

VIRGIN ISLANDS NATIONAL PARK

SEA TURTLE PROGRAM

2021 SEASON REPORT



Introduction:

Growth and Development of the VINP Sea Turtle Program

Since 2015 the Virgin Islands National Park (VINP) Sea Turtle Program, funded by the Friends of VINP (FVINP), has been coordinating nest protection efforts through volunteer-based beach monitoring 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.



Willow Melamet

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. From 2015-2019 beaches within the VINP were monitored semi-regularly by trained volunteers yielding 76 hawksbill nests. During the first three years the program revealed high nest depredation and loss of nests to storms. To reduce these threats, protective screening of nests began in 2017, and nest relocation efforts were established in 2019. In 2020, the volunteer

team tripled to 100 beach monitors, and the number of beaches regularly patrolled expanded to 47 beaches including nearby cays. This resulted in the highest number of hawksbill nests being recorded with 35 confirmed nests. Thanks to the funding and support of the FVINP, the program has two part-time FVINP employees (Adren Anderson and Willow Melamet) who serve as the coordinators year-round to uphold the program's mission. The continued evolution of the program has led to a multifaceted approach that now has a strong foundation to sustain island wide sea turtle conservation initiatives and documentation of nesting activity on St. John.

2021 Nesting Season (June 2021-February 2022)

Data collected during the 2021 nesting season and presented in this report spans the timeframe of June 2021-February 2022. This time period is a comprehensive representation of the nesting season as it begins with the first documentation of nesting activity and ends with the last nest being excavated. Prior to 2020, the nesting season and coordinator duties were defined based on the volunteer commitment and peak hawksbill nesting season of July-November. However, with the expansion of the program, the work is now year-round with on-going research, education outreach and strategic beach monitoring. This report and the following information includes the data collected during the 2021 nesting season (June 2021-February 2022) and also highlights the program's initiatives and growth since the last report in March 2021.



Beach Monitoring

Regular beach monitoring for sea turtle nesting activity was conducted by 100 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. Daily to near daily monitoring was maintained throughout the season and several volunteers continued to monitor well into February. Additionally, strategic patrolling of key nesting beaches is now being conducted year-round by a group of dedicated volunteers and the program coordinators.

Nesting Activities

One hundred and nine hawksbill nesting activities were documented between June 28, 2021 and February 14, 2022 on ten nesting beaches, yielding 35 confirmed nests, 71 dry runs, and 3 possible nests. 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 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 1 shows the number of nesting activities by beach for the 2021 season.

109
nesting
activities

Table 1. Nesting activities by beach on St. John and Lovango Cay for the 2021 nesting season

Beach	Number of Dry Runs	Number of Confirmed Nests	Number of possible (unconfirmed) nests
Western Reef	12	8	0
Genti	0	5	0
Reef Bay Ruins	6	5	0
Windswept	5	10	0
Ditleff	1	1	0
Lameshur	15	4	0
Lovango (North and South)	10	2	3
Denis	1	0	0
Cocoloba	21	0	0
Total	71	35	3

Nest Protection

In response to recent studies showing that metal screens may impact the magnetic field of incubating nests, a switch was made to plastic screens for nest protection. These screens are similar to the predator screens used in the past, 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. The screen size was increased to 4x4 feet to increase protection of the cavity from peripheral digging.

Nests are highly susceptible to predation within the first week of deposition and again during the hatching and emergence phase. Despite screening efforts, five depredation events occurred in which the nests had not yet been discovered and screened, or the hatchlings had crawled through the screen and predated thereafter. Two nests were partially predated within the first night of being laid and discovered on morning patrols. Three nests suffered post-emergence predation.

Teaming with the USDA, mongoose eradication efforts were implemented on beaches with nesting activity to minimize depredation events. Eradication efforts in conjunction with screening and frequent monitoring have proven to be an effective method of increasing nest success rates. Mongoose eradication efforts at high-priority beaches will be continued to minimize predation events and increase the protection of each nest.





Nest Success

Following emergence, nests are 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 1 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.

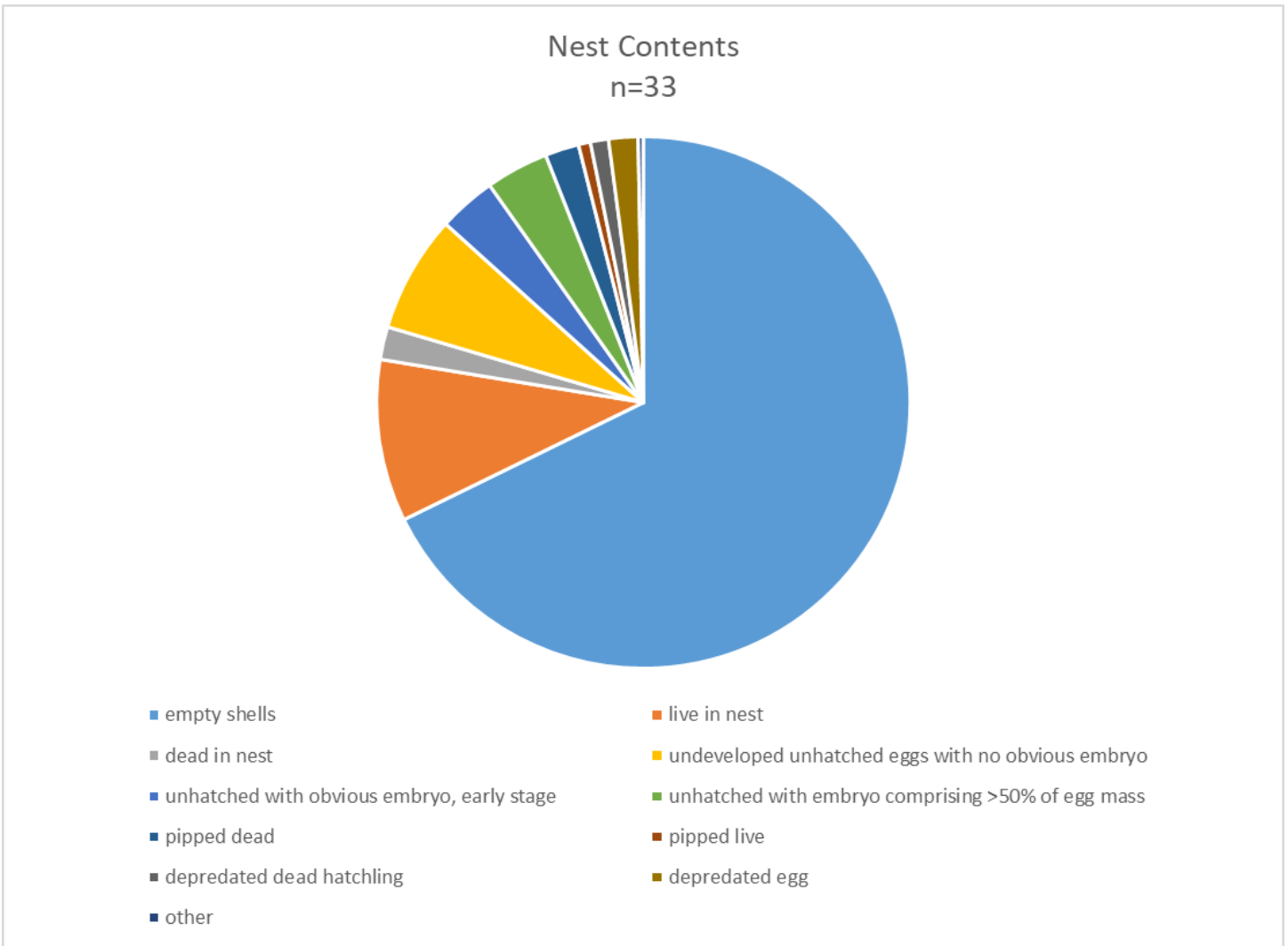


Figure 1. Nest contents categorized upon excavations for 33 nests

Thirty-four of the 35 total nests were excavated this season. One excavated nest was excluded from the calculations due to a depredation event resulting in an incomplete clutch. This nest was discovered post-hatching and the contents of the chamber were strewn around and unable to properly categorize. One confirmed nest is currently incubating and remains to be excavated. Table 2 shows the summarization of clutch data for the 2021 season.

Incubation time ranged from 52-83 days, with an average incubation time of 57 days. The late-season nests laid on the north shore revealed longer incubation durations compared to the south shore nests, of which none made it past 58 days of incubation.

The egg count for the season was 4,208 eggs producing 3,155 hatchlings that made it to the sea. During excavations, 511 hatchlings were found alive in the cavities and released. The majority of these hatchlings were entangled in roots.

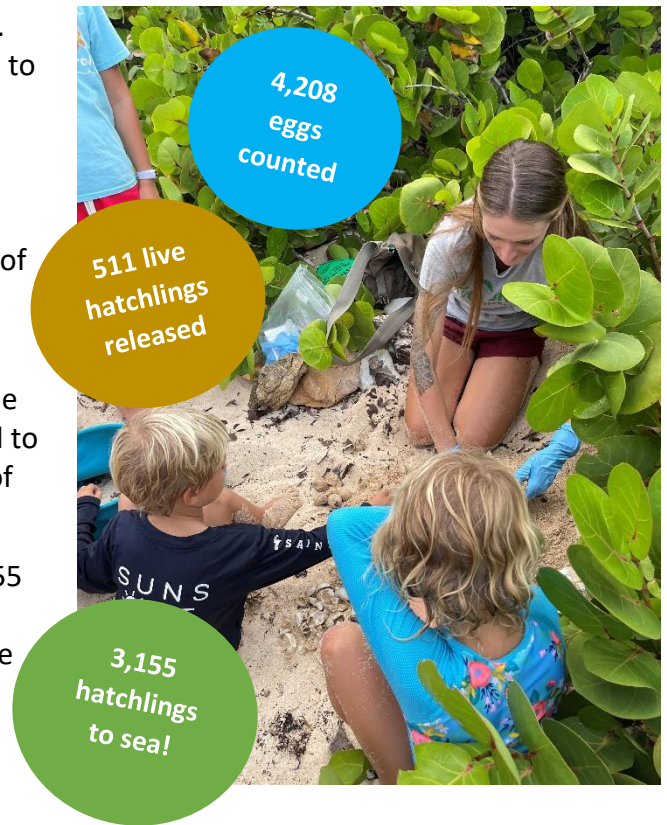


Table 2. Summary of hawksbill clutch data for the 2021 season, n=33

	mean	SD	range
Clutch size	127.5	27.34	71-179
% Hatch success	77.69	16.81	0-100
% Emergence Success	62.65	21.93	0-100

Volunteer Program

In 2020 the program’s volunteer base tripled, which catapulted the sea turtle program into a new unprecedented level of growth. Fueled by the momentum of last season, the program welcomed new volunteers and several return volunteers, leading to over 100 volunteers being on the “Turtle Patrol Team” this season. Volunteer training sessions were held in June to train new volunteers and serve as a refresher for previous volunteers. Volunteers were assigned beaches and days to patrol to ensure coverage throughout the season. New this season was the implementation of an online data sheet to





log volunteer hours and allow for expedited data processing. Managing and coordinating a large volunteer team has become a substantial facet of the program and an area that will continue to be focused on next season.

The 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.

Volunteers set a new record this year, logging 1,642 hours between June 2021 and March 2022. In addition to beach monitoring, volunteers regularly collected trash on their patrols and documented 480 beach cleanups. Several volunteers continued to patrol after the end of the official volunteer commitment in November and also assumed new roles with education outreach and stranding response.

Education Outreach

The threats to sea turtles are vast and education outreach is now more than ever of great importance. This year, education outreach has been brought to the forefront and rejuvenated with new initiatives established. We have greatly expanded our educational materials and scope to include virtual presentations, scheduled 'Turtle Talks', and incorporated a marine-based component. With a well-rounded approach established, the program's mission and conservation messaging is now being spread with vigor reaching school children, visitors, the community, as well as people world-wide. The expansion of education outreach and the interest generated as a result have been notable achievements of the season and will remain a focus for future seasons.



'Let's Talk About Turtles'

As part of the *Friday with Friends Seminar Series*, the program has offered educational 'Turtle Talks' on the third Friday of each month since November. These two and a half hour presentations cover general sea turtle ecology, threats, and conservation efforts.

In response to increased pressures facing the foraging population of green turtles at Maho Bay, an informational sea turtle display was created 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. Since mid-December, we have had over 989 people visit our display, which is set up twice a week at the Maho beach pavilions.

School Kids in the Park (SKIP)

We were pleased to continue beach field trips for six groups of students ranging from Pre-K to High School. These 79 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, we were happy to provide sea turtle presentations for the 18 members of the Youth Conservation Corps and Summer Trails Crew.



Virtual Outreach

Virtual outreach via Zoom has been a great platform to reach interested participants locally and world-wide. We launched a Virtual Volunteer Seminar Series this season, which consisted of four presentations and covered topics of stranding response, nesting, and research. These presentations were well attended by volunteers and students. During the Friends Ocean Week Seminar Series, 60 people tuned in to learn more about the sea turtles of St John.

Marine Stewardship

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 Sunday 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 2022 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.



Fernando Ramos

Research

Genetic Sampling

For the second 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. We aim to continue this study, pursue options for a citizen science component, and incorporate additional research such as sea grass dynamics, remora and turtle relationship, and water quality analysis.



Willow Melamet



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. As trained and permitted stranding responders for the island of St. John, we have responded to over 20 St. John based stranding calls through STAR since January 2021-present. These calls have consisted of reports of entanglement, disease (FP), unusual behavior/floating, and

boat strike injuries. There have been 8 documented fatal strandings, five of which were from boat strike related injuries, two undetermined, and one entanglement. Our immediate objectives are to streamline and hone our response tactics by solidifying a trained stranding response team on St. John, and to secure essential tools and necessary equipment. Additionally, we will continue to spread awareness of the STAR network and strive to bolster STAR/stranding response on St. John through the VINP Sea Turtle Program.



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. A new level has been achieved with each core initiative of the program (volunteer-based beach monitoring, research, and education outreach) having strengthened this season. 2021 is noteworthy with a volunteer team of over 100 strong, daily to near daily monitoring of 47 beaches, 35 nests documented, and over 3,000 critically endangered hawksbill hatchlings making it to the ocean. In order 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. With great milestones achieved in 2020 and continued in 2021 the program has now entered a new tier in regards to sustainability, all of which could not have been achieved without the VINP, FVINP, donors, volunteers, and the community of St. John.

Thank you!

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



Willow Melamet