

**USACE Hopper Dredging Interactions with Sea Turtles:  
Fiscal Year 08 Annual Summary Report  
For the South Atlantic Region  
Of the USACE South Atlantic Division**

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**FINAL REPORT**



## **BACKGROUND**

This report summarizes data collected for dredging interactions with sea turtles during USACE hopper dredging operations throughout the South Atlantic Region in Fiscal Year (FY) 2008 (1 October 2007 through 30 September 2008). Data were collected by contracted observer companies as part of the Endangered Species Observer Program administered by the USACE Districts Jacksonville, Savannah, Charleston, and Wilmington as specified and mandated by the South Atlantic Regional Biological Opinion (SARBO) (issued by the Southeast Region National Marine Fisheries Service on 25 November 1991 and revised 25 August 1995 (Revision 1) and 25 September 1997 (Revision 2) and the USACE SARBO Management Protocol (USMP) (issued by the USACE South Atlantic Division in FY 2003). These data are for hopper (trailing-suction style) dredging projects only and do not include non-hopper (i.e. clamshell bucket, cutterhead) dredging projects. Non-hopper dredges are not monitored for sea turtle entrainments since the mechanical operation of these dredges has been identified as having minimal or no risk to sea turtles (SARBO). Hopper dredges were used instead of non-hopper dredges for the projects presented in this report due to factors related to crew/vessel safety, sea and weather conditions, project configurations, and productivity costs. This report provides a regional summary of hopper dredging-related incidental takes and trawling-related captures/relocations of sea turtles within the south Atlantic region of the USACE South Atlantic Division.

## **METHODS AND DATA SOURCES**

Appendix A provides a map designating the 10 locations for the 13 USACE hopper dredging projects in the South Atlantic during FY 2008 by USACE District and geographic subregion. The USACE Districts Jacksonville, Savannah, Charleston, and Wilmington were responsible for implementing these hopper dredging projects and for complying with the environmental requirements designated by the SARBO and the USMP (i.e., use of deflectors, 100% observer coverage, relocation trawling). Due to potential differences in habitat use by sea turtles and differences in dredging environments, the South Atlantic region was divided into 2 subregions (South Atlantic (SA) and Central Atlantic (CA) for some data presented in this report. The dividing boundary for these two subregions is the coastal border between Georgia and South Carolina. These subregions are consistent with those presented in Dickerson et al. 2007 to allow continuity in data comparisons.

Data summarized in this report were compiled from individual project summary reports and the annual hopper dredging reports on sea turtle interactions for FY2008 submitted by the USACE SAD Districts Jacksonville, Savannah, Charleston, and Wilmington as well as the Endangered Species Observer Reports submitted by each of the contracted observer companies. Reports are electronically linked within the reference section of this document. These report, along with individual data profiles for each documented sea turtle incidental take, protocols for mitigation efforts and data collection, and links to the SARBO and USMP are archived for reference on the USACE Sea Turtle Data Warehouse website: (<http://el.erdc.usace.army.mil/seaturtles/>).

## **RESULTS**

During FY 2008, 13 hopper dredging projects (12 civil works (CW) channel/harbor maintenance and 1 regulatory (R) beach renourishment) were conducted along the South Atlantic. A total of 11 sea turtles were incidentally taken during these projects (11 during CW dredging; 0 during R dredging). Trawling to capture and relocate sea turtles was only done during 3 CW projects with a total of 17 turtles relocated. All summaries for these data are provided in the following appendices.

## REFERENCES AND RESOURCES

USACE Sea Turtle Database Warehouse, (<http://el.erdc.usace.army.mil/seaturtles/>).

Dickerson, D., C. Theriot, M. Wolters, C. Slay, T. Bargo, W. Parks. 2007. “Effectiveness of relocation trawling during hopper dredging for reducing incidental take of sea turtles,” *In: Proceedings of the World Dredging Congress XVIII, USACE ERDC Research Initiatives*. Central Dredging Association, 27 May-1 June 2007, Lake Buena Vista, Florida.

Dickerson, D. D., M. S. Wolters, C. T. Theriot, C. Slay. 2005. “Dredging impacts on sea turtles in the Southeastern USA: A historical review of protection,” *In: Proceedings of the World Dredging Conference XVII, Dredging in a Sensitive Environment*. Central Dredging Association, 27 September-1 October 2004, Hamburg, Germany.

South Atlantic Regional Biological Opinion (SARBO). 1991.

South Atlantic Regional Biological Opinion (SARBO). 1995 revision.

South Atlantic Regional Biological Opinion (SARBO). 1997 revision.

USACE South Atlantic SARBO Management Protocol.

**FY 2008 USACE District Annual Reports for Sea Turtle Monitoring during Maintenance Dredging/Beach Nourishment Projects along the South Atlantic US Coast:**  
(Archived at <http://el.erdc.usace.army.mil/seaturtles/>)

USACE Savannah District. FY 2008. Annual Sea Turtle Monitoring Report,

**FY 2008 Project Sea Turtle/Dredging Data Submitted by Endangered Species Observer Companies and USACE Districts** (Archived at <http://el.erdc.usace.army.mil/seaturtles/>)

USACE Jacksonville District (FY 2008)

Palm Beach Harbor (Coastwise Consulting, Inc.)

Indian River Shore Protection Project (Phase II) (Coastwise Consulting, Inc.)

Jacksonville Harbor (Coastwise Consulting, Inc.)

Jacksonville Harbor (Coastwise Consulting, Inc.)

Kings Bay Entrance Channel (Coastwise Consulting, Inc.)

Charleston District

Charleston Harbor Entrance Channel (Coastwise Consulting, Inc.)

Myrtle Beach Renourishment Project, Part 1 (Coastwise Consulting, Inc.)

Myrtle Beach Renourishment Project, Part 2 (Coastwise Consulting, Inc.)

Savannah District

Brunswick Harbor Entrance Channel, (Coastwise Consulting, Inc.)

Savannah Harbor Entrance Channel , (Coastwise Consulting, Inc.)

Wilmington Harbor

Morehead City Inner Harbor, (REMSA)

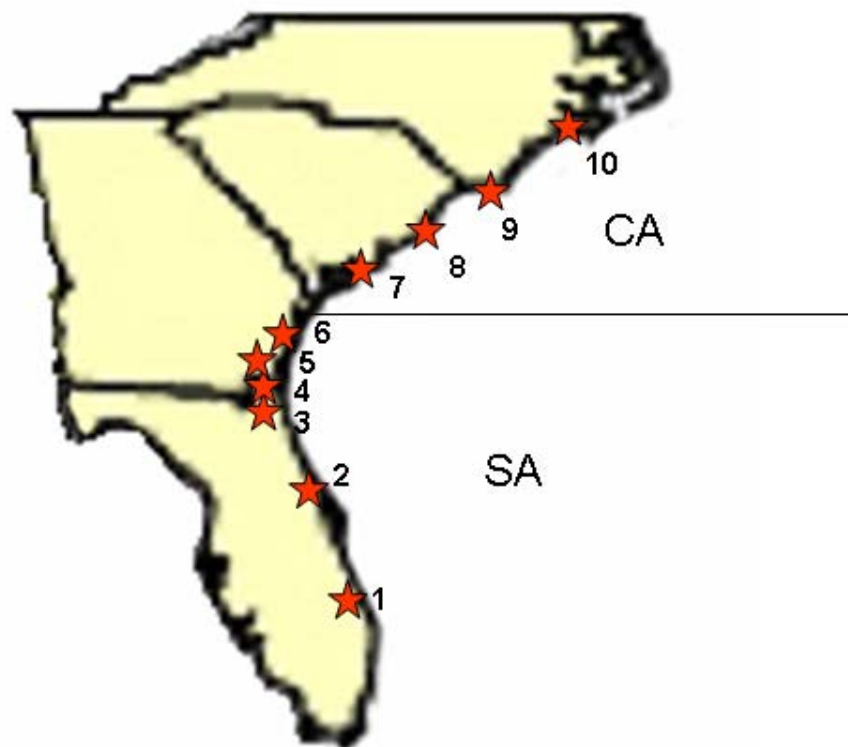
Morehead City Ocean Bar, (East Coast Observers, Inc.)

Wilmington Harbor Ocean Bar, (Coastwise Consulting, Inc.)

## APPENDICES

Appendix A.....	Map of FY08 South Atlantic Region Hopper Dredging Projects
Appendix B-1.....	Incidental Take Limits Designated by the South Atlantic Region Biological Opinion
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**APPENDIX A**  
**FY08 South Atlantic Region Hopper Dredging Projects**



**South Atlantic (SA)**

1. Palm Beach Harbor (SAJ)
2. Indian River County (SAJ)
3. Jacksonville Harbor (SAJ)
4. Kings Bay Channel (SAJ)
5. Brunswick Harbor (SAS)
6. Savannah Harbor (SAS)

**Central Atlantic (CA)**

7. Charleston Harbor (SAC)
8. Myrtle Beach (SAC)
9. Wilmington Harbor (SAW)
10. Morehead City Harbor/Inner Bar (SAW)

**Key**

**SAJ = USACE Jacksonville District**  
**SAS = USACE Savannah District**  
**SAC = USACE Charleston District**  
**SAW = USACE Wilmington District**

**APPENDIX B-1**  
**Incidental Take Limits Designated by the**  
**South Atlantic Region Biological Opinion**

<i><b>FY08 Incidental Take Limits as stated in the South Atlantic Biological Opinion (1997) for Hopper Dredges</b></i>				
<b>Loggerhead</b> <i>(Caretta caretta)</i>	<b>Green</b> <i>(Chelonia mydas)</i>	<b>Kemp's ridley</b> <i>(Lepidochelys kempii)</i>	<b>Hawksbill</b> <i>(Eretmochelys imbricata)</i>	<b>Shortnose Sturgeon</b> <i>(Acipenser brevirostrum)</i>
<b>35</b>	<b>7</b>	<b>7</b>	<b>2</b>	<b>5</b>

**APPENDIX B-2**  
**FY 2008 Documented Summary of Incidental Takes, Relocated Turtles, and**  
**Shortnose Sturgeon**

<i><b>FY08 Incidental Takes for the South Atlantic Region</b></i>				
<b>Loggerhead</b> <i>(Caretta caretta)</i>	<b>Green</b> <i>(Chelonia mydas)</i>	<b>Kemp's ridley</b> <i>(Lepidochelys kempii)</i>	<b>Hawksbill</b> <i>(Eretmochelys imbricata)</i>	<b>Shortnose Sturgeon</b> <i>(Acipenser brevirostrum)</i>
<b>6</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>

<i><b>FY08 Relocated Turtles and Sturgeon for South Atlantic Region</b></i>			
<b>Sea Turtle Relocations</b>	<b>Sea Turtle (any species) Relocation Takes (injured or killed)</b>	<b>Shortnose Sturgeon Relocations</b>	<b>Shortnose Sturgeon Relocation Takes (injured or killed)</b>
<b>17</b>	<b>0</b>	<b>0</b>	<b>0</b>

**APPENDIX C**  
**Dredging Project Summary Data**  
**(FY08 South Atlantic Region Hopper Dredging)**

District	Sub-region	Project*	Project Type	Dredge	# Drag-heads	Dredge Dates**	Total Dredge Days**	Total Y <sup>3</sup> Dredged***	Total M <sup>3</sup> Dredged***	Observer Co.
SAJ	SA	Palm Beach Harbor	M/C/OD	<i>Atchafalaya</i>	1	4/5/08-5/20/08	46	157,828	120,668	CWC
SAJ	SA	Indian River County	O/BD	<i>Dodge Island/ Padre Island</i>	2/2	12/10/07 -12/28/07/ 12/10/07 -12/28/07	19/19	180,000	137,620	CWC
SAJ	SA	Kings Bay Channel	M/C/OD	<i>R.N. Weeks</i>	2	12/27/07-2/24/08	60	540,433	413,191	CWC
SAJ	SA	Jacksonville Harbor	M/C/OD	<i>Bayport</i>	2	11/27/07-12/12/07	16	191,103	146,109	CWC
SAJ	SA	Jacksonville Harbor	M/C/OD	<i>R.N. Weeks</i>	2	3/14/08-3/23/08; 3/28/08-4/12/08	26	291,151	222,601	CWC
SAS	SA	Brunswick Harbor	M/C/OD	<i>Dodge Island/ Liberty Island</i>	2/2	3/2/08-3/5/08; / 1/19/08-2/26/08; 2/28/08-2/29/08; 3/5/08-3/6/08	4/43	128,736 1,208,286	98,428 923,801	CWC
SAS	SA	Savannah Harbor	M/C/OD	<i>Dodge Island/ Padre Island</i>	2/2	3/6/08-3/10/08 / 2/19/08-3/10/08	5/21	89,957 394,650	68,777 301,732	CWC
SAC	CA	Myrtle Beach Part 1	O/BD	<i>Dodge Island/ Padre Island</i>	2/2	11/14/07 – 12/7/07; 12/31/07 – 2/16/08; 3/7/08 – 3/23/08	87/91	857,633	655,707	CWC
SAC	CA	!Myrtle Beach Part 2	O/BD	<i>Dodge Island/ Padre Island</i>	2/2	8/28/08 - 9/30/08 / 8/14/08 - 9/30/08	34/48	875,219	669,153	CWC
SAC	CA	Charleston Harbor	M/C/OD	<i>Bayport</i>	2	12/23/07 – 1/22/08	31	519,537	397,215	CWC
SAW	CA	Morehead City Inner Harbor	M/C/OD	<i>McFarland</i>	2	3/21/08 – 4/4/08	15	133,652	102,184	REMSA
SAW	CA	Morehead City Ocean Bar	M/C/OD	<i>Bayport</i>	2	1/25/08 – 3/2/08	38	466,127	356,380	ECO
SAW	CA	Wilmington Harbor Ocean Bar	M/C/OD	<i>Liberty Island</i>	2	12/9/07 – 1/7/08; 1/15/08 – 1/16/08	32	489,191	374,013	CWC

M = Maintenance; ED = Emergency dredging; C = Channel sediment source; O = Offshore/non-channel sediment source; OD = Ocean disposal; BD = Beach disposal  
ECO = East Coast Observers, Inc.; CWC = Coastwise Consultants, Inc.; REMSA = Research, Environmental & Management Support

\*Data included only for projects that occurred in FY08

\*\* Project and dredge dates include non-dredging down time

\*\*\* Dredge quantities (provided by USACE Districts) may be estimates instead of actual amounts.

! Project carried over two FY's. Myrtle Beach Part 2 continued over into FY09.

^Y<sup>3</sup> = Total Cubic Yards; M<sup>3</sup> = Total Cubic Meters.

Gray shaded = Regulatory project



**APPENDIX D**  
**Distribution of Sea Turtle Incidental Takes by Species**  
**(FY08 South Atlantic Region Hopper Dredging)**

District	Sub-Region	Project	Dredge	Cc	Cm	Lk	Total Takes
SAJ	SA	Palm Beach Harbor	<i>Atchafalaya</i>	0	0	0	0
SAJ	SA	Indian River County	<i>Dodge Island/ Padre Island</i>	0	0	0	0
SAJ	SA	Kings Bay Channel	<i>R.N. Weeks</i>	1	2	0	3
SAJ	SA	Jacksonville Harbor	<i>Bayport</i>	1	0	0	1
SAJ	SA	Jacksonville Harbor	<i>R.N. Weeks</i>	0	0	0	0
SAS	SA	Brunswick Harbor	<i>Dodge Island/ Liberty Island</i>	3	0	2	5
SAS	SA	Savannah Harbor	<i>Dodge Island/ Padre Island</i>	0	0	0	0
SAC	SA	Myrtle Beach Part I	<i>Dodge Island/ Padre Island</i>	0	0	0	0
SAC	CA	Myrtle Beach Part II	<i>Dodge Island/ Padre Island</i>	1	0	0	1
SAC	CA	Charleston Harbor	<i>Bayport</i>	0	0	0	0
SAW	CA	Morehead City Inner Harbor	<i>McFarland</i>	0	0	0	0
SAW	CA	Morehead City Ocean Bar	<i>Bayport</i>	0	0	0	0
SAW	CA	Wilmington Harbor Ocean Bar	<i>Liberty Island</i>	0	1	0	1
<b>TOTAL</b>				<b>6</b>	<b>3</b>	<b>2</b>	<b>11</b>

Cc = Loggerhead (*Caretta caretta*); Cm = Green turtle (*Chelonia mydas*); Lk = Kemp's Ridley (*Lepidochelys kempii*)  
Gray shaded = Regulatory project

**APPENDIX E**  
**Hopper Dredge/Capture Trawler-related Incidental Take Summary**  
**(FY08 South Atlantic Region Hopper Dredging)**

District	Sub-region	Project	Species	Take Date	Dredge Load #	Time Recovered	Lat	Long	Water Temp*	SI used?	Trawling used?
SAJ	SA	Kings Bay Channel	Cm	1/2/08	19	1640	30' 42.71	81' 21.64	14.5	Yes	Yes <sup>+</sup>
			Cm	1/10/08	47	1145	30' 42.67	81' 20.85	16.0	Yes	Yes <sup>+</sup>
			Cc	2/18/08	171	2110	30' 42	81' 22	15.0	Yes	Yes
SAJ	SA	Jacksonville Harbor	Cc	12/12/07	94	1423	30' 23.78	81' 21.61	19.3	Yes	Yes <sup>++</sup>
SAC	CA	Myrtle Beach Part II	Cc	9/24/08	465	1121	33' 48.20	78' 32.42	27.2	Yes	No
SAS	SA	Brunswick Harbor	Cc	2/13/08	56	1521	31' 05.64	81' 19.44	13.3	Yes	Yes
			Cc	2/26/08	101	2226	31' 05.37	81' 18.85	16.0	Yes	Yes
			Lk	2/26/08	101	2226	31' 05.37	81' 18.85	16.0	Yes	Yes
			Cc	3/6/08	107	0005	31' 04.48	81' 17.72	16.1	Yes	Yes
			Lk	3/6/08	107	0005	31' 04.48	81' 17.72	16.1	Yes	Yes
SAW	CA	Wilmington Harbor	Cm	12/17/2007	38	2030	33' 49.56	78' 01.95	14.5	Yes	No
Cc = Loggerhead ( <i>Caretta caretta</i> ); Cm = Green turtle ( <i>Chelonia mydas</i> ); Lk = Kemp's ridley ( <i>Lepidochelys kempi</i> )											
SI used? = Silent Inspector in use during dredging project?											
* Method and location in water column for temperature data collection not identified in reports											
<sup>+</sup> Trawling was not initiated until 11 January 2008 after the 2 takes occurred.											
<sup>++</sup> Take occurred on the last of dredging (12 December 2007) after trawling had ceased (10 December 2007).											
Observer's record lat/long of turtle takes either at the beginning, middle, or end of the load. Usually the beginning of the load (Chris Slay, Coastwise Consulting).											

**APPENDIX F**  
**Capture Relocation Trawling Summary Data**  
**(FY08 South Atlantic Region Hopper Dredging)**

District	Sub-Region	Project	Trawl Vessel*	Trawl Dates	Total Trawl Days	Total Tows	Cc	Cm	Lk	Total Relocated	Avg. Tows/Day	Observer Co.
SAJ	SA	Palm Beach Harbor	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAJ	SA	Indian River County	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAJ	SA	Kings Bay Channel	<i>Winds of Fortune</i>	1/11/08-2/23/08	44	1031	1	0	2	3	23.43	CWC
<b>SAJ</b>	<b>SA</b>	<b>Jacksonville Harbor</b>	<b><i>Winds of Fortune</i></b>	<b>11/27/07-12/10/07</b>	14	353	3	0	1	4	25.21	CWC
SAJ	SA	Jacksonville Harbor	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAS	SA	Brunswick Harbor	**Reilly Morgan, Catina Renae	1/14/08 - 1/27/08; 2/28/08 - 3/6/08	13/8	279/150	1/3	0	1/5	10	20.43	CWC
SAS	SA	Savannah Harbor	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAC	CA	Myrtle Beach	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAC	CA	Charleston Harbor	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAW	CA	Morehead City Inner Harbor	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAW	CA	Morehead City Ocean Bar	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAW	CA	Wilmington Harbor Ocean Bar	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL TURTLES RELOCATED BY SPECIES							8	0	9	17		

Cc = Loggerhead (*Caretta caretta*); Cm = Green turtle (*Chelonia mydas*); Lk = Kemp's ridley (*Lepidochelys kempi*)

N/A = Not Applicable since relocation did not occur during that project

Gray shaded = Regulatory project

ECO = East Coast Observers, Inc.; CWC = Coastwise Consultants, Inc.

\*Each trawler worked 24 hours/2 crews during the project. \*\*Worked 24 hour/2 crews through 1/26/09 then only worked 12 hour days from 1/23/09-1/27/09.

**APPENDIX G**  
**Dredging Project Summary Data by Subregion and USACE District**  
**(FY08 South Atlantic Region Hopper Dredging)**

Dredging Data Summary	Subregion		
	South Atlantic	Central Atlantic	TOTAL
Total Dredge Projects	7	6	13
Total Turtle Takes	9	2	11
Total Dredge Days	259	376	635
Total Turtle Takes/Days Dredged	0.0347	0.0053	0.0173
Total Cubic Yards	3,182,144	3,341,359	6,523,530
Total Cubic Meters	2,432,924	2,554,652	4,987,576
Total Turtle Takes/1000-y <sup>3</sup>	0.00283	0.0006	0.00169
Total Turtle Takes/1000-m <sup>3</sup>	0.00370	0.0008	0.00221

Dredging Summary Data	USACE District				
	Jacksonville	Savannah	Charleston	Wilmington	Total
Total Dredge Projects	5	2	3	3	13
Total Turtle Takes	4	5	1	1	11
Total Dredge Days	186	73	291	85	635
Total Turtle Takes/Days Dredged	0.0215	0.0685	0.0034	0.0118	0.0173
Total Cubic Yards	1,360,515	1,821,629	2,252,389	1,088,970	6,523,530
Total Cubic Meters	1,040,188	1,392,735	1,722,075	4,043,708	4,987,576
Total Turtle Takes/1000-y <sup>3</sup>	0.00294	0.00274	0.00044	0.00092	0.00169
Total Turtle Takes/1000-m <sup>3</sup>	0.00385	0.00359	0.00058	0.00120	0.00221

**APPENDIX H**  
**Relocation Trawling Summary Data by Subregion and USACE District**  
**(FY08 South Atlantic Region Hopper Dredging)**

Relocation Trawling Summary Data	Subregion		
	South Atlantic	Central Atlantic	TOTAL
Total Trawl Projects	3	N/A	3
Total Turtles Relocated	17	N/A	17
Total Trawl Days	79	N/A	79
Total Tows	1,813	N/A	1,813
Total Turtles Trawled/Total Days	0.2152	N/A	0.2152
Total Turtles Trawled/Total Tows	0.0094	N/A	0.0094
Average Tows per day	22.95	N/A	22.95

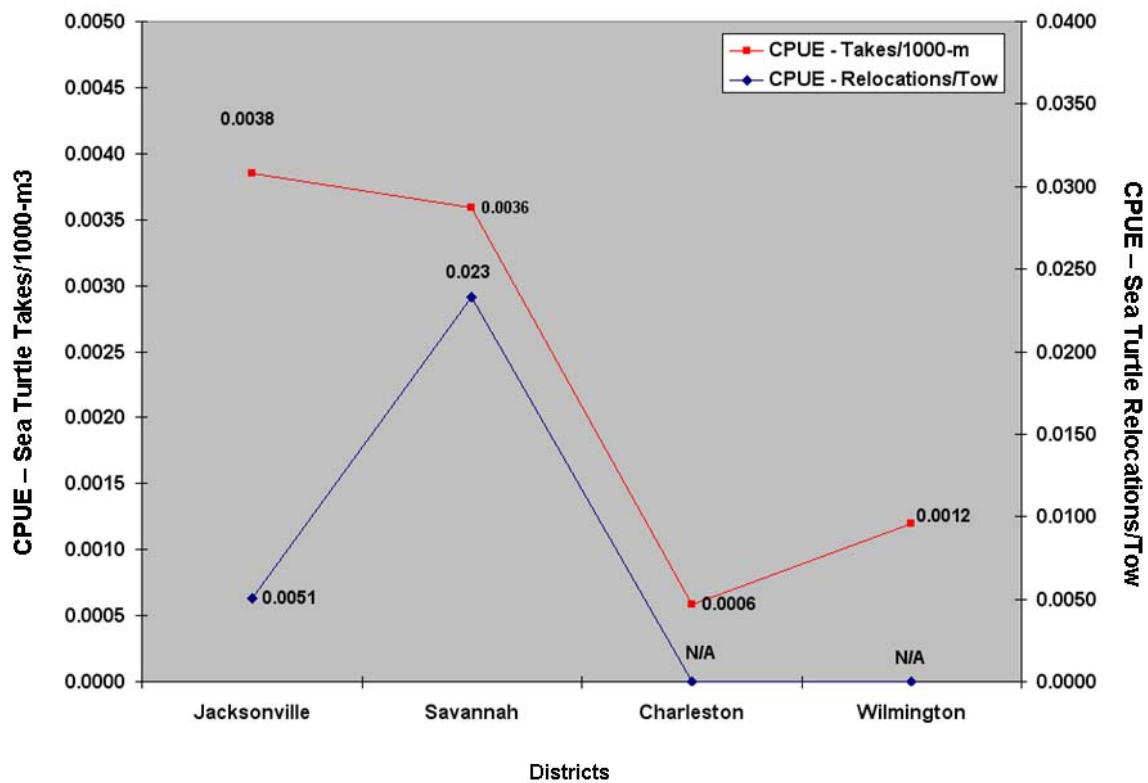
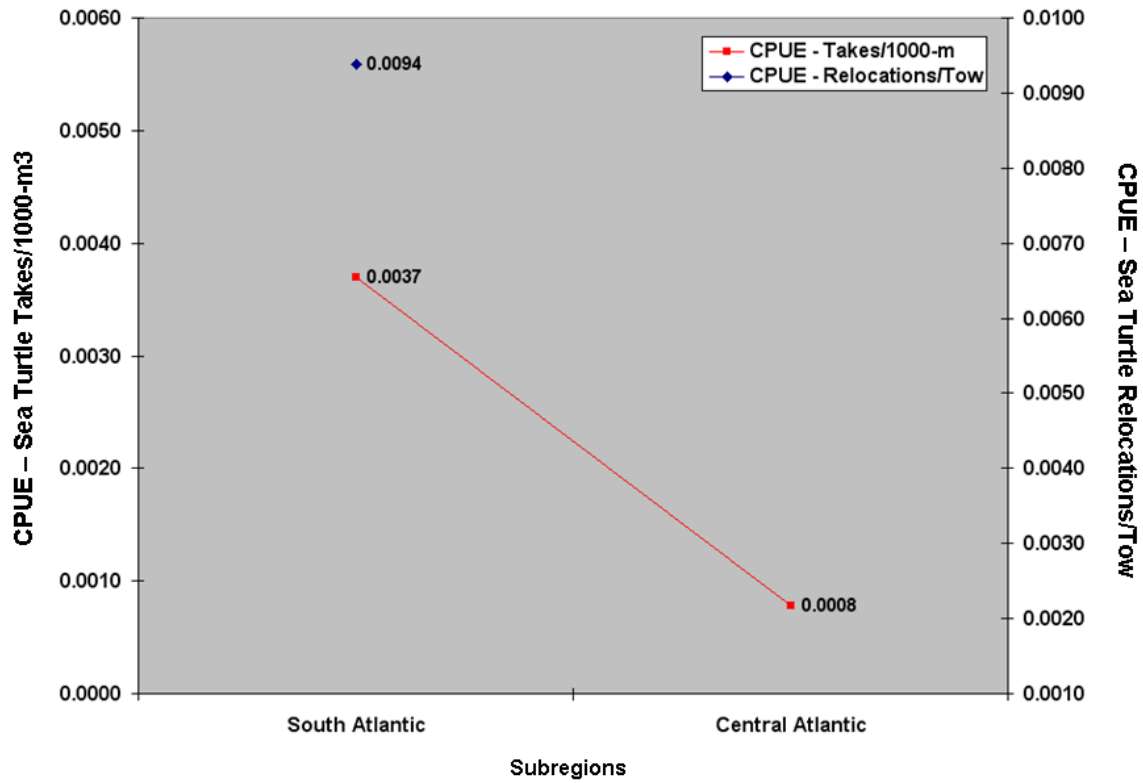
Relocation Trawling Summary Data	USACE District				
	Jacksonville	Savannah	Charleston	Wilmington	Total
Total Trawl Projects	2	1	N/A	N/A	3
Total Turtles Relocated	7	10	N/A	N/A	17
Total Trawl Days	58	21	N/A	N/A	79
Total Tows	1,384	429	N/A	N/A	1813
Total Turtles Trawled/Total Days	0.1207	0.4762	N/A	N/A	0.2152
Total Turtles Trawled/Total Tows	0.0051	0.0233	N/A	N/A	0.0094
Average Tows per day	23.86	20.43	N/A	N/A	22.95

N/A = No relocation trawling performed.

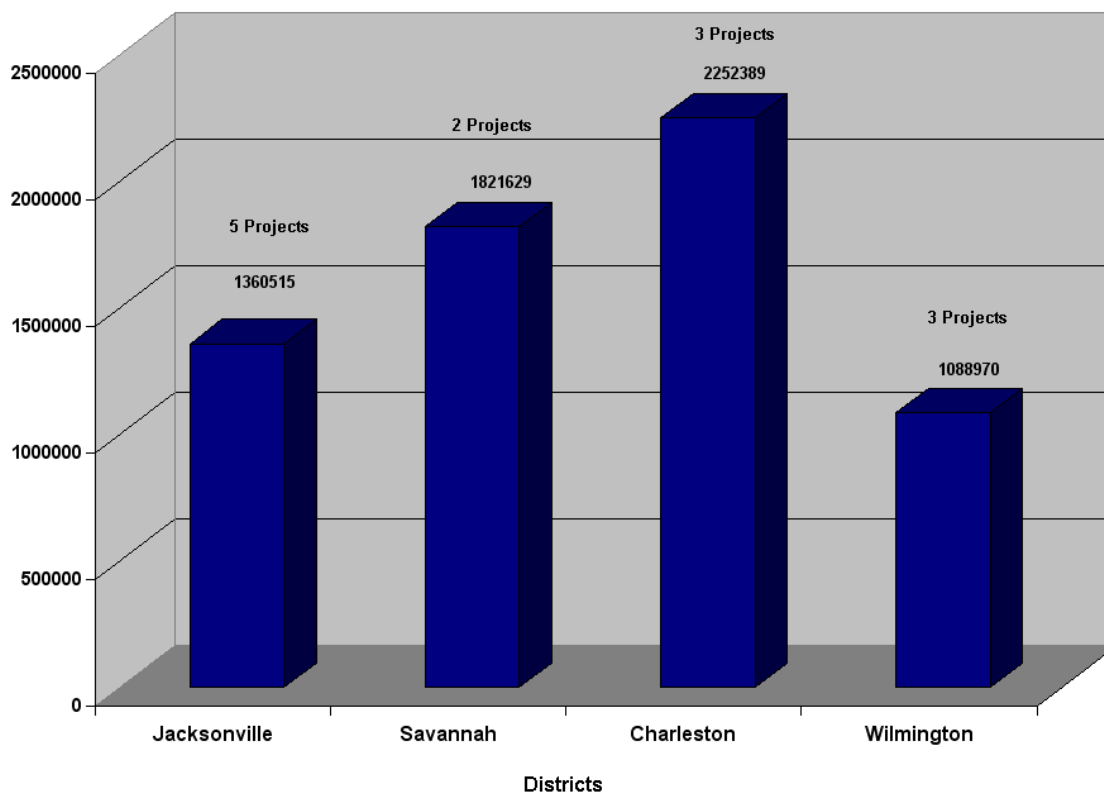
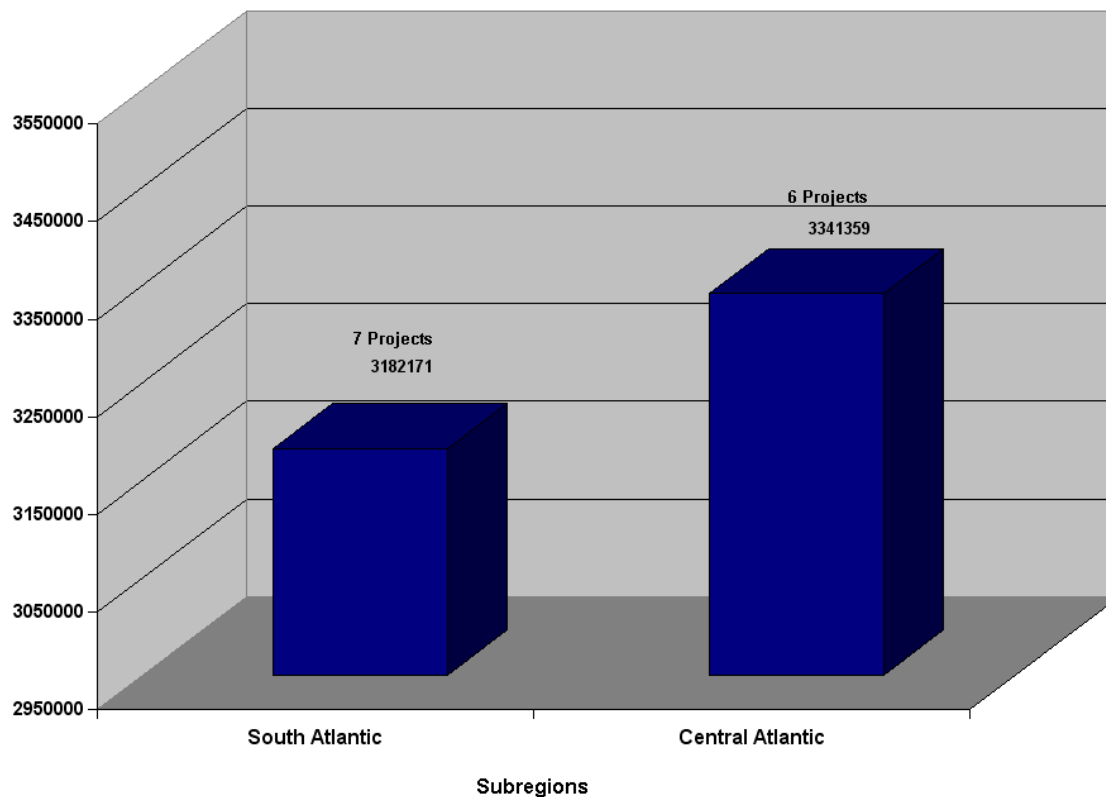
## APPENDIX I

### Catch per Unit Effort Comparisons for Sea Turtle Dredge Takes and Trawl Relocations by Subregion and USACE District

(FY08 South Atlantic Region Hopper Dredging)



# **APPENDIX J** **Distribution of Dredged Material Quantities (Cubic Yards) by Geographic Subregion and USACE Districts** (FY08 South Atlantic Region Hopper Dredging)



**APPENDIX K**  
**Distribution of Sea Turtle Takes by Month**  
**(FY08 South Atlantic Region Hopper Dredging)**

PROJECT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Palm Beach Harbor												
Indian River County												
Kings Bay Channel	2 Cm	1 Cc										
Jacksonville Harbor												1 Cc
Jacksonville Harbor												
Brunswick Harbor		2 Cc 1 Lk	1 Cc 1 Lk									
Savannah Harbor												
Myrtle Beach Part I												
Myrtle Beach Part II									1 Cc			
Charleston Harbor												
Morehead City Inner Harbor												
Morehead City Ocean Bar												
Wilmington Harbor Ocean Bar												1 Cm
<b>TOTAL LOGGERHEAD TAKES</b>	0	3	1	0	0	N/A	N/A	N/A	1	N/A	N/A	1
<b>TOTAL GREEN TURTLE TAKES</b>	2	0	0	0	0	N/A	N/A	N/A	0	N/A	N/A	1
<b>TOTAL KEMP'S RIDLEY</b>	0	1	1	0	0	N/A	N/A	N/A	0	N/A	N/A	0
<b>TOTAL TURTLE TAKES BY MONTH</b>	2	4	2	0	0	N/A	N/A	N/A	1	N/A	N/A	2
<b>TOTAL PROJECTS BY MONTH</b>	6	5	5	2	1	0	0	1	1	N/A	1	6

Cc = Loggerhead (*Caretta caretta*); Cm = Green turtle (*Chelonia mydas*); Lk = Kemp's ridley (*Lepidochelys kemp*i)  
Shaded areas = project occurrence (projects under 5 days in one month not included unless turtle take occurred)



**APPENDIX L**  
**Distribution of Project Dredge Days by Month**  
**(FY08 South Atlantic Region Hopper Dredging)**

[illegible]

**APPENDIX M**  
**Non-Sea Turtle Species Incidental Takes or Noted Occurrences**  
**(FY08 South Atlantic Region Hopper Dredging)**

Species	Project	Observations/Remarks
<b>Sturgeon</b>	Brunswick Harbor	10 Atlantic sturgeon relocated during trawling efforts
<b>Whales/Manatees</b>	Palm Beach Kings Bay Jacksonville (Dec-Feb) Charleston	4 Manatee Observed in area Right Whales observed Right Whales observed Right Whale and calf sighted
<b>Dolphin</b>	All	Seen in all locations. No incidents
<b>Shark</b>	Kings Bay Morehead (Mar – Apr) Morehead (Jan – Mar) Wilmington	2 mentions of shark, 1 sand shark, 1 dogfish 3 mentions of Smooth dogfish 3 mentions of dogfish dogfish mention on daily reports ~10 times
<b>Horseshoe Crab</b>	Palm Beach Indian River Kings Bay Jacksonville (Dec-Feb) Jacksonville (Mar-Apr) Morehead (Mar – Apr) Morehead (Jan – Mar) Wilmington	mentioned most days two reported mentioned most days (638 noted) mentioned most days (80 noted) mentioned some days (12 noted) mentioned most days (292 noted) mentioned some days (26 noted) mentioned on most days (15 noted)
No observer daily reports for Savannah, Brunswick, Myrtle Beach, or Charleston projects at point of report. Actual numbers noted are counts given by observers on daily and load reports but not necessarily a total for the project. Many notes might state the kind of animal but not a count on a given load or day.		