BIOLOGICAL ASSESSMENT
USE OF THE SIDECAST DREDGES FRY, MERRITT, AND SCHWEIZER AND THE SPLIT-HULL HOPPER DREDGE CURRITUCK IN COASTAL UNITED STATES WATERS

1.00 Background

The sidecast dredges Fry, Merritt, and Schweizer, and the split-hull hopper dredge Currituck, are used throughout the east coast of the United States to maintain adequate depths in navigation channels through shallow coastal inlets. These dredges are Government-owned and are based in, and operate out of, Wilmington, North Carolina, and are administered by the Wilmington District, U.S. Army Corps of Engineers.

These dredges were once covered under the Regional Biological Opinion (RBO) for hopper dredging issued by the Southeastern Regional Office of the National Marine Fisheries Service. However, they were left out of the 1997 RBO because of concerns about their potential impacts to listed species since they operate without deflectors, have no screening or observers, and operate during all times of year, including warm weather seasons. In order to address these concerns, a separate Biological Assessment became necessary.

2.00 Description of Dredge Plants

These shallow draft dredges all use small California style dragheads to collect shoal material; however, their sizes and power are substantially less than that of the commercial hopper dredges which employ similar draghead technology in the southeast. Dredge pumps on these vessels average around 350 horsepower and draghead sizes range from approximately 2' X 2' to 2' X 3'. The draghead openings are further subdivided on their undersides by gridded baffles, with openings ranging from about 5" X 5" to 5" X 8". These baffles serve to restrict the size of objects which can enter the dredge and to even-out and direct the hydraulic forces during dredging, allowing for maximum production with each dredge cut.

When operating, the Fry, Merritt, and Schweizer cast dredged material to the side of the navigation channel whereas the Currituck fills a small hopper with the material and transports it to designated disposal areas. These vessels operate at working speeds ranging between 1 and 3 knots and travel at speeds between 7.0 and 10 knot. These dredges normally dredge shallow channels, with depths between 4 feet and 14 feet below mean low water.

Photographs and complete descriptions of each of these vessels are provided in Attachment A. Photographs of the draghead of the dredge Fry are also included in Attachment D.

5.00 Species Assessments

5.01 Finback whale, humpback whale, right whale, sei whale, and sperm whale

a. Status - all endangered

b. Occurrence in Immediate Project Vicinity - Whales occur infrequently in the ocean off the coast of North America. Of these, only the right whale routinely comes close enough inshore to encounter these dredges which would be operating in the immediate vicinity of ocean inlets. The right whale winter calving grounds occur in the nearshore ocean near the Florida/Georgia state line and their late summer feeding and breeding grounds are in the lower Bay of Fundy or the lower Scotian shelf. Their occurrence along much of the eastern seaboard is usually associated with migrations. Sighting data provided by the Right Whale Program of the New England Aquarium indicates that 93 percent of all North Carolina sightings between 1976 and 1992 occurred between mid-October and mid-April (Chris Slay, personal communication, 1993). Since these dredges operate year-round along the eastern seaboard, this species could easily be in the vicinity of the dredges during some of their operations.

c. Current Threats to Continued Use of the Project Area - None

d. Project Impacts -

(1) Habitat - These dredges restore navigation channels to their authorized dimensions, in essence, reestablishing a previously existing condition. No permanent modification of habitat will occur.

(2) Food Supply - Right whales feed on copepods and juvenile euphasiids. The productivity of these prey species will not be diminished by the maintenance dredging of inlets channels; therefore, the food supply of the right whale should be unaffected.

(3) Relationship to Critical Periods in Life Cycle - Over most of the eastern seaboard, these dredges operate year-round while right whales should only be present during migrations. Right whales are vulnerable to ship and small vessel collisions while migrating; however, sidecast dredges and the Currituck normally work in the throat and interior portions of inlets. When working in inlet channels, the vessels operate at speeds between 1 and 3 knots. The Currituck travels to an adjacent beach to dispose of dredged material at speeds between 5 and 8 knots. The vessels transit between sites at speeds of 7 to 10 knots. These speeds allow maximum dredging efficiency but maintain an adequate speed for steerage in inlet environments. Because of these slow speeds, these vessels should present less of a threat to migrating whales than normal commercial ship traffic and recreational boating. When operating near, or traveling through, the right whale calving grounds, the Captains of these vessels would be provided daily information on the locations of the whales from the right whale monitoring program and would operate their vessels accordingly.

Analysis of stranding data does not reveal any pattern which would indicate that either the sidecast dredges or the Currituck were responsible for any of the strandings in inlet areas. Of the eight inlet areas examined, four of them had no strandings during the multiple periods when dredging was occurring. Of the other four, almost half of the strandings (9 out of 21) could not be attributed to any known cause, i.e., no damage to the turtles was apparent. Of the remaining, boat propellers or human molestation appeared to be the probable cause of mortality in most cases (9 out of 12), in the remaining (3), injury was too non-specific or the specimen was too badly decomposed to assess any cause of death. The complete text of Boettcher's report is included as Attachment C.

On 26 February 1998, Ruth Boettcher, NC Wildlife Resources Commission, and Messers. Frank Yelverton and William Adams, Corps of Engineers, visited the sidecast dredge "Fry", located in New River Inlet, Onslow Co., N. C., to test whether or not this class of vessel could take sea turtles. A fresh dead 13.5" green sea turtle from Pamlico Sound (taken last year but kept frozen) was used in the tests (see photographs in Attachment D). Three tests were run: 1) in the water column, the turtle was impinged on the draghead and the pumps were run for 5 minutes (this test was performed twice), 2) the turtle was impinged on the draghead, then the draghead placed on the bottom and the pumps were run for 5 minutes (this test was also performed twice), and 3) the turtle was impinged on the draghead and the vessel performed routine dredging for 5 minutes. Results were as follows:

For test one, first run, no significant damage was visible to the turtle, only a few barely detectable nicks to the carapace. After the second run, the barnacles had been sucked off but, again, the shell and flippers had no detectable damage. For test two, both runs, no significant damage was done, a few nicks on the carapace were apparent but nothing else. For test three, significant abrasions occurred on the anterior portion of the carapace and one blister-like hematoma (dime-sized) was raised on the underside of the left front flipper. Significant quantities of sand had also been forced into the turtle's mouth. Several important observations were made during the tests.

The suction force coming through the draghead was not strong. In one case, the turtle was not properly impinged and it was easily prodded with a pole into proper position. This would not have been possible if it were tightly held by suction forces. A check with the Captain indicated that the vacuum gauge for the pump showed no change when the turtle was impinged. This further indicates minimal suction forces at the draghead.

The same turtle was used on all of the tests. At the end of all of this cumulative impingement abuse, the only damage observed was abrasion from being dragged along the bottom. No fractures, dislocations, or any other type of physical damage was detectable.

The last test was considered to be a worst case scenario - an impinged turtle unable to escape because it was tied to a draghead. Under normal circumstances, it is questionable whether these vessels could actually impinge a sea turtle with such low suction forces. If a sea turtle were to accidentally become impinged, at such low suction forces it would have ample opportunity for escape due to bottom irregularities.

would be expected to continue to support benthic populations similar to those existing prior to maintenance dredging.

(3) Relationship to Critical Periods in Life Cycle - Maintenance dredging with these vessels can be performed at any time of year. Compliance with seasonal restrictions is the responsibility of the host Corp District; if requested to dredge in a given area, it is assumed that the host Corps District has coordinated the activity and obtained the necessary environmental clearances.

Adults could occur in some of the areas that may be dredged by these vessels. Because of the mobility of adults, they should be able to avoid the slow moving dredging equipment if they exhibit flight behavior when approached. Whether or not this occurs is unknown. From the sea turtle tests performed in New River Inlet and described above, it is known that the suction dragheads of these vessels exhibit very low suction forces and have very small openings, ranging from 3" X 5" for the Currituck and 5.5"x 8" for the sidecast dredges. Given the size of shortnose sturgeon which would be expected to occupy the areas being dredged (>45cm = 17.7"), the low suction forces and small openings, and an expected flight response, it is unlikely that an adult sturgeon would be taken under normal circumstances.

(4) Affect Determination - Analysis of the life history and range of the shortnose sturgeon and the general physical characteristics of the areas likely to be dredged within that range indicate that these dredges may occasionally be working in the vicinity of the species. Project maintenance should not result in significant habitat modification and feeding areas will not be significantly affected. Spawning areas and nursery areas for juveniles would be expected to occur outside of the areas normally dredged, but adult shortnose sturgeon could be present in dredging areas. Since the shortnose sturgeon which occupy the project area are mobile, they should be able to avoid locations being disturbed by dredging. Assuming a worst case, based on the low suction forces of these vessels and the small size of the draghead openings, direct impingement is considered unlikely. For these reasons, it has been determined that continued operation of these vessels along the eastern seaboard is not likely to adversely affect the shortnose sturgeon.

6.00 SUMMARY AND CONCLUSION

6.01 Factors Considered

This biological assessment has analyzed the potential impacts associated with the maintenance of coastal inlets along the eastern seaboard with sidecast dredges and the splithull hopper dredge Currituck, on those listed species which the National Marine Fisheries Service believes may be in the project area. Factors which were considered in making effect determinations were as follows:

* Project location in relation to distribution of listed species.
* Types of environmental impacts created by the project, including secondary impacts.
* Seasonality of occupation of the area by listed species.