

**USACE Hopper Dredging Interactions with Sea Turtles
and Shortnose Sturgeon:
Fiscal Year 11 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) 2011 (1 October 2010 through 30 September 2011). 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 7 locations for the 7 USACE hopper dredging projects in the South Atlantic during FY 2011 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 FY2011 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 2011, 7 hopper dredging projects (5 civil works (CW) channel/harbor maintenance, 1 regulatory (R) beach nourishment, and 1 shore protection project) were conducted along the South Atlantic. A total of 5 sea turtles were incidentally taken during hopper dredging projects during FY2011 for the South Atlantic Region. Non capture sweep trawling was performed during 2 CW projects (1 channel/harbor maintenance and 1 beach renourishment) and both Navy projects in Mayport that used its own Biological Opinion and turtle take numbers.

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 2011 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 2011. [Annual Sea Turtle Monitoring Report](#)

FY 2011 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 \(FY 2011\)](#)

[Duval County SPP](#) (Coastwise Consulting, Inc.)

[Palm Beach Harbor O&M](#) (Coastwise Consulting, Inc.)

[Kings Bay Entrance Channel](#), (REMSA, Inc.)

Savannah District

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

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

Charleston District

NONE

Wilmington Harbor

Nags Head Beach Nourishment, (Coastwise Consulting, Inc.)

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

NOTE: (2) Mayport Harbor Channel projects/efforts were contracted by the Navy and worked off separate take limits from it's on Biological Opinion, not the SARBO with non-capture sweep trawling. 11 Loggerheads, 4 greens taken by dredge and 1 drowned in trawler net.

Project	Dredge / Trawler	Dates	Dredge/Trawler Incidental Takes	Month of takes	Load/Tow Taken	Total Loads/Tows	Notes
Mayport I	Terrapin Island	4/16/11 - 4/21/11	0	N/A	N/A	21 loads	
	Liberty Island	4/27/11 - 5/18/11	4 cc, 3 cm	May	29,39,40,45,48,49,50	62 loads Number of tows/sweeps unknown at this point	
	Catina Renee Trawler	4/7/11 - 4/25/11	0	N/A	N/A	202 tows (44 by Catina Renee and 156 by Lady Bride)	A live sub-adult loggerhead was captured and released on 4/26/11. Tows ranged from 1-6 hours.
	Lady Bride Trawler	4/26/11 - 5/20/11	1 cm	April	tow #76		
Mayport II	Liberty Island	9/1/11 - 10/6/11	7cc, 1cm	September	64,75,76,91,121,137,140,148	168 loads Number of tows/sweeps unknown at this point	Both dredge and trawler stopped on 9/16, started back on 9/20-9/21, shut down and started back 10/2
	Lady Vanessa	9/1/11 - 10/6/11	0	N/A	N/A		Started with 1-hour sweeps and then went to 3-4 hour sweeps

APPENDICES

Appendix A.....	Map of FY11 South Atlantic Region Hopper Dredging Projects
Appendix B-1.....	Incidental Take Limits Designated by the South Atlantic Region Biological Opinion
Appendix B-2.....	Documented Summary of Incidental Takes, Relocated Turtles, and Shortnose Sturgeon
Appendix C.....	Dredging Project Summary Data
Appendix D.....	Distribution of Sea Turtle Incidental Takes by Species
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Appendix F.....	Capture Relocation Trawling Summary Data
Appendix G.....	Dredging Project Summary Data by Subregion and USACE District
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APPENDIX A
FY11 South Atlantic Region Hopper Dredging Projects



South Atlantic (SA)

1. Palm Beach Harbor (SAJ)
2. Duval County SPP (SAJ)
3. Kings Bay Channel (SAJ)
4. Brunswick Harbor (SAS)
5. Savannah Harbor (SAS)

Central Atlantic (CA)

6. Wilmington Harbor Ocean Bar (SAW)
7. Nags Head Beach Nourishment (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>FY11 Incidental Take Limits as stated in the South Atlantic Biological Opinion (1997) for Hopper Dredges</i>				
Loggerhead <i>(Caretta caretta)</i>	Green <i>(Chelonia mydas)</i>	Kemp's ridley <i>(Lepidochelys kempii)</i>	Hawksbill <i>(Eretmochelys imbricata)</i>	Shortnose Sturgeon <i>(Acipenser brevirostrum)</i>
35	7	7	2	5

APPENDIX B-2
FY 2011 Documented Summary of Incidental Takes, Relocated Turtles, and
Shortnose Sturgeon

<i>FY11 Incidental Takes for the South Atlantic Region</i>				
Loggerhead <i>(Caretta caretta)</i>	Green <i>(Chelonia mydas)</i>	Kemp's ridley <i>(Lepidochelys kempii)</i>	Unknown	Shortnose Sturgeon <i>(Acipenser brevirostrum)</i>
4	0	0	1	0

<i>FY11 Relocated Turtles and Sturgeon for South Atlantic Region</i> <i>Non relocated- Non Capture Sweep Trawling Performed</i>			
Sea Turtle Relocations	Sea Turtle (any species) Relocation Takes (injured or killed)	Shortnose Sturgeon Relocations	Shortnose Sturgeon Relocation Takes (injured or killed)
0	0	0	0

APPENDIX C
Dredging Project Summary Data
(FY11 South Atlantic Region Hopper Dredging)

District	Sub-region	Project	Project Type	Dredge	# Drag-heads	Dredge Dates**	Total Dredge Days**	Total Y ³ [^] Dredged***	Total M ³ [^] Dredged****	Observer Co.
SAJ	SA	Duval County SPP	NSB/BD	<i>Dodge Island Padre Island</i>	2/2	7/8/11 - 8/16/11 7/8/11 - 8/16/11	40 40	689,015	526,790	CWC
SAJ	SA	Palm Beach Harbor O&M	C/BD	<i>Newport</i>	2	1/28/11 – 3/29/11	60	66,777	51,055	CWC
SAJ	SA	Kings Bay Entrance Channel	C/BD	<i>Terrapin Island</i>	2	2/18/11 – 3/19/11	30	854,894	653,616	REMSA
SAJ	SA	Brunswick Harbor Entrance Channel	C/NSB	<i>Padre Island</i>	2	1/15/11 – 2/24/11	41	1,474,424	1,127,278	CWC
SAS	SA	Savannah Harbor Entrance Channel	C/OD	<i>Padre Island</i>	2	2/25/11 – 3 /7/11	11	237,007	181,205	CWC
SAW	CA	Wilmington Harbor Ocean Bar	C/BD	<i>Terrapin Island</i>	2	12/6/11 – 1/1/11	26	857,726	655,779	CWC
SAW	CA	Nags Head Beach* Nourishment	NSB/DB	<i>Liberty Island Dodge Island Padre Island</i>	2/2/2	5/24/11 – 8/24/11 8/19/11 – 9/30/11 8/22/11 – 9/30/11	93 43 40	2,315,328 274,458 217,462	2,146,295	CWC

M = Maintenance; ED = Emergency dredging; C = Channel sediment source; O = Offshore/non-channel sediment source; OD = Ocean disposal; BD = Beach disposal; NSB = Near Shore Feeder Berm; CLN = Clean Up from previous project

ECO = East Coast Observers, Inc.; CWC = Coastwise Consultants, Inc.; REMSA = Research, Environmental & Management Support

*Data included only for projects that occurred in FY11. Project started work in FY11 but finished in FY112. Cubic yards are separated out by FY so yards are estimates for Dodge Island and Padre Island. Liberty Island worked all its days in FY11.

**Project and dredge dates include non-dredging down time unless actual dredge days are reported with known breaks/down time.

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

[^]Y³ = Total Cubic Yards; M³ = Total Cubic Meters.

Gray shaded = Regulatory project

APPENDIX D
Distribution of Sea Turtle Incidental Takes by Species
(FY11 South Atlantic Region Hopper Dredging)

District	Sub-Region	Project	Dredge	Cc	Cm	Lk	Unk	Total Takes
SAJ	SA	Duval County SPP	<i>Dodge Island</i> <i>Padre Island</i>	2	0	0	0	2
SAJ	SA	Palm Beach Harbor O&M	<i>Newport</i>	0	0	0	0	0
SAJ	SA	Kings Bay Entrance Channel	<i>Terrapin Island</i>	2	0	0	1	3
SAS	SA	Brunswick Harbor Entrance Channel	<i>Padre Island</i>	0	0	0	0	0
SAS	SA	Savannah Harbor Entrance Channel	<i>Padre Island</i>	0	0	0	0	0
SAC	CA	Wilmington Harbor Ocean Bar	<i>Terrapin Island</i>	0	0	0	0	0
SAW	CA	Nags Head Beach Nourishment*	<i>Liberty Island</i> <i>Dodge Island</i> <i>Padre Island</i>	0	0	0	0	0
TOTAL				4	0	0	1	5
Cc = Loggerhead (<i>Caretta caretta</i>); Cm = Green turtle (<i>Chelonia mydas</i>); Lk = Kemp's ridley (<i>Lepidochelys kempii</i>); (Unk = Unknown *Data included only for projects that occurred in FY11. Gray shaded = Regulatory project								

APPENDIX E
Hopper Dredge/Non-Capture Trawler-related Incidental Take Summary
(FY11 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	Duval County SPP	Cc	8/7/11	153	2145	30' 20.890	81'15.351	24.8	Yes	No
			Cc	8/14/11	185	1115	30' 20.8	81' 15.5	27.6	Yes	No
SAJ	SA	Kings Bay Entrance Channel	Cc	3/11/11	54	0730	30' 42.65	81' 22.38	13.3	Yes	No
			Cc	3/15/11	64	0815	30' 42.6	81' 23.0	13.3	Yes	No
			Unk	3/15/11	65	1730	30'42.6	81' 22.2	13.6	Yes	No

Cc = Loggerhead (*Caretta caretta*); Cm = Green turtle (*Chelonia mydas*); Lk = Kemp's ridley (*Lepidochelys kempi*); Unk = Unknown
 SI used? = Silent Inspector in use during dredging project?

* Method and location in water column more than likely surface temp.

+ Non-capture trawling performed in Duval County and Kings Bay after turtles were taken and not performed during.

Observer recorded lat/long of turtle takes are either the beginning, middle, or end of the load. Usually the beginning of the load (Chris Slay from Coastwise Consulting).

APPENDIX F
Capture Relocation Trawling Summary Data
(FY11 South Atlantic Region Hopper Dredging)

District	Sub-Region	Project	Trawl Vessel	Trawl Dates	Total Trawl Days	Total Tows	Cc	Cm	Lk	Dc	Total Relocated	Avg. Tows/Day	Observer Co.
SAJ	SA	Duval County SPP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAJ	SA	Palm Beach Harbor O&M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAJ	SA	Kings Bay Entrance Channel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAS	SA	Brunswick Harbor Entrance Channel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAS	SA	Savannah Harbor Entrance Channel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAC	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	N/A
SAW	CA	Nags Head Beach Nourishment*	N/A	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							N/A	N/A	N/A	N/A	N/A	N/A	
Cc = Loggerhead (<i>Caretta caretta</i>); Cm = Green turtle (<i>Chelonia mydas</i>); Lk = Kemp's ridley (<i>Lepidochelys kemp</i>)													
N/A = Not Applicable since relocation did not occur during that project													
Gray shaded = Regulatory project													
*Data included only for projects that occurred in FY11. Project started work in FY11 but finished in FY112. Cubic yards are separated out by FY so yards are estimates for Dodge Island and Padre Island. Liberty Island worked all its days in FY11.													

APPENDIX G

Dredging Project Summary Data by Subregion and USACE District (FY11 South Atlantic Region Hopper Dredging)

Dredging Data Summary	Subregion		
	South Atlantic	Central Atlantic	TOTAL
Total Dredge Projects	5	2	7
Total Turtle Takes	5	0	5
Total Dredge Days	222	202	424
Total Turtle Takes/Days Dredged	0.0225	0.0000	0.0118
Total Cubic Yards	3,322,117	3,664,974	6,987,091
Total Cubic Meters	2,539,941	2,802,074	5,342,014
Total Turtle Takes/1000-y ³	0.00151	0.0000	0.00072
Total Turtle Takes/1000-m ³	0.00197	0.0000	0.00094

Dredging Summary Data	USACE District				
	Jacksonville	Savannah	Charleston	Wilmington	Total
Total Dredge Projects	3	2	N/A	2	7
Total Turtle Takes	5	0	N/A	0	5
Total Dredge Days	170	52	N/A	202	424
Total Turtle Takes/Days Dredged	0.0294	0.0000	N/A	0.0000	0.0118
Total Cubic Yards	1,610,686	1,711,431	N/A	3,664,974	6,987,091
Total Cubic Meters	1,231,458	1,308,483	N/A	2,802,074	5,342,014
Total Turtle Takes/1000-y ³	0.00310	0.0000	N/A	0.0000	0.00072
Total Turtle Takes/1000-m ³	0.00406	0.0000	N/A	0.0000	0.00094

APPENDIX H

Relocation Trawling Summary Data by Subregion and USACE District (FY11 South Atlantic Region Hopper Dredging)

Relocation Trawling Summary Data	Subregion		
	South Atlantic	Central Atlantic	TOTAL
Total Trawl Projects	N/A	N/A	N/A
Total Turtles Relocated	N/A	N/A	N/A
Total Trawl Days	N/A	N/A	N/A
Total Tows	N/A	N/A	N/A
Total Turtles Trawled/Total Days	N/A	N/A	N/A
Total Turtles Trawled/Total Tows	N/A	N/A	N/A
Average Tows per day	N/A	N/A	N/A

N/A = No relocation trawling performed.

Relocation Trawling Summary Data	USACE District				
	Jacksonville	Savannah	Charleston	Wilmington	Total
Total Trawl Projects	N/A	N/A	N/A	N/A	N/A
Total Turtles Relocated	N/A	N/A	N/A	N/A	N/A
Total Trawl Days	N/A	N/A	N/A	N/A	N/A
Total Tows	N/A	N/A	N/A	N/A	N/A
Total Turtles Trawled/Total Days	N/A	N/A	N/A	N/A	N/A
Total Turtles Trawled/Total Tows	N/A	N/A	N/A	N/A	N/A
Average Tows per day	N/A	N/A	N/A	N/A	N/A

N/A = No relocation trawling performed.

APPENDIX I

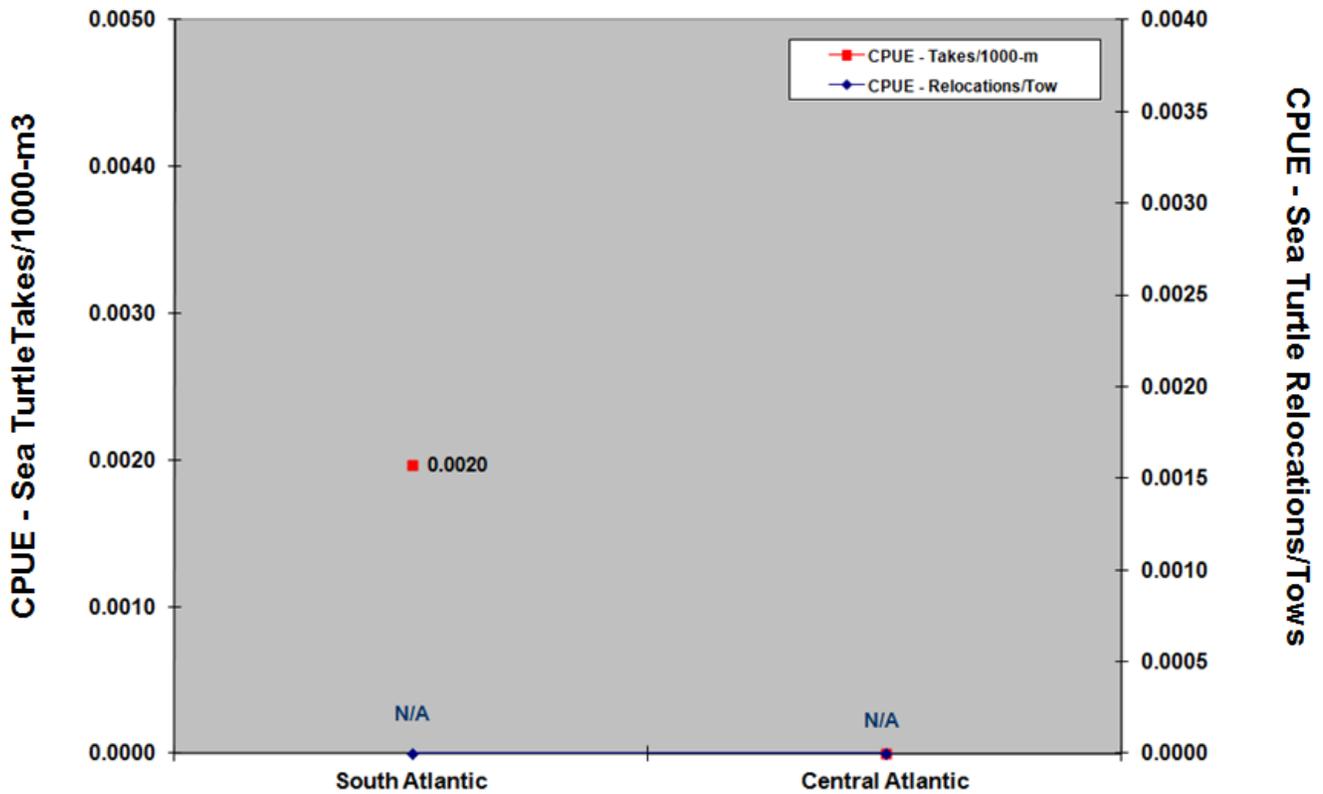
Non-Capture Sweep Trawling Summary Data by District (FY11 South Atlantic Region Hopper Dredging)

Relocation Trawling Summary Data	USACE District				
	Jacksonville	Savannah	Charleston	Wilmington	Total
Total Sweep Projects	2	N/A	N/A	1	3
Total Sweep Days	?	N/A	N/A	N/A	?
Total Tows	?	N/A	N/A	N/A	?
Total Sweeps	?	N/A	N/A	N/A	?

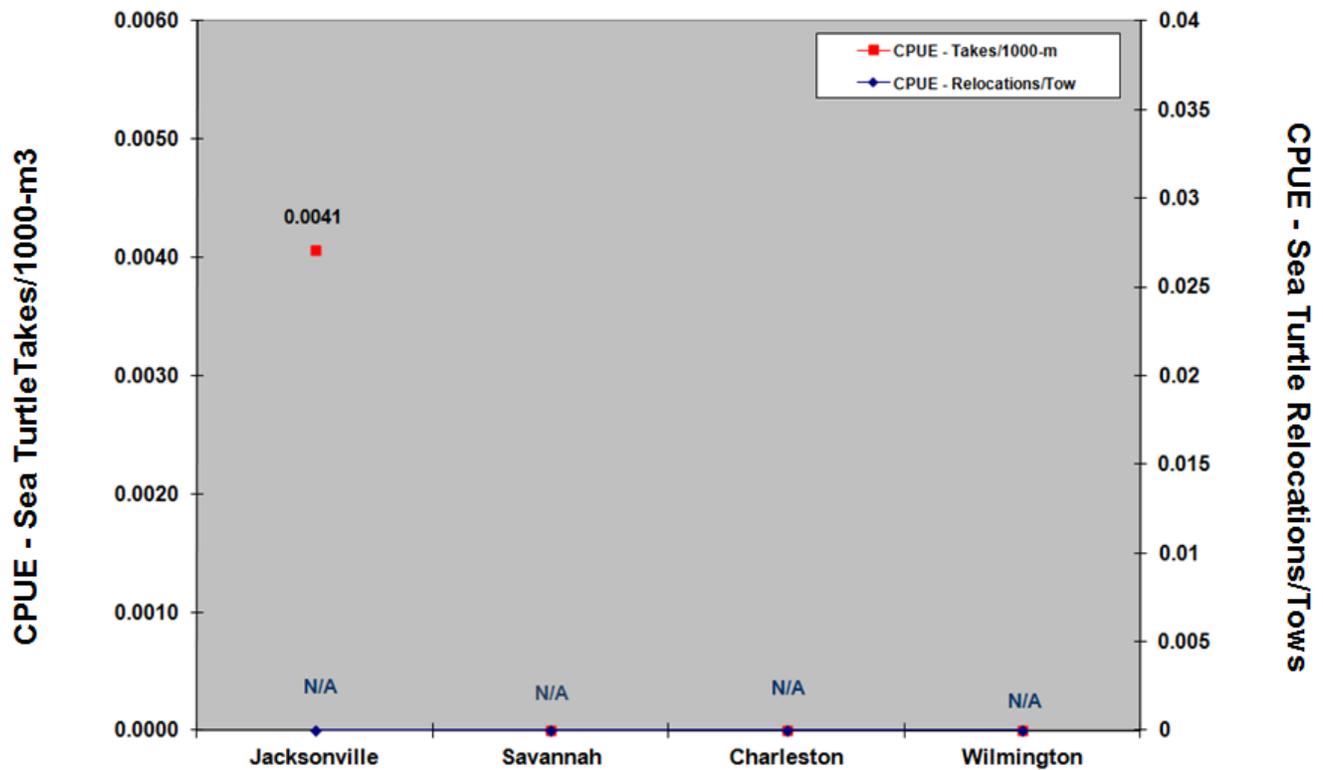
N/A = No relocation trawling performed. Duval County: Lady Vanessa 2 days (no other info), Kings Bay: Cheryl Lynn 3-4 days and 14 (1-6hr tows), Nags Head (5/22/11-10/27/11 ~132 days in FY11 & 27 days in FY 12) observers not onboard so Chris Slay had crew filled out dailies but has yet received them.

APPENDIX J

Catch per Unit Effort Comparisons for Sea Turtle Dredge Takes and Trawl Relocations by Subregion and USACE District (FY11 South Atlantic Region Hopper Dredging)



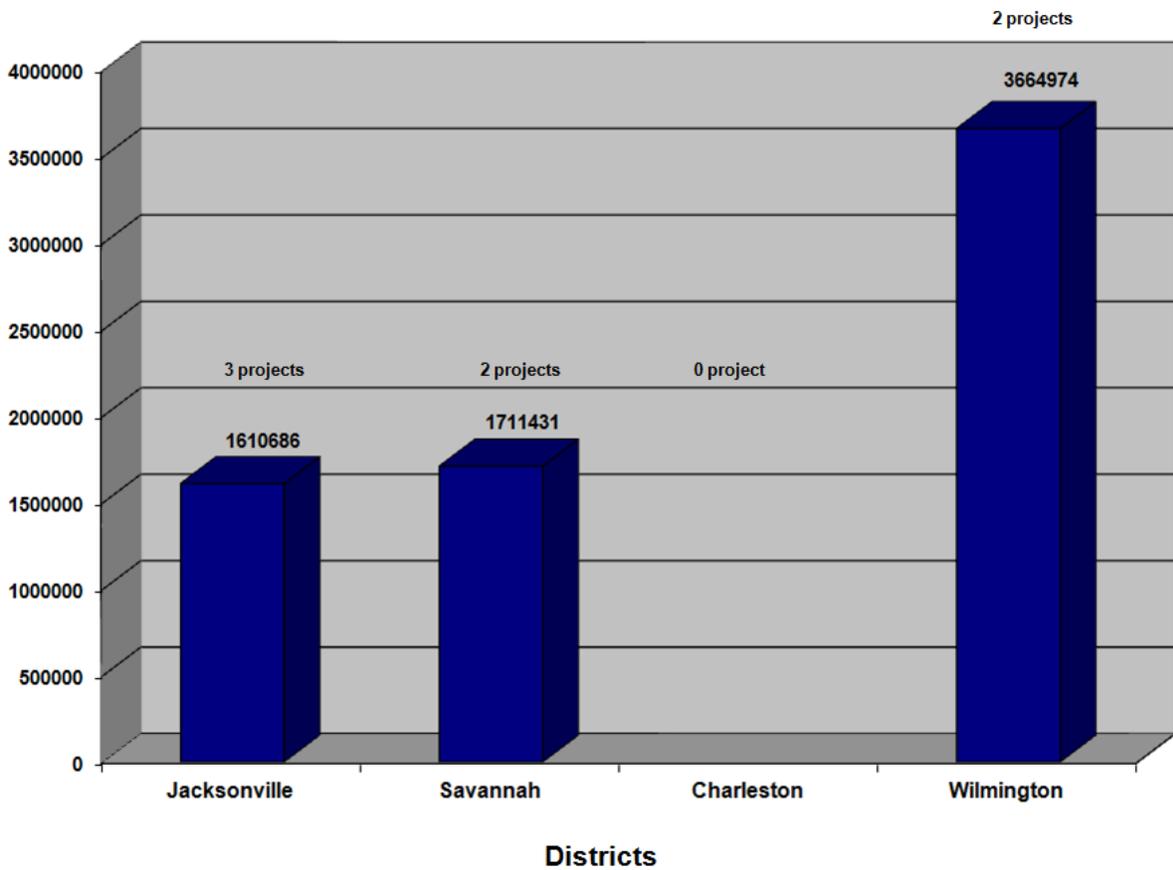
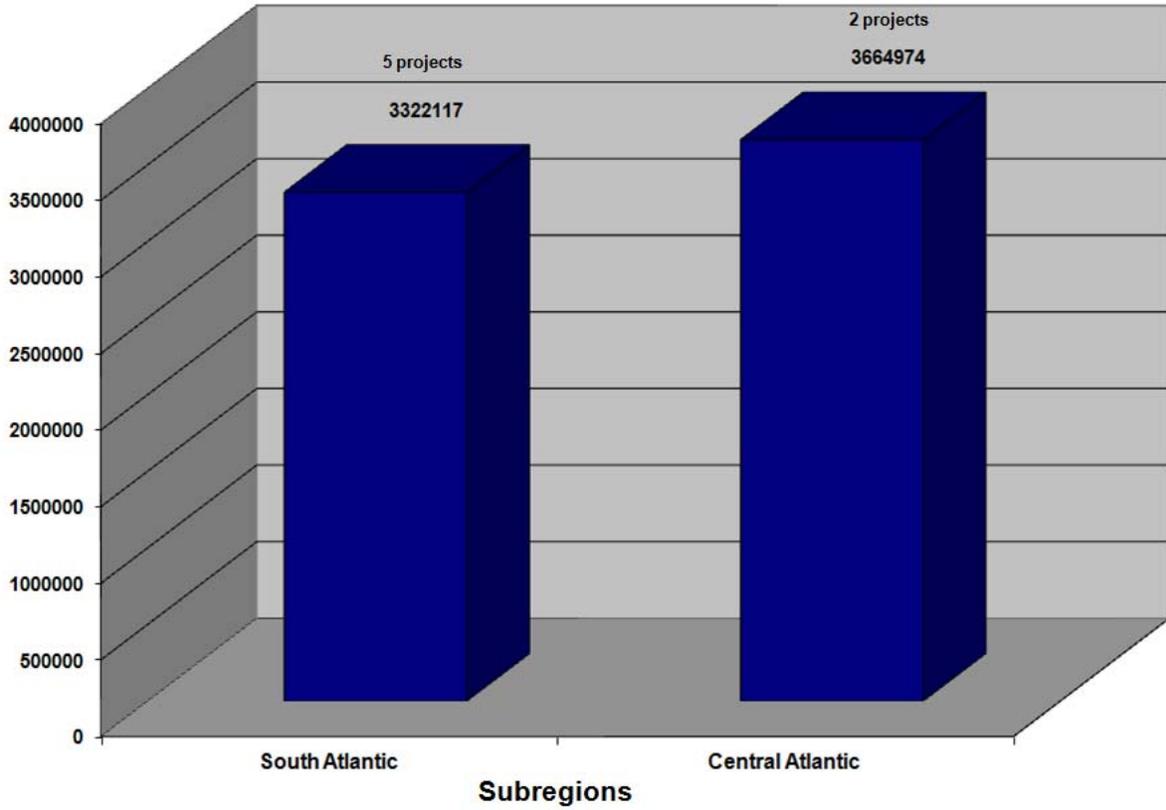
Subregions



Districts

APPENDIX K

Distribution of Dredged Material Quantities (Cubic Yards) by Geographic Subregion and USACE Districts (FY11 South Atlantic Region Hopper Dredging)



APPENDIX L
Distribution of Sea Turtle Takes by Month
(FY11 South Atlantic Region Hopper Dredging)

PROJECT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Duval County SPP								2Cc				
Palm Beach Harbor O&M												
Kings Bay Entrance Channel			2Cc 1 Unk									
Brunswick Harbor Entrance Channel												
Savannah Harbor Entrance Channel												
Wilmington Harbor Ocean Bar												
Nags Head Beach Nourishment *												
TOTAL LOGGERHEAD TAKES	0	0	2	N/A	0	0	0	2	0	N/A	N/A	0
TOTAL GREEN TURTLE TAKES	0	0	0	N/A	0	0	0	0	0	N/A	N/A	0
TOTAL KEMP'S RIDLEY TAKES	0	0	0	N/A	0	0	0	0	0	N/A	N/A	0
TOTAL UNKNOWN TAKES	0	0	1	N/A	0	0	0	0	0	N/A	N/A	0
TOTAL TURTLE TAKES BY MONTH	0	0	3	N/A	0	0	0	2	0	N/A	N/A	0
TOTAL PROJECTS BY MONTH	1	3	3	N/A	1	1	2	2	1	N/A	N/A	1

*Data included only for projects that occurred in FY11. Project started work in FY11 but finished in FY12. Cubic yards are separated out by FY so yards are estimates for Dodge Island and Padre Island. Liberty Island worked all its days in FY11.

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

Shaded Months = project occurrence (projects under 5 days in one month not included unless turtle take occurred.)

Gray shaded Project = Regulatory project

APPENDIX M
Distribution of Project Dredge Days by Month
(FY11 South Atlantic Region Hopper Dredging)

PROJECT	DREDGE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Duval County SPP	<i>Dodge Island Padre Island</i>							24/24	16/16				
Palm Beach Harbor O&M	<i>Newport</i>		28	29									
Kings Bay Entrance Channel	<i>Terrapin Island</i>		11	19									
Brunswick Harbor Entrance Channel	<i>Padre Island</i>	17	24										
Savannah Harbor Entrance Channel	<i>Padre Island</i>			7									
Wilmington Harbor Ocean Bar	<i>Terrapin Island</i>												26
Nags Head Beach Nourishment *	<i>Liberty Island Dodge Island Padre Island</i>					8/0/0	30/0/0	31/0/0	24/13/10	0/30/30			
TOTAL DAYS DREDGED BY MONTH		17	59	55	N/A	8	30	31	47	60	N/A	N/A	26
TOTAL TURTLE TAKES BY MONTH		0	0	3	N/A	0	0	0	2	0	N/A	N/A	0
TURTLES TAKES PER DREDGE DAY BY MONTH		0	0	0.0545	N/A	0	0	0	0.0425	0	N/A	N/A	0
*Data included only for projects that occurred in FY11. Project started work in FY11 but finished in FY12. Cubic yards are separated out by FY so yards are estimates for Dodge Island and Padre Island. Liberty Island worked all its days in FY11. Shaded Months = project occurrence (projects under 5 days in one month not included unless turtle take occurred.) Gray shaded Project = Regulatory project													

APPENDIX N
Non-Sea Turtle Species Incidental Takes or Noted Occurrences
(FY11 South Atlantic Region Hopper Dredging)

Species	Project	Observations/Remarks
Sturgeon	Wilmington Harbor	Atlantic Sturgeon - taken in #6 onboard the Terrapin Island in overflow skimmer, 61cm fork length.
Whales/Manatees	Brunswick Harbor	--10-12 Right Whale sightings from aerial surveys. Couple with calves.
Dolphin	Brunswick Harbor Savannah Harbor Wilmington Harbor	--40 sightings reported throughout project. --26 sightings reported throughout project. --24 sightings reported throughout project.
Shark	Brunswick Harbor Savannah Harbor	-5 mentioned, one noted sand shark. -1 mentioned as possible dogfish
Horseshoe Crab	Wilmington Harbor Brunswick Harbor Savannah Harbor	-Counted 41, mentioned as being taken in other loads just no #'s given. --1271 counted on load sheets. --1,564 counted on load sheets.

Note: Observations of these other occurrences are mentioned only if observer daily/load reports were received for project.