

# FINAL REPORT

## **THE MONITORING AND MITIGATION OF IMPACTS TO PROTECTED SPECIES DURING BEACH RESTORATION DREDGING AT BREVARD COUNTY AND PATRICK AIR FORCE BASE**

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## **INTRODUCTION**

Coastwise Consulting, Incorporated (CCI) provided Weeks Marine, Incorporated (WMI) with the required monitoring and mitigation of impacts to endangered and threatened species during the dredging operations at the Patrick Air Force Base / Brevard County Shore Protection Project. The Weeks Marine hopper dredges *BE Lindholm* and *RN Weeks*, as well as, the subcontracted Bean Stuyvesant hopper dredge *Stuyvesant*, were monitored around-the-clock by two endangered species observers, approved by the National Marine Fisheries Service (NMFS), who lived aboard each dredge.

The most commonly encountered endangered or protected species in this area are the loggerhead sea turtle (*Caretta caretta*) and West Indian manatee (*Trichechus manatus*). Several other species less likely to be encountered include the sea turtle species Kemp's ridley (*Lepidochelys kempi*), green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*) and leatherback (*Dermochelys coriacea*). Three loggerheads were taken during this project.

While several marine mammal species were encountered, principally the bottlenose dolphin (*Tursiops truncatus*), humpback whales (*Megaptera novaeangliae*) and right whales (*Eubalaena glacialis*), none of the activities undertaken by Weeks Marine had an adverse effect on these species. Precautions were taken when whales were sighted and, of course, when manatees were sighted. However, a single manatees was encountered only once as manatee occurrence in this area is usually near inshore grassbeds, structures where macro-algae proliferates (seawalls), sources of fresh water, such as creeks and water hoses at marinas and not in the open ocean. Right whales sighted during this project were reported immediately to the appropriate agencies.

The project began with the *BE Lindholm* and *RN Weeks* dredging for the Patrick Air Force Base (PAFB) project from 03/07/05 – 03/19/05. Both dredges then began digging and pumping for Brevard county with the *Lindholm* working from 03/19/05 – 05/14/05 and the *Weeks* working 03/19/05 – 04/26/05. The dredge Bean Stuyvesant hopper dredge *Stuyvesant* was subcontracted to dig and pump for the southern reach of beach on the Brevard County project and was on-site from 03/28/05 – 04/28/05.

## **METHODS**

On each dredge, rigid turtle deflectors were installed on the dragheads before work began. All points of inflow were screened with cages designed to capture entrained sea turtles and their parts. These cages are constructed of steel bar-stock, welded in a grid pattern, with openings of approximately 4" x 4". Observers gain access through the top of these cages for the purposes of inspection.

Two observers, working in shifts, will cleaned and inspected this screening, around-the-clock, in order to document any evidence of turtle take. The observer on duty thoroughly cleaned and inspected all screening at the end of each load. Before cleaning and inspecting the screens, the observer checked the dragheads and turtle deflectors. Load sheets were completed at the end of each load cycle, detailing everything found in the screening or the dragheads, as well as the condition of the screens and the deflectors. Also recorded was the start, end and pump times for each load, the specific location of the dredging area, the type of material being dredged, weather, tide and water temperature data (surface and mid-depth), and any other pertinent information.

Observers maintained a bridge watch for protected species and kept logbook of all sightings of turtles and marine mammals, especially large whales. Coastwise contracted sea turtle observers with at-sea large whale identification experience, and given the efficiency of screening apparatus on the dredges, the observers had no problem checking screening and providing an effective bridge watch for marine mammals. The bridge watch noted date, time, location, species, number of animals, distance and bearing from dredge, direction of travel and any other information available on all sightings.

All right whale sightings were reported to the USN Whale Sighting Node, FACSFACJAX, from where they were relayed across the pager system that alerts military and merchant mariners to right whale locations. All right whale sightings within 15NM of the dredge site or disposal area necessitated that the dredge operate at speeds of 5 knots or less during nighttime or during periods of limited visibility for 24-hours proceeding the sighting. Sightings were summarized on the Daily Reports. Daily reports and Weekly Summaries were filed with Bean Stuyvesant.

There were 3 loggerhead turtle mortalities documented on this project. When a turtle is taken, the protocol is as follows: observers photograph and measure the samples involved. All turtles taken are sampled for genetic analyses. The protocol for biopsy sampling is attached as Appendix 1. Samples are then weighted and jettisoned at an offshore dredge disposal site, or in the case of beach restoration projects, samples are sent ashore to be handled by the local sea turtle stranding network. Injured but living turtles are turned over to the stranding network and transferred to a facility that can provide rehabilitation to injured turtles. Such turtles are secured in a cooler, or box, lined with moistened padding. Every effort is made to maintain a relatively constant temperature in the cooler during transport that approximates the columnar water temperature where the turtle was taken.

The dredging contractor, the USACE, officials at PAFB, Brevard County and Coastwise Consulting were notified by telephone after all incidents involving takes of sea turtles. Incident reports were completed for every event, recording all details surrounding the event and a diagram is made of injuries sustained by each turtle sampled.

## **RESULTS**

### **Patrick Air Force Base**

The dredges *B.E. Lindholm* and *R.N. Weeks* worked 12 days at PAFB during the dates of 03/07/05 – 03/19/05, logging a total of 24 “dredge days” and 131 total loads. No sea turtles were taken during this time. Surface water temperatures ranged from 12.2° C – 17.7° C over the course of the project. There were two sightings of the same northern right whale (*Eubalaena glacialis*) from the *R.N. Weeks* prior to project commencement on 03/07/05.

Results of the bridge-watch included daily sightings of bottlenose dolphins (*Tursiops truncatus*). There were two sightings of the same northern right whale (*Eubalaena glacialis*) from the *R.N. Weeks* prior to project commencement on 03/07/05.

03/06/05, 1610 hours	1 <i>E. glacialis</i> , 1 juv.	near buoy #9 (lat/long not available)
03/06/05, 1615 hours	1 <i>E. glacialis</i> , 1 juv.	near buoy #9 (lat/long not available)

## Brevard County

The dredge *Lindholm* worked for Brevard County from 03/19/05 – 05/14/05, 56 days. The *Weeks* worked from 03/19/05 – 04/26/05, 39 days and 421 total loads. The *Stuyvesant* was subcontracted for Brevard from 03/28/05 – 04/28/05, 33 days. Surface water temperatures ranged from 17.7° C – 26.6° C over the course of the project. A total of 128 “dredge days” were completed. Three loggerhead mortalities were documented during this time. All occurred on the dredge *Lindholm* over the course of 16 days (04/26/05 – 05/13/05).

04/26/05, 0215 hours	1 <i>C. caretta</i> , 1 adult	H2O 21.1 C	28° 23.807 x 80° 27.143
05/03/05, 1751 hours	1 <i>C. caretta</i> , 1 adult	H2O 25.0 C	28° 23.858 x 80° 26.655 *
05/13/05, 2101 hours	1 <i>C. caretta</i> , 1 unknown	H2O 26.1 C	28° 24.208 x 80° 26.216

\*Parts of same turtle were taken on 05/07/05, in load 227, and on 05/09/05, in load 238.

Results of the bridge-watch included daily sightings of bottlenose dolphins (*Tursiops truncatus*). There were multiple sightings of approximately 4 humpback whales (*Megaptera novaeangliae*): all sightings were from the *Stuyvesant*.

04/03/05, 1610 hours	1 <i>M. novaeangliae</i> , 1 adult	near channel (28° 24.197 x 80° 33.04) *
04/03/05, 1950 hours	1 <i>M. novaeangliae</i> , 1 adult	near channel (28° 24.197 x 80° 33.04) *
04/03/05, 2003 hours	1 <i>M. novaeangliae</i> , 1 adult	near channel (28° 24.197 x 80° 33.04) *
04/05/05, 1115 hours	1 <i>M. novaeangliae</i> , 1 adult	near channel (28° 06.80 x 80° 32.83) **
04/05/05, 1217 hours	1 <i>M. novaeangliae</i> , 1 adult	near channel (28° 07.6 x 80° 32.6) +
04/05/05, 1718 hours	1 <i>M. novaeangliae</i> , 1 adult	near channel (28° 07.6 x 80° 32.6) +

\*All sightings were either of the same whale, or of 2 whales.

\*\*Whale was sighted 6 times between 1115 and 1200.

+All sightings were of the same whale.

It should also be noted that the dredge *Stuyvesant* reported a manatee (*Trichechus manatus*) sighting on 04/04/05.

04/04/05, 1420 hours	1 <i>T. manatus</i> , 1 adult	near dredge (28° 14.1 x 80° 30.3)
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## DISCUSSION

Given the efficiency of screening on the dredges *B.E. Lindholm*, *R.N. Weeks* and *Stuyvesant*, it is unlikely that turtle mortalities went unrecorded. The take numbers can not be considered particularly high given the location and season and with a sample size of three, we don't think that all of the takes occurring on the *Lindholm* is statistically significant, although this may be difficult to ascertain. The whale sightings so late in the year are interesting and speak to the importance of maintaining a diligent bridge watch in the right whale calving ground even at the end of the winter calving season. The captains and crews of all the dredges helped maintain a sharp look-out for whales and were extremely helpful when screening maintenance was required. The project superintendents were also quick to lend assistance and made sure that the observers had crewboat access and anything else they needed to do their jobs well. The cooperation of Weeks Marine and Bean Stuyvesant is greatly appreciated.