ensure the maximum safety of the nest. Relocations are only applicable in situations where the nest is in imminent danger of inundation or erosion, and have been discovered within 12 hours of deposition. Operating only within this 12-hour window ensures that the eggs are not disturbed after the embryo has attached to the shell wall.

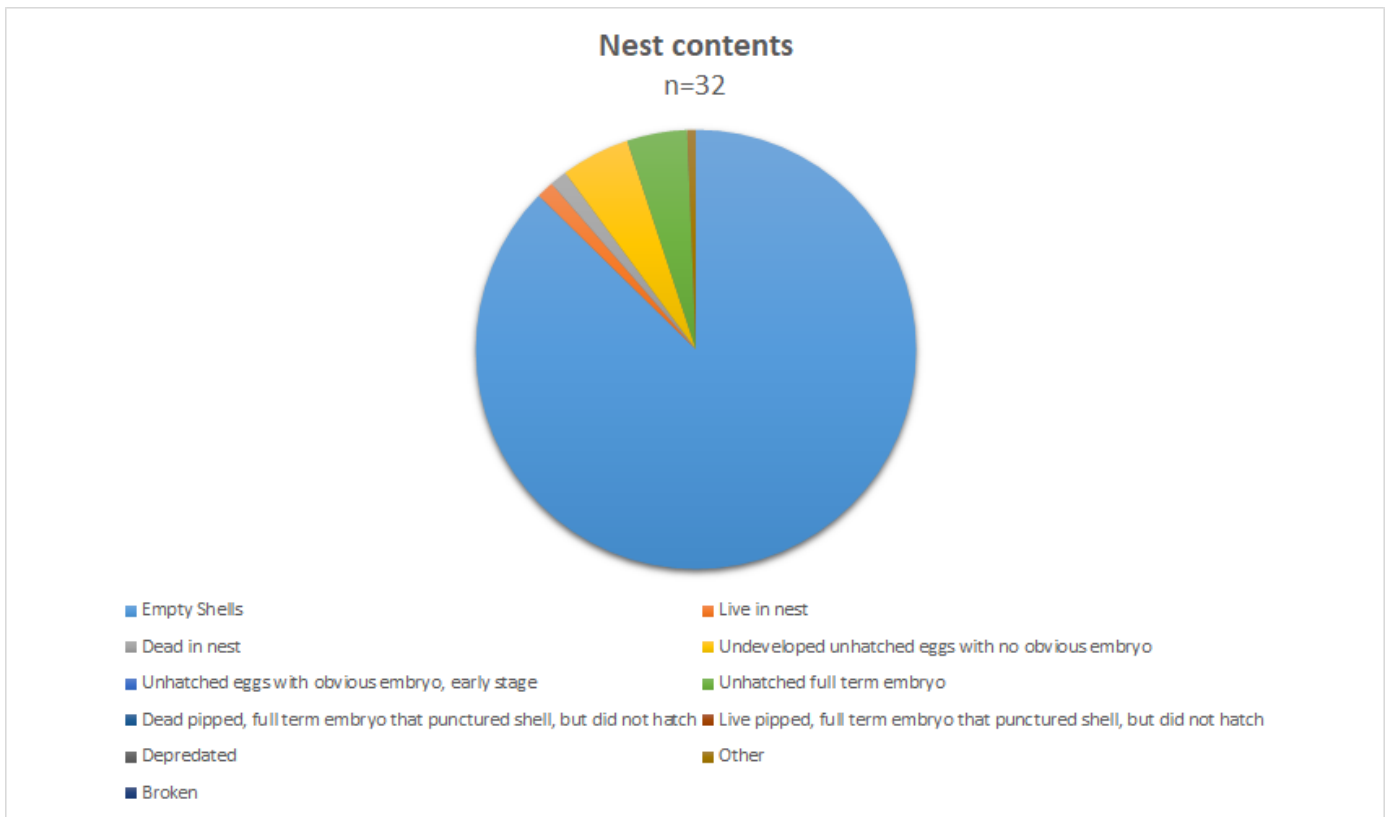


All six nests were in imminent danger of sea water inundation, thus warranting relocation. The eggs were carefully removed and placed in new cavities mimicking the inner dimensions of the *in situ* nests, with the exception of three nests that were originally laid too shallow due to a deformity of the mother's rear flipper. The orientation of each individual egg was maintained to the best ability during the transfer. The relocation sites were chosen based on the maximum safety from sea inundation and erosion, taking the original site selection into consideration. One of the nesting beaches experienced significant washover due to large north swells

throughout the season. Thankfully two nests on this beach were able to be relocated that would have otherwise been complete losses.

### **Nest Success**

Following emergence, nests are excavated within three to five days to document the contents and determine hatch and emergence success. Hatch success is the percentage of eggs that hatch; emergence success is the percentage hatchlings that make it out of the nest cavity. Unhatched eggs are opened to assess and categorize the developmental stage (see Figure 1 below).



**Figure 1. Nest contents categorized upon excavations for 32 nests during the 2020 season**

Thirty-two of the 34 total nests were excavated this season. One of the excavated nests was excluded from the calculations because it was an incomplete clutch consisting of 13 infertile non-viable eggs and inclusion would have skewed the results. One nest was not excavated due to the inability to locate the egg chamber. This nest was unknown until it was reported by visitors who were fortunate enough to witness the emergence in late February. Upon receiving this information a month later, we were unable to locate the chamber. Table 2 shows the summarization of clutch data.

This season there were a total of 17 nests yielding hatch successes over 80% and four nests with 0% hatch success. Several environmental factors can influence the success of the nest such as location, temperature, substrate, water retention, root growth, gas exchange, bacterial and fungal growth, etc. Since peak hawksbill nesting season



occurs during hurricane season, it is not uncommon for nests to be impacted by storms or by the northern swells associated with the wintertime. One nest was repeatedly inundated by seawater and unable to be excavated. Two nests never developed, potentially due to groundwater saturation.

The incubation time ranged from 54 to 85 days, with an average incubation time of 58 days. The late-season nests laid on the north shore revealed longer incubation durations compared to the south shore nests.

The egg count for the season was 3,923 eggs producing 2,634 hatchlings that made it to the sea. During excavations, 222 hatchlings were found alive in the cavities and released. The majority of these hatchlings were either entangled in roots or obstructed by compacted sand and soil.

**Table 2. Summary of hawksbill clutch data for the 2020 season**

	mean	n	SD	range
<b>Clutch size</b>	126.13	31	32.79	52-199
<b>Hatch success of <i>in situ</i> nests</b>	65.04	25	33.93	0-97.71
<b>Emergence Success of <i>in situ</i> nests</b>	53.96	25	35.10	0-96.65
<b>Hatch success of relocated nests</b>	76.23	6	14.93	50.78-93.89
<b>Emergence success of relocated nests</b>	72.09	6	13.51	46.86-83.92
<b>Hatch success overall</b>	67.21	31	29.46	0-97.71
<b>Emergence success overall</b>	57.47	31	32.70	0-96.95

## Volunteer Programs

One of the greatest successes of this season was the increase of our volunteer team and the continued dedication of several seasoned volunteers. Over the past few years, return volunteers have become more knowledgeable and involved in the program and continue to be a valuable asset to the program. We were proud to more than triple the volunteer base this season and logged over 1350 volunteer hours.

In addition to beach monitoring, volunteers had the opportunity to assist with nest screenings, relocations, excavations, and night watches that were well attended. Virtual turtle talks were regularly held and update emails provided to maintain volunteer engagement and learning opportunities throughout the season.



Fernando Ramos

## Education Outreach



Although our ability to visit schools and arrange field trips on the beach was limited this season, several education outreach programs were conducted to spread awareness of sea turtle conservation. Participation in virtual seminar series hosted by the Friends of the VINP allowed us to reach many people for Earth Day and Ocean Week. Virtual turtle talks were also held, reaching students as far as Missouri.

Additionally, non-volunteering members of the community were present and enthusiastically engaged in a number of nest excavations.



We are currently holding interpretive turtle talks with Reef 2 Peak as part of the 'Friday with Friends' Seminars. These talks are aimed to educate locals and visitors of the life histories of sea turtles as well as discuss proper observational etiquette.

## Fibropapillomatosis Documentation and Monitoring

Due to the presence and spread of fibropapillomatosis (FP) tumors in recent years, we have begun to conduct research on the population of foraging sea turtles at Maho Bay. FP is a debilitating infectious disease that presents as both external and internal tumors on sea turtles, primarily greens. The tumors can hinder an individual's sight, ability to swim, forage, and evade predators. Causation of tumor development is still largely unknown, however, it has been linked to individuals with immunosuppression due to environmental and human-based stressors. Sea turtles with FP tumors have been anecdotally seen with increased frequency within St. John waters in recent years. Documentation is key to creating a baseline of the presence and severity of this disease which may assist with future research. The purpose of this observational study is to monitor and document tumor growth and development of the sea turtles that forage within VINP bays. The objective is to create a photographic catalog of individuals to better assess the health of the population and to monitor the abundance and spread of this disease.



## Collaborations

For the first time this year, we were excited to participate in a collaboration with the University of the Virgin Islands (UVI), the Ocean Foundation, and the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) Southwest Fisheries Science Center. Tissue samples were taken from deceased hatchlings or deceased full-term embryos upon excavation for each applicable nest. These samples will be sent to and processed by NOAA NMFS Southwest Fisheries Science Center and analyzed by UVI. These genetic samples will provide insight into the population demographics and structure of nesting hawksbills in the Virgin Islands.

Recently a partnership was formed between the University of the Virgin Islands, the National Save the Sea Foundation, and The Ocean Foundation to spearhead an initiative to produce a Hawksbill Conservation Action Plan for the Virgin Islands. This collaborative effort aims to identify priorities for hawksbill conservation of the three islands. As members of the working group, our program is contributing valuable nesting data from St. John that will be used in the creation of a recovery action plan for the critically endangered hawksbill sea turtle in the VI.



The responsibilities of the program coordinators also expanded to include being stranding responders for St. John through the Sea Turtle Assistance and Rescue (STAR) organization. STAR is a collaboration of NGO's, territorial and federal agencies, veterinarians, and community volunteers that are trained to respond and document sea turtle stranding events of entrapped, disoriented, sick, injured, or dead sea turtles in the USVI. Having designated stranding responders on St. John will speed-up response time and streamline efforts.

## Conclusion

The program was proud to report yet another successful season, far surpassing our goals and objectives. With our dedicated team of well-trained volunteers, we were able to frequently cover more beaches and record the highest number of nesting activities in over a decade. We were able to successfully protect nests from predators and sea swell inundation, expand our volunteer base, promote conservation through education outreach, and collaborate with universities and organizations to learn more about the sea turtles of the Virgin Islands. These efforts will assist in the development and implementation of future conservation management strategies and aid in the recovery of these marvelous critically endangered species.





## Thank you!

Thank you to all of the supporters of the VINP Sea Turtle Program funded by the Friends of the Virgin Islands National Park. Thanks to all Friends staff and supporters, VINP staff, Brent Squires, Fiona Russell, Dan Boyd, Caneel Bay Security Crew, Christain Family, Kelly Stewart, the Ocean Foundation, NOAA NMFS Southwest Fisheries Science Center, Paul Jobsis, University of the Virgin Islands, DPNR-DFW, USFWS, Jenn Russ, Reef 2 Peak, STAR, students, collaborators, interested community members, and all the wonderful volunteers that made this program possible!

