

# Sea Turtle Relocation Trawling: Is it Effective?

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## Abstract

The Army Corp of Engineers (ACOE) annual coastal dredging program has included sea turtle relocation trawling for selected projects since the early 1980's. Relocation trawling has been successful at temporarily displacing Kemp's ridley, loggerhead, leatherback, and green sea turtles from channels and nearshore mining areas in both the Atlantic and Gulf of Mexico during periods when hopper dredging was imminent or ongoing (NMFS NE Biological Opinion F/NER/2003/00302).

Net design, protocols, and trawling techniques were developed by the ACOE after considerable research and development efforts. These methods have become standard for ACOE dredging projects where project managers need to reduce the potential for incidental takes of sea turtles during the dredging project. Trawling projects are normally accomplished by contractors.

Towing two specially designed, 60-foot trawl nets, the trawlers operate in the same vicinity as the dredge on either a twelve or twenty-four hour schedule. Captured turtles are identified, measured, photographed, and thoroughly scanned for PIT tags and overall health. The turtles are then tagged and released unharmed 3-5 miles away from the channel. Collected data on each turtle is reported to the National Marine Fisheries Service and to the ACOE.

Since September 2001, REMSA, Inc. personnel have completed thirteen trawling projects capturing and safely relocating 232 threatened or endangered sea turtles. During the same period, a total of 13 turtles were taken by dredges involved in these projects. Because levels of effort on relocation trawling projects vary greatly, REMSA has developed a series of "levels" to distinguish between the amounts of effort applied. Results indicate that effectiveness of the trawling project itself varies widely with the level of trawling effort applied. The results are encouraging, demonstrating that Sea Turtle Relocation trawling may be effective in minimizing the impact of dredging projects on sea turtle populations.

## Introduction

Sea turtle relocation trawling is a tool to facilitate the continuation of dredge operations in areas where turtles are known or suspected to be present. Sea turtle relocation trawling was first conducted in the early 1980's by the Army Corps of Engineers and the US Navy to reduce sea turtle takes by hopper dredges working in Port Canaveral, Florida. In recent years, relocation trawling has been initiated on projects and in Corps districts where excessive "takes" have occurred or in areas that are known to have significant sea turtle populations.

## Types of trawling

There are generally two types of trawling operations required on hopper dredging projects: abundance trawling and relocation trawling. Sea turtle **abundance trawling** is trawling conducted 3-5 days prior to dredging activity to determine sea turtle abundance in an area about to be dredged. If results show an abundance of turtles in the area, relocation trawling is initiated. **Relocation trawling** is trawling conducted during the dredging project to remove turtles in danger of being taken by a working hopper dredge.

### Trawl Procedures

Trawling is conducted using two (60 ft.) sixty-foot nets constructed in accordance with the US Army Corps of Engineers net specifications. The amount of time a trawler is allowed to pull their nets (tow time) is limited to 30-40 minutes. This is to prevent drowning any turtles that are captured. The average bottom width covered by two (60 ft.) sixty-foot nets is approximately 100 linear feet. The nets are designed with an 8" inch mesh (stretch), which allows most potential bycatch to pass through.

### Levels of trawling

Because levels of effort on relocation trawling projects vary greatly, REMSA has developed a series of "levels" to distinguish between the amounts of effort applied. The levels assume that the dredge(s) are working for 24 hours per day with two dragheads. All relocation trawling projects can be placed into one or more of the following levels or categories, from least aggressive to the most:

<b>LEVELS OF TRAWLING</b>	
<b>LEVEL ONE-</b>	<b>2 dredges vs. 1 trawler (12 hrs)= 25% coverage</b>
<b>LEVEL TWO-</b>	<b>1 dredge vs. 1 trawler (12 hrs)=50% coverage</b>
<b>LEVEL THREE-</b>	<b>2 dredges vs. 1 trawler (24 hrs)=50% coverage</b>
<b>LEVEL FOUR-</b>	<b>1 dredge vs. 1 trawler (24 hrs)=100% coverage</b>
<b>LEVEL FIVE-</b>	<b>2 dredges vs. 2 trawlers (24 hrs)=100 % coverage</b>
<b>LEVEL SIX:</b>	<b>1 dredge vs. 2 trawlers (24 hrs)=200% coverage</b>
<b>LEVEL SEVEN:</b>	<b>1 dredge vs. 3 trawlers (24 hrs)=300% coverage</b>

With proper planning and preparation, many problems can be easily avoided. Some of these problems may include:

- Time required to mobilize/demobilize
- Number of turtle nets available
- Communication between dredge and trawler
- Number of personnel required
- Inclement weather
- Release of captured turtles
- Vessel traffic
- Debris

### Mobilization

Depending upon where a potential project is located geographically, it may take anywhere from 24 hrs to several days to get an available trawler, crew, equipment, supplies, and observers on site. The more advanced notice given to the hired contractor, the less costly and better organized the project.

### Turtle nets

A single turtle net costs an average of \$1,200 dollars and weighs app. 250 pounds. Shipping alone can cost lots of time, money and logistical nightmares. Obstructions, debris, and excessive mud and clay can wreak havoc on nylon nets. REMSA has experimented with heavier gauge nylon twine and has found that 60-86 gauge nylon or poly is more durable than the ACOE standard requirement of 36 gauge. Having a sufficient number of nets onboard and ensuring that one or more of the trawler personnel is capable of making onboard repairs (and having the supplies available) is key to a successful project. It is recommended that each trawler have a minimum of six nets aboard for projects of 30 days or less.

### Communication

Communication between the dredge(s) and trawler(s) is vital. Finding trawler captains with good VHF skills and experience working inside crowded channels can be a challenge. Since both vessels are restricted in their ability to maneuver, it is essential that the vessels synchronize their intentions. When a working dredge intends to move to a different location in the channel being dredged, it is strongly recommended that the trawler be notified in advance so that the new area can be effectively cleared before work begins.

### Required personnel

Most trawling vessels have inadequate crew and accommodations for conducting such long term, round-the-clock operations. Project managers must ensure that the minimum personnel are present, that the trawl supervisors and observers are NMFS approved, and NMFS and State permits are onboard the trawling vessels at all times. For 24 hr trawling projects, the following personnel are required for safe operations:

- Two qualified vessel operators-each may not exceed 12 hrs per day on duty
- 2-3 deckhands
- One NMFS approved trawl supervisor
- One NMFS approved observer

### Inclement weather

Trawlers (65-99 ft) are often limited in their ability to operate in sea conditions that might not impact dredge operations. The much smaller trawlers are limited to operating in seas up to 4-5 feet and/or wind conditions up to 25 knots. In such conditions a trawler is often forced to go on standby, while the much larger dredge is able to continue routine operations. The ACOE managers must then decide whether to risk continued dredging without coverage by the trawler(s). If dredging and trawling operations have been suspended for inclement weather (or any other reason), REMSA recommends that trawling resume a minimum of 2-3 hours before dredging resumes.

### Relocating captured turtles

Once a turtle has been captured, it is examined, measured, photographed, weighed, tagged, and eventually released. Turtles may be kept onboard the vessel for 3-6 hours before being released as long as the air temperature is between 65-80° F and sufficient shaded holding space is available. A recurring question with releasing captured turtles is “where” and “when” to release the turtles. Typically, a turtle is relocated 3-5 miles away from the project site. REMSA biologists use historical migration data to predict the safest direction. Of the 249 turtles successfully relocated, REMSA has recaptured only 7 turtles (Aransas Pass, TX 2003 and Port Canaveral, FL 2004). Transporting turtles to release sites can be time consuming, particularly when the site is several miles away. On projects where turtle abundance is high and many turtles are caught, this is of great concern as the trawler must cease trawling to pick up their gear and motor off to the release site. REMSA has experimented with utilizing a smaller, faster vessel but has found that its usefulness is limited. Transferring a 100-300 lb. Turtle from vessel to vessel is risky. Additionally, it is unsafe to operate such a vessel in darkness or high seas, further limiting its use. On projects where “bottom time” is critical, REMSA recommends using the dredge crew boat whenever possible. In some cases, turtles are simply too large to transfer safely and the trawler must do the release. In such cases, it is recommended that release occurs when the dredge is dumping.

### Vessel/Channel traffic

Another recurring problem with relocation trawling is vessel traffic. In most channels less than 400 ft., a trawler must give way to larger inbound/outbound ships thus disrupting operations. This problem is unavoidable. It is absolutely CRITICAL that the vessel master maintain close watch on the marine radio and communicate with inbound/outbound traffic.

### Debris

Debris in the water column can cause significant operational problems and even result in ineffective trawling. One 30 minute trawl in debris polluted channels can result in several hours of debris removal prior to making another trawl. Most debris problems will arise during the first few days of a project but will eventually subside as the area being trawled/dredged is cleared. Areas that have had recent hurricane activity are particularly difficult as the debris (trees, pilings, etc.) can be overwhelming.

### Results

From 2001-2004, REMSA completed a total of thirteen (13) trawling projects totaling 402 sea days. Of those 402 days of trawling, 161 days were 12 hours of trawling per day and 241 were 24 hours of trawling per day. A total of 349 sea

turtles were successfully caught, tagged, and released. A total of 13 turtles were taken by dredges working while trawling was being conducted.

### Recommendations

Although relocation trawling is costly, exceeding take limits and ultimate project shutdown can far outweigh the cost of relocation trawling. Once trawling has been initiated, the following recommendations can help projects run smoother:

1. Notify selected trawling company as soon as possible
2. Ensure that trawling company holds NMFS and State permits and gear complies with ACOE standards.
3. Dredging project managers should be willing and able to communicate effectively with trawl supervisors.
4. REMSA also recommends that an ACOE liaison, knowledgeable of trawling operations, be established in the South Atlantic Division.

### Conclusion

Although sea turtle relocation trawling cannot be shown to be 100% effective, results have shown that if turtles are abundantly present in areas needing to be dredged, trawling can be an effective tool in significantly reducing dredge takes during the project. In many cases, it has been the trawling project alone which enabled the dredging project to continue to completion without reaching the take limit set for the project.

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