SPATIAL DISTRIBUTION OF NATURAL AND RELOCATED LEATHERBACK SEA TURTLE NESTS AT SANDY POINT NATIONAL WILDLIFE REFUGE, ST. CROIX USVI

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INTRODUCTION

Sandy Point National Wildlife Refuge (SPNWR) is an important sea turtle nesting site and a critical location for endangered leatherback sea turtle research, monitoring, and management.

The conditions that influence nesting site favorability at Sandy Point relate to the basic geography of the beach. The north beach is large, steep, and sandy; the western beach experiences seasonal longshore current erosion, and the south beach is often covered in dried seagrass and experiences moderate erosion.

Due to the beach's dynamic profile, washout during nest incubation poses a significant threat to hatch success.

As such, nest relocation based on knowledge of past erosion patterns is an integral tool in leatherback conservation and research, and increasing hatchling production through nest relocation is one of the principal goals of the Comprehensive Conservation Plan for Sandy Point.

Figure 1: Nesting leatherback sea turtle at Sandy Point.
** This photograph was taken during the Leatherback Recovery Project at SPNWR with permission from the U.S. Fish and Wildlife Service. Photo by Jeremy Smith.*

OBJECTIVES

- Determine the distribution of natural and relocated leatherback sea turtle nests in the Sandy Point National Wildlife Refuge.
- Provide recommendations for future management through spatial examination of:
  - Nest washout
  - Relocated nest hatch success

METHODS

Nighttime patrols were conducted to encounter nesting females. Clutches laid too close to the high-water mark or on the western beach were relocated. Hatchling emergence surveys were executed to determine the fate of natural and relocated nests. Nests were excavated three days post-emergence to determine hatch success.

Data were collected at Sandy Point during the 2018 leatherback nesting season. GPS points were collected in the field and processed in ESRI's ArcGIS.

RESULTS

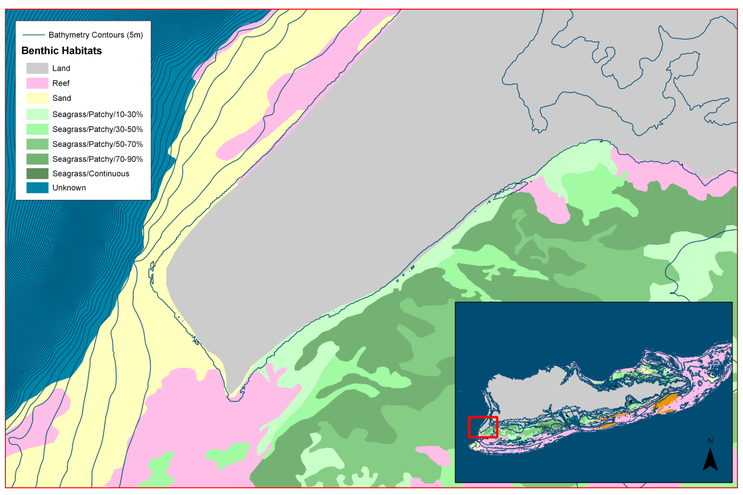

Figure 2: Benthic nearshore environments (NOAA 2001) and bathymetric contours (NOAA 2014).

Table 1: 2018 nesting activity at Sandy Point.

	In-Situ	Relocated	Dry Run	Track Only	Washed Out	Total
North	64	9	7	1	0	**81**
West	23	13	5	4	4	**49**
South	15	4	4	0	1	**24**
Other/Unk	4	2	1	1	0	**8**
Total	**106**	**28**	**17**	**6**	**5**	**162**

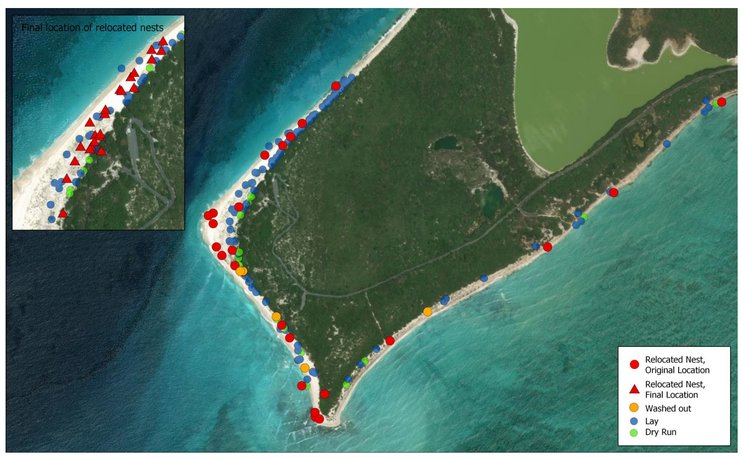

Figure 3: Overall 2018 ***natural*** *and* ***relocated*** *leatherback nesting activity.*

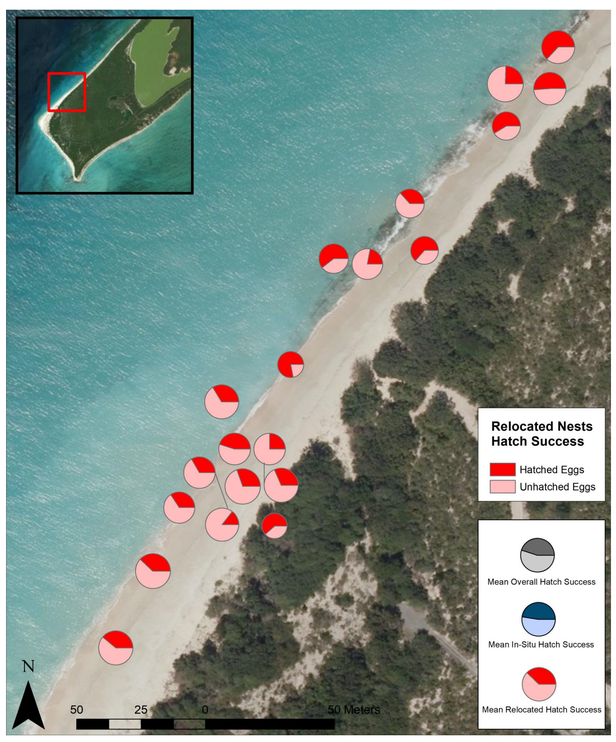

Figure 4: Relocated nest hatch success on the north beach. Size of pie chart scaled by total number of eggs in clutch.

DISCUSSION

The natural distribution of leatherback nesting activity in 2018 strongly favored the north and west beaches. Quick access to deep waters from the north and west beaches, contrasted with the shallower nearshore water offshore of the south beach, creates an ideal approach.

Unsurprisingly, the west beach had the most relocated nests, nest washouts, and "track only" (beach entrance but no digging) activity. The only successful nests laid on the west beach were located far above the high tide line; all others were washed out before their anticipated hatch date.

Nests relocated to the mid and northern sections of the north beach were more successful than those relocated to the more southern region of the north beach.

Observed differences in environmental conditions on different beaches (temperature, precipitation, wind speed/direction) likely influence hatchling sex ratios, due to temperature-dependent sex determination. Relocation from a "cooler" beach to a "warmer" beach may produce female-biased nests.

Conclusions/Management Implications:

- An increase in relocations from the west beach will decrease washouts and increase hatch success.
- To improve relocated hatch success, relocation on the north beach should be on the northern end.

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