
2022 SEASON REPORT

VIRGIN ISLANDS NATIONAL PARK SEA TURTLE PROGRAM

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Friends of
Virgin Islands National Park

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Since 2015 the Virgin Islands National Park (VINP) Sea Turtle Program, funded by the Friends of VINP (FVINP), has been coordinating sea turtle monitoring and protection efforts on the island of St. John, USVI. The main objectives are to document nesting activity, promote conservation through education outreach, and mitigate threats to sea turtles that utilize the beaches and waters of the VINP and Virgin Islands Coral Reef National Monument.

Hawksbill (*Eretmochelys imbricata*), green (*Chelonia mydas*), and leatherback (*Dermochelys coriacea*) sea turtles have been recorded nesting on St. John, with the critically endangered hawksbill producing the majority of nests. Over the past seven years, the program has been built on the core foundation of volunteer-based monitoring, nest protection, research, and education outreach.



2022 NESTING SEASON (April 2022-February 2023)

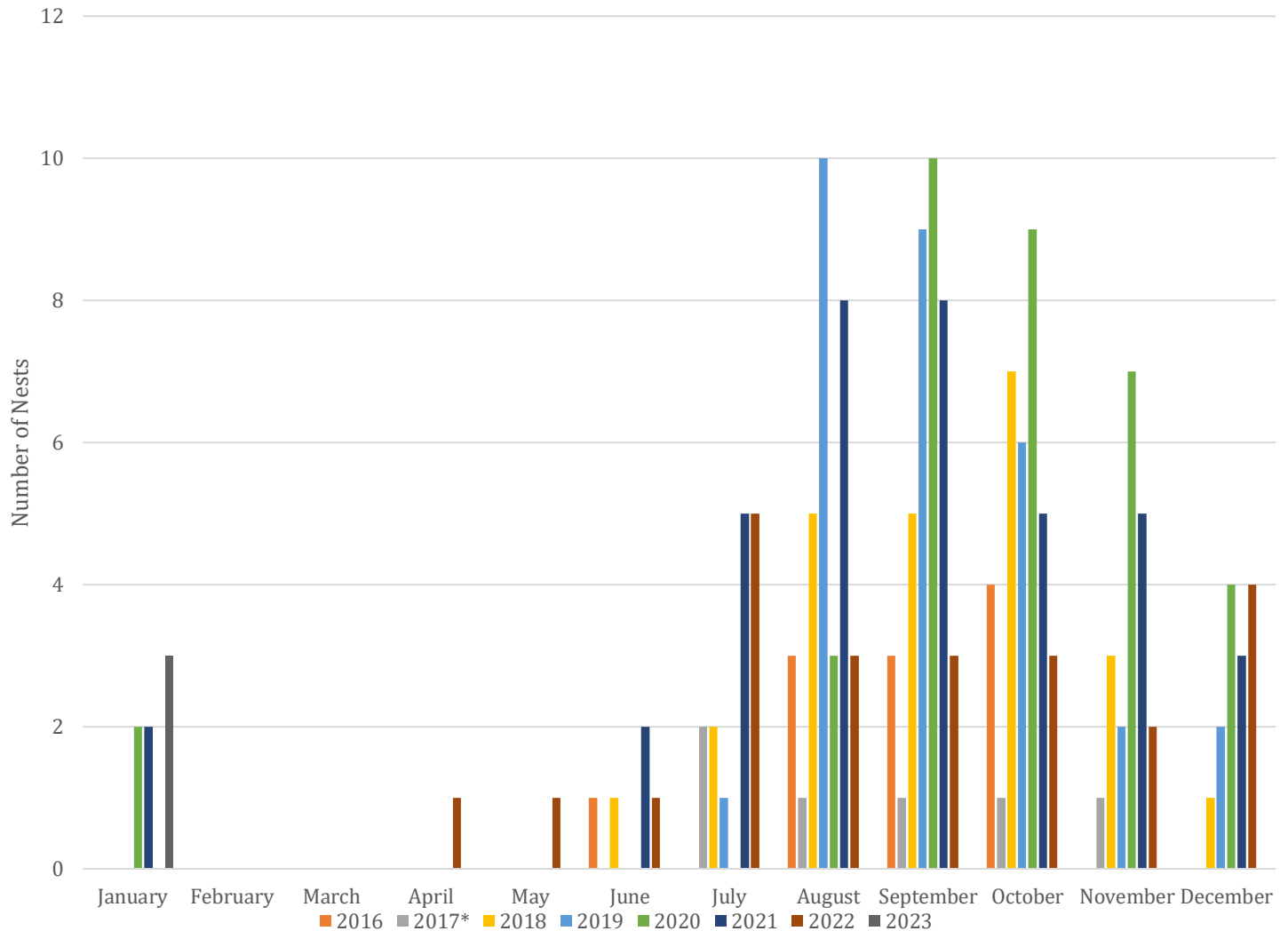
Data collected during the 2022 nesting season and presented in this report spans the timeframe of April 2022 through February 2023. This time period gives a comprehensive representation of the program's initiatives since the last report in March 2021, (June 2021-February 2022), and captures nearly all of the nesting activity for the 2022 season with the exception of excavation data from nests that are currently incubating. The 2022 nesting season began with the first documented nest on April 23rd and is on-going with four nests still incubating in March 2023. Nests laid in January 2023 are from nesting females that started their cycle in 2022, and are therefore included in the 2022 nesting season.

Beach Monitoring

Beach patrols are conducted during the early hours of the morning and consist of walking the length of an assigned beach looking for signs of sea turtle crawls, nest depredations, hatching activity, stranded turtles and unusual activity. Regular volunteer-based beach monitoring was conducted from late June-November. During this time 47 beaches were monitored between 1 and 7 days a week by 67 volunteers and the program coordinators. Daily to near daily monitoring was maintained throughout the high season on all medium to high priority nesting beaches. During the low season (December-June), patrolling efforts are focused on beaches with incubating nests and those with historic nesting activity. Figure 1 shows the confirmed number of nests by month found on St. John from June 2016 to January 2023.



Figure 1. Confirmed nest numbers by month June 2016 - January 2023



Notes: Monitoring efforts were not equal across the years. Monitoring efforts are also unequal throughout the year, with significantly less or no monitoring of beaches from December-June.
 *Monitoring ended 9/4

Nesting Activities

Fifty nesting activities were documented between April 23, 2022 and January 28, 2023 on ten nesting beaches, yielding 25 confirmed nests, 24 dry runs, and 1 possible nest. Dry runs are events where the turtle crawls on the beach but does not nest, and possible nests are sites that were observed to show some signs of a nest but were not confirmed. Reasons for unconfirmed nests may be 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. Table 2 shows the number of nesting activities by beach for the 2022 season.

Table 2. Sea Turtle Nesting Activity 2022 (April 2022-Feb 2023), St. John, USVI

Beach	Nests			Possible Nests	Dry Runs
	<i>Ei</i>	<i>Cm</i>	<i>Dc</i>	<i>Ei</i>	<i>Ei</i>
Cinnamon			1		
Trunk			1		
W. Reef	4	2		1	5
Cocoloba					1
Europa					1
Ditleff	5				
S. Lovango	4				12
N. Lovango					1
Windswept	6				3
Scott, Caneel	2				1
Total	21	2	2	1	24

Ei=*Eretmochelys imbricata* (hawksbill); *Cm*=*Chelonia mydas* (green); *Dc*=*Dermochelys coriacea* (leatherback)

A success of the 2022 season was the documentation of three species of sea turtles nesting on the beaches of St. John.

All species are listed on the Endangered Species Act.

The last leatherback nest recorded on STJ was in 2016.



Nest Protection

Plastic mesh screens measuring 4 x 4 feet were placed over the surface of each confirmed nest, deterring predators such as dogs and the invasive small Indian mongoose from entering the cavity, while allowing the hatchlings to crawl out of the small openings.

Teaming with the USDA, mongoose eradication efforts were implemented on beaches with nesting activity. Eradication is an integral component of nest protection measures, as it is the first line of defense against predators before the nest is confirmed and screened. These efforts in conjunction with screening and frequent monitoring have proven to be an effective method of increasing nest success rates.

Lani Clark

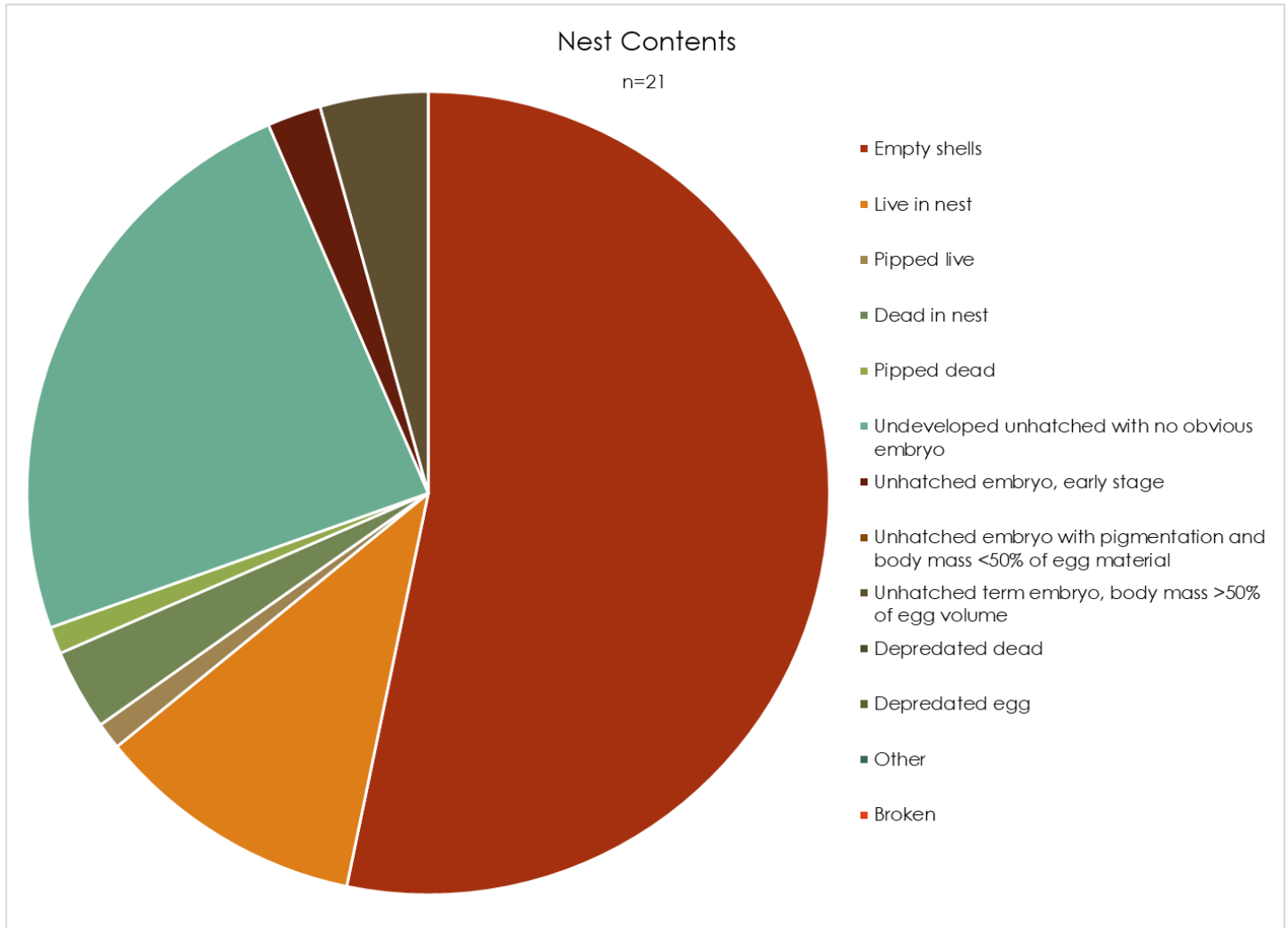
Nest Success

Following emergence, nests were excavated within 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 2 below). 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.



Twenty-one of the 25 total nests were excavated at the time of this report, with 4 nests currently incubating. Figure 1 shows the contents of the excavated nests, while Table 2 shows the summarization of clutch data for the 2022 season.

Figure 2. Nest contents categorized upon excavations for 21 nests





Incubation time ranged from 52-89 days, with an average incubation time of 60.16 days for all species and 66.82 days for hawksbill only.

The egg count for these excavated nests was 2,530 eggs producing 1,935 hatchlings that made it to the sea. During excavations, 194 hatchlings were found alive in the cavities and released. The majority of these hatchlings were entangled in roots.

Table 2. Summarization of clutch data for 17 hawksbill (Ei), 2 green (Cm), and 2 leatherback (Dc) nests for the 2022 season

	AVG	SD	range min	range max
% Hatch Success Ei	79.7	19.6	31.6	97.5
% Emergence Success Ei	69.9	21.7	30.8	96.6
Clutch Size	132.6	18.5	94.0	162.0
% Hatch Success Cm	77.6	20.5	63.2	92.1
% Emergence Success Cm	75.3	17.1	63.2	87.4
Clutch Size	130.0	4.2	127.0	133.0
% Hatch Success Dc	31.6	44.8	0.0	63.3
ES Dc	22.2	31.3	0.0	44.3
Clutch Size	74.0	7.1	69.0	79.0

VOLUNTEER EFFORTS

The sea turtle program is centered around and supported by volunteer-based beach monitoring efforts. Although beach monitoring is largely done on an individual level, participation and education opportunities were offered to encourage volunteer engagement. This included regular update emails, virtual presentations, a shared google folder with resource materials, individual training, opportunities to assist with nest screenings/excavations and team gatherings.



Sarah Swan

New this season was the use of the Epicollect5 app, which allowed volunteers to enter their beach patrol log electronically via a phone app. This user-friendly way of collecting data was well received by the volunteers and streamlined data collection.

Over 1,765 beach patrols were conducted, contributing to over 1,575 volunteer hours for the calendar year of 2022. During these patrols, 764 beach clean-up efforts were recorded. Several volunteers continued to patrol after the end of the official volunteer commitment in November.



Photos (middle and right): Sarah

EDUCATION OUTREACH



Our education outreach initiatives continue to be a great way to reach members of the island community, visitors, school children and people from afar. We routinely add to our repertoire of materials and tools to create fun and interactive ways to promote conservation messaging. Increased effort will be placed on reef-safe sunscreen and marine stewardship initiatives in 2023.

Maho Turtle Talks

In response to increased pressures facing the foraging population of green turtles at Maho Bay, an informational sea turtle display was created in 2021 to advocate sea turtle friendly snorkeling and educate the public on a wide variety of sea turtle topics. Through the use of interpretive signs, games, posters, reading materials, and a lively sea turtle mascot, our aim is to reach as many beachgoers as possible. This booth is set up once a week on Tuesdays from 9-11am and reaches between 15 and 40 beachgoers a day.

Cinnamon Campground Chats

Each Monday night beginning in November and continuing through June, an hour-long informative sea turtle talk is presented to interested campers, visitors, and island residents. These seminars have given us the opportunity to reach 10 to 45 people each week, totaling over 1000 people throughout the season.

School Kids in the Park (SKIP)

During the 2022 calendar year, we were pleased to provide both beach and in-class field trips for 12 groups of students ranging from Pre-K to 12th grade. In addition, we conducted five turtle talks for summer camps, including the Boys and Girls Club, Parks and Recreation, St. John School of the Arts, and the Outdoor Learning Summer Creative Arts and Literacy Workshop. These students got their hands sandy simulating the nesting process through relay races, testing their chances of survival through predator tag, and showcasing their knowledge of sea turtle adaptations and morphology through sand art. In addition to the school groups and summer camps, we were happy to provide sea turtle presentations for the 18 members of the Youth Conservation Corps and Summer Trails Crew. Through these efforts, we were able to reach over 230 young adults and children.



Sea Turtle Boat and Snorkeling Trip

In coordination with Ocean Surfari, unique snorkel trips are being conducted to promote safe boating and snorkeling practices while educating guests about sea turtles aboard the 'Reef Surfari' vessel. Ocean Surfari generously donates the proceeds above cost back to the Friends organization to fund programs like the Sea Turtle Program. Beginning in January and occurring on the second Friday of each month until June, these trips have been a great success, reaching around 35 participants per trip. We aim to cultivate marine-based education outreach and conservation efforts further in 2023 with the main intention of fostering marine stewardship. This boat trip will hopefully serve as a model and lead to additional focus and initiatives geared towards charter companies and captains that utilize the water of St. John.

RESEARCH

Genetic Sampling

For the third year, we contributed genetic material from St. John nests to aid in further analyses. In 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.

Fibropapillomatosis Documentation and Monitoring

Due to the presence of fibropapillomatosis (FP) tumors in the waters of the VINP, an on-going research initiative has been underway which centers around the foraging population of green 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 Maho Bay. The objective is to regularly photograph and catalog pictures of individuals to better assess the health of the population and to monitor the abundance and spread of this disease.



Between October 2016 and February 2022, 45 individuals have been identified using their unique facial scale patterns. Several of these turtles have been photographed on multiple occasions over the years. 'Nibble', first observed in October 2016, is currently foraging in Maho Bay with her most recent documentation taking place in September 2022. She has been cataloged on 6 occasions, and during this period of time we have been able to see the emergence and regression of FP tumors. 'Duane' was first identified in 2021 with a small tumor on the right eye. We have tracked the significant development of this tumor through January 2023 using the database (see example below). Nibble and Duane are examples of how this catalog has allowed us to document cases of both tumor growth and regression.

Duane, Maho Bay



March 30, 2021



August 13, 2022



January 13, 2023

Along with FP tumor documentation and monitoring, this catalog also allows us to observe other factors such as growth and wounds. For example, 'Proppy', was first photographed in October 2020 with healed but obvious propeller marks on her carapace. Over time, we were able to observe these old wounds disappear by April 2022.

This catalog is a valuable tool for the monitoring of the population at Maho Bay and provides important information into the investigation of FP tumors.

In collaboration with the University of the Virgin Islands and Archie Carr Center for Sea Turtle Research, this catalog will aid in studies monitoring changes in seagrass species composition, impacts of the invasive *Halophila* seagrass, and grazing preferences of individual turtles within Maho Bay. We aim to continue expanding the photographic database, pursue options for a citizen science component, and incorporate additional research such as remora and turtle relationship, and water quality analysis.

SEA TURTLE ASSISTANCE AND RESCUE



The collaborative efforts of the Sea Turtle Assistance and Rescue (STAR) network is an invaluable resource that provides rescue and stranding response for sea turtles on all three islands. STAR is a network of territorial and federal agencies, veterinarians, and community volunteers that are trained to respond and document sea turtle stranding events of sick, injured, distressed and deceased turtles in the USVI. Data in the form of a stranding report is collected and if applicable veterinary care and rehabilitation can be provided for live turtles at Coral World, St. Thomas. This year response tactics were honed and the use of a stretcher to assist with moving large sea turtles was implemented. The STAR hotline number continues to be shared and the network promoted through education outreach. The main goal for 2023 is to solidify a trained stranding response team for St. John.

For the 2022 calendar year there have been over a dozen St. John based stranding calls through STAR. These calls have consisted of reports of entanglement, disease (FP), unusual behavior/floating, and boat strike injuries. There have been 6 documented green fatal strandings, three of which the cause of death was undetermined, two boat strikes, and one entanglement.

CONCLUSION

Since its inception as an established program in 2015, the VINP Sea Turtle Program has been steadily growing and developing. With each year, knowledge is gained with the fine tuning of protection measures and data collection. The 2022 season was noteworthy with the documentation of three species of sea turtles utilizing St. John's beaches, daily to near daily monitoring of 47 beaches, 25 nests being discovered, and nearly 2,000 hatchlings making it to the ocean. To help ensure the survival of the species, efforts and protection measures have to be both land and sea based. This is why education outreach, research, marine stewardship and the STAR network are integral pieces of the conservation equation in addition to nest monitoring and protection. All of these efforts could not have been achieved without the VINP, FVINP, donors, volunteers, and the community of St. John.



Thank you to all the supporters of the VINP Sea Turtle Program! Thanks to all Friends staff, members and donors, VINP staff, collaborators, interested community members, generous photographers and wonderful volunteers that made this program possible.