

# **USACE Hopper Dredging Interactions with Sea Turtles: FY07 Annual Summary Report For the Northern Gulf of Mexico Region**

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## **BACKGROUND**

This report summarizes data collected for dredging interactions with sea turtles during USACE hopper dredging operations throughout the northern Gulf of Mexico in Fiscal Year (FY) 2007 (1 October 2006 through 31 September 2007). Data were collected by contracted observer companies as part of the Endangered Species Observer Program administered by the USACE Districts Galveston, New Orleans, Mobile, and Jacksonville as specified and mandated by the Gulf of Mexico Regional Biological Opinion (GRBO) (issued by the Southeast Region National Marine Fisheries Service on 19 November 2003 and revised 24 June 2005 (Revision 1) and 9 January 2007 (Revision 2) and the USACE GRBO Management Protocol (UGMP) (issued by the USACE South Atlantic Division on 29 December 2006). 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 (GRBO). 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 fulfills the reporting requirements, as specified in both the GRBO and the UGMP, for an annual regional summary of hopper dredging-related incidental takes and trawling-related captures/relocations of sea turtles.

## **METHODS AND DATA SOURCES**

Appendix A provides a map designating the 12 locations for the 16 USACE hopper dredging projects in the northern Gulf of Mexico during FY 2007 by USACE District and geographic subregion. The USACE Districts Galveston, New Orleans, Mobile, and Jacksonville were responsible for implementing these hopper dredging projects and for complying with the environmental requirements designated by the GRBO and the UGMP (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 northern Gulf of Mexico region was divided into 4 subregions (West Gulf (WG), Northwest Gulf (NWG), Northeast Gulf (NEG), and East Gulf (EG)) for some data presented in this report. These subregions were defined using the 29° 00" latitude and Mississippi River outlet as boundaries. 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 the annual dredging reports on sea turtle interactions submitted by each of the USACE Districts (Galveston, New Orleans, Mobile, and Jacksonville (2007) and the Endangered Species Observer Reports submitted by each of the contracted observer companies (2007). These reports along with individual data profiles for each documented sea turtle incidental take, protocols for mitigation efforts and data collection, and links to the GRBO and UGMP are archived for reference on the USACE Sea Turtle Data Warehouse website: (<http://el.erdc.usace.army.mil/seaturtles/>).

## **RESULTS**

During FY 2007, 16 hopper dredging projects (13 civil works (CW) channel/harbor maintenance and 3 regulatory (R) beach renourishment) were conducted along the northern Gulf of Mexico with a total of 17 (14 CW; 3 R) dredging-related incidental takes of sea turtles, one (0 CW; 1 R) trawling-related incidental take of sea turtle, and 178 (116 CW; 62 R) trawler relocated sea turtles. 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.

### **2007 Final District Summary Reports Submitted by USACE Districts: (From <http://el.erdc.usace.army.mil/seaturtles/>)**

Galveston District. 2007. [USACE Galveston District 2007 Summary Report](#), U.S. Army Corps of Engineers.

New Orleans District. 2007. [USACE New Orleans District 2007 Summary Report](#), U.S. Army Corps of Engineers.

Mobile District. 2007. [USACE Mobile District 2007 Summary Report](#), U.S. Army Corps of Engineers.

Jacksonville District. 2007. [USACE Jacksonville District 2007 Summary Report \(Gulf of Mexico\)](#), U.S. Army Corps of Engineers.

### **2007 Final Sea Turtle Data Submitted by Observer Companies (From <http://el.erdc.usace.army.mil/seaturtles/>)**

#### Galveston

East Coast Observers, Inc. 2007. [Brazos Island Harbor](#), Galveston District, U.S. Army Corps of Engineers.

Coastwise Consulting, Inc. 2007. [Corpus Christi Ship Channel/Aransas Pass](#), Galveston District, U.S. Army Corps of Engineers.

Coastwise Consulting, Inc. 2007. [Freeport Harbor \(Entrance & Jetty Channels\)](#), Galveston District, U.S. Army Corps of Engineers.

Coastwise Consulting, Inc. 2007. [Galveston Harbor & Channel](#), Galveston District, U.S. Army Corps of Engineers.

#### New Orleans

Coastwise Consulting, Inc. 2007. [Calcasieu River Bar Channel](#), New Orleans, Army Corps of Engineers.

### Mobile

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Coastwise Consulting, Inc. 2007. Mobile Harbor (Bay Channel), Mobile District, Army Corps of Engineers.

Coastwise Consulting, Inc. 2007. Mobile Harbor (Bay Channel), Mobile District, Army Corps of Engineers.

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Coastwise Consulting, Inc. 2007. Mobile Harbor Entrance Channel, Mobile District, Army Corps of Engineers.

Coastwise Consulting, Inc. 2007. Pascagoula Harbor (Bar Channel), Mobile District, Army Corps of Engineers.

### Jacksonville

Coastwise Consulting, Inc. 2007. Siesta Key Beach Renourishment Project, Jacksonville District, Army Corps of Engineers.

Coastwise Consulting, Inc. 2007. Walton County/City of Destin Beach Nourishment Project (Phase II), Jacksonville District, Army Corps of Engineers.

East Coast Observers. 2007. Navarre Beach Renourishment Project, Jacksonville District, Army Corps of Engineers.

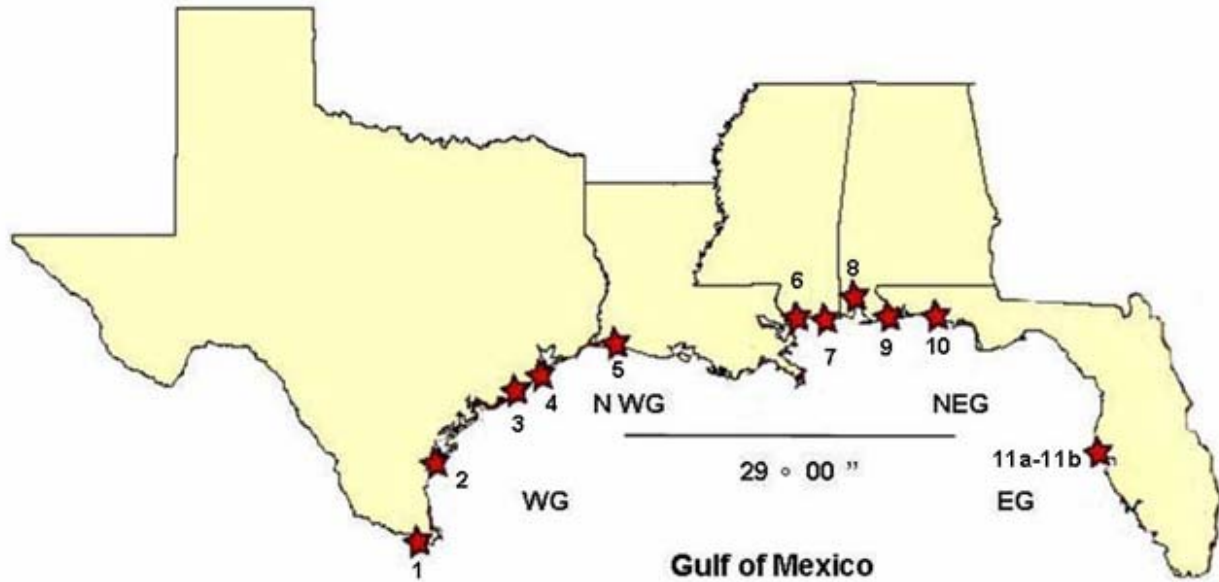
East Coast Observers. 2007. Tampa Harbor Entrance Harbor (Egmont Key), Jacksonville District, Army Corps of Engineers.

## APPENDICES

Appendix A.....	Map of FY07 Gulf of Mexico Hopper Dredging Projects
Appendix B-1.....	Incidental Take Limits Designated by the Gulf of Mexico Region Biological Opinion
Appendix B-2.....	Incidental Takes Designated by Civil Works Versus Regulatory Projects
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## APPENDIX A

### FY07 Gulf of Mexico Hopper Dredging Projects



#### **West Gulf (WG)**

1. Brazos Island Harbor (SWG)
2. Corpus Christi Ship Channel (SWG)
3. Freeport Harbor (SWG)

#### **Northwest Gulf (NWG)**

4. Galveston Channel (SWG)
5. Calcasieu Pass (MVN)

#### **Northeast Gulf (NEG)**

6. Gulfport (SAM)
7. Pascagoula (SAM)
8. Mobile Bay (SAM)
9. Navarre Beach (SAJ)
10. Walton County Beaches (SAJ)

#### **East Gulf (EG)**

11. Tampa Bay-Egmont Channel (SAJ)
12. Siesta Key (SAJ)

#### **Key**

**SWG** = USACE Galveston District  
**MVN** = USACE New Orleans District  
**SAM** = USACE Mobile District  
**SAJ** = USACE Jacksonville District

**APPENDIX B-1**  
**Incidental Take Limits Designated by the**  
**Gulf of Mexico Region Biological Opinion**

<b><i>FY07 Incidental Take Limits for Civil Works (CW) and Regulatory (R) Projects as defined by Revision 2 of the Gulf of Mexico Regional Biological Opinion (2007) for Hopper Dredges</i></b>									
<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>Gulf Sturgeon</b> <i>(Acipenser oxyrinchus desotoi)</i>	
CW	R	CW	R	CW	R	CW	R	CW	R
32	8	11	3	16	4	3	1	3	1

<b><i>FY07 Take Limits for Relocation Trawling Operations as defined by Revision 2 of the Gulf of Mexico Regional Biological Opinion (2007)</i></b>			
<b>Sea Turtle Relocations</b>	<b>Sea Turtle (any species) Relocation Takes (injured or killed)</b>	<b>Gulf Sturgeon Relocations</b>	<b>Gulf Sturgeon Relocation Takes (injured or killed)</b>
300	2	8	1

## APPENDIX B-2

### Incidental Takes Designated by Civil Works (CW) vs Regulatory (R) Projects

<b><i>FY07 Incidental Takes for Gulf of Mexico Civil Works (CW) and Regulatory (R) Hopper Dredging Projects</i></b>									
<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>Gulf Sturgeon</b> <i>(Acipenser oxyrinchus desotoi)</i>	
CW	R	CW	R	CW	R	CW	R	CW	R
7	2	7	1 (live)	0	0	0	0	0	0

<b><i>FY07 Total Relocated Turtles and Sturgeon by Gulf of Mexico Civil Works and Regulatory Projects</i></b>							
<b>Sea Turtle Relocations</b>		<b>Sea Turtle (any species) Relocation Takes (injured or killed)</b>		<b>Gulf Sturgeon Relocations</b>		<b>Gulf Sturgeon Relocation Takes (injured or killed)</b>	
CW	R	CW	R	CW	R	CW	R
116	62	0**	1 (Dc)	0	0	0	0

116 Civil Works relocated turtles = 21 Cc, 65 Cm, 29 Lk, 1 Dc

62 Regulatory relocated turtles = 47 Cc, 2 Cm, 12 Lk, 1 Dc

\*\* One green turtle trawled, appeared sick, taken to Mote Marine Lab, later died but cause of death not attributed to trawling.



**APPENDIX C**  
**Dredging Project Summary Data**  
**(FY07 Gulf of Mexico Hopper Dredging)**

District	Sub-region	Project*	Project Type	Dredge	# Drag-heads	Dredge Dates**	Total Dredge Days**	Total Y <sup>3</sup> <sup>^</sup> Dredged***	Total M <sup>3</sup> <sup>^</sup> Dredged***	Observer Co.
SWG	WG	Brazos Island Harbor	M/ED	<i>Padre Island</i>	2	2/20/07-3/15/07	24	443,000	338,698	ECO
SWG	WG	Corpus Christi Ship Channel	M	<i>Columbia</i>	1	2/24/07-5/23/07	89	954,566	729,818	CWC
SWG	WG	Freeport Harbor	M	<i>Columbia</i>	1	10/7/06-2/20/07	228	2,516,000	1,923,620	CWC
SWG	NWG	Galveston Channel	M	<i>Glenn Edwards</i>	2	9/12/07-9/30/07	19	670,000	512,252	CWC
MVN	NWG	Calcasieu River Bar Channel	M	<i>Newport</i>	2	2/24/07-4/24/07	60	5,382,806	4,115,450	CWC
SAM	NEG	Gulfport Harbor – Bar Channel	M	<i>Newport</i>	2	6/1/07-6/8/07	8	200,828	153,544	CWC
SAM	NEG	Mobile Harbor – Bar Channel	M/SI	<i>Bayport/ Newport</i>	2/2	8/5/07-8/30/07 8/11/07-8/30/07	26 10	215,954 796,004	165,109 608,589	CWC
SAM	NEG	Mobile Harbor – Bay & River Channels	M	<i>Glenn Edwards</i>	2	3/7/07-5/26/07	81	986,844	754,496	CWC
SAM	NEG	Mobile Harbor – Bay Channel	M	<i>Glenn Edwards</i>	2	5/26/07-7/17/07	53	1,366,164	1,044,507	CWC
SAM	NEG	Mobile Harbor – Bay Channel	M	<i>Glenn Edwards</i>	2	7/20/07-8/10/07	22	546,213	417,610	CWC
SAM	NEG	Mobile Harbor – Bay Channels	M	<i>Glenn Edwards</i>	2	10/3/06-11/11/06	40	475,472	363,524	CWC
SAM	NEG	Pascagoula Harbor – Bar Channel	M/ED	<i>Glenn Edwards/ Newport</i>	2/2	4/27/07-5/1/07 4/27/07-5/1/07	5 5	231,573	177,050	CWC
SAJ	NEG	Walton County Beach	BN/R	<i>Dodge Island/ Liberty Island</i>	2/2	12/2/07-1/19/07 5/4/07-6/24/07	50 53	1,378,948	1,054,281	CWC
SAJ	NEG	Navarre Beach	BN/R	<i>RN Weeks</i>	2	9/29/06-11/12/06	45	683,505	522,577	ECO
SAJ	EG	Tampa Harbor Entrance Channel	M/BN	<i>Eagle I</i>	2	10/1/06-11/25/06	55	681,505	521,048	ECO
SAJ	EG	Siesta Key	BN/R	<i>Bayport</i>	2	12/18/06-3/4/07	77	924,896	707,134	CWC

BN = Beach nourishment; M = Maintenance; ED = Emergency dredging; SI = Sand Island beneficial use disposal area; R=Regulatory project (shaded)

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

\* Data included only for projects that began in FY07

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

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

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

**APPENDIX D**  
**Distribution of Sea Turtle Incidental Takes by Species**  
**(FY07 Gulf of Mexico Hopper Dredging)**

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**APPENDIX E**  
**Hopper Dredge/Trawler-related Incidental Take Summary**  
**(FY07 Gulf of Mexico Dredging)**

District	Sub-region	Project	Species	Take Date	Dredge Load #	Time Recovered	Lat	Long	Water Temp**	SI used?	Trawling used?
SWG	WG	Brazos Island Harbor	Cm	2/22/2007	21	2130	N/A	N/A	17.8	Yes	Yes
			Cm	3/1/2007	74	600	N/A	N/A	20.0	Yes	Yes
			Cm	3/6/2007	102	1415	N/A	N/A	17.2	Yes	Yes
			Cm	3/12/2007	154	1305	N/A	N/A	20.0	Yes	Yes
			Cc	3/14/2007	167	2300	N/A	N/A	20.6	Yes	Yes
			Cm	3/15/2007	169	830	N/A	N/A	20.6	Yes	Yes
SWG	WG	Corpus Christi Ship Channel	Cc	4/15/2007	362	1444	27' 49.230	97' 00.765	21.1	Yes	Yes
			Cc	4/17/2007	382	1238	27' 49.230	97' 00.765	21.1	Yes	Yes
			Cm	5/13/2007	571	1116	27' 49.570	97'01.430	26.0	Yes	Yes
			Cm	5/18/2007	621	0045	27' 49.650	97' 01.500	26.5	Yes	Yes
SWG	WG	Freeport Harbor	Cc	11/14/2006	384	1315	28' 55.54	97' 17.12	20.0	Yes	No
SAM	NEG	Pascagoula Harbor	Cc	4/29/2007	19	1041	N/A	N/A	21.7	N/A	No
SAJ	WG	Walton Co. Beach* (Regulatory)	Cc	1/10/2007	180	2347	30' 22.4	86' 30.5	15.5	Yes	Yes
			Cc	5/13/2007	344	0740	30' 22.6	86' 31.6	22.5	Yes	Yes
SAJ	EG	Tampa Harbor	Cc	10/15/2006	299	0915	N/A	N/A	21.1	Yes	Yes
			Cc	10/31/2006	364	0524	N/A	N/A	21.1	Yes	Yes
SAJ	EG	Siesta Key (Regulatory)	Cm****^	2/23/2007	266	0858	27' 12.4	82' 37.1	15.6	Yes	Yes

Cc = Loggerhead (*Caretta caretta*); Cm = Green turtle (*Chelonia mydas*); N/A = Data not available; SI used? = Silent Inspector in use during dredging project?  
 \* One leatherback (*Dermochelys coriacea*) taken by the trawler *REVA ROSE* due to net entanglement not included  
 \*\* Method and location in water column for temperature data collection not identified in reports  
 \*\*\* Juvenile green turtle was recovered alive on the Dredge *Bayport* and sent Mote Marine Lab for observation. “Lucky” was released successfully 3/29/07  
 ^ Not included as a trawler take was one (1) green turtle, appeared sick when captured, taken to Mote Marine Lab, later died.

## APPENDIX F

### Relocation Trawling Summary Data (FY07 Gulf of Mexico Hopper Dredging)

[illegible]

**APPENDIX G**  
**Dredging Project Summary Data by Subregion and USACE District**  
**(FY07 Gulf of Mexico Hopper Dredging)**

Dredging Data Summary	Subregion				
	West Gulf	Northwest Gulf	Northeast Gulf	East Gulf	TOTAL
Total Dredge Projects	3	2	9	2	16
Total Turtle Takes	11	0	3	3	17
Total Dredge Days	341	79	398	132	950
Total Turtle Takes/Days Dredged	0.0323	0	0.0075	0.0227	0.0179
Total Cubic Yards	3,913,566	6,052,806	6,881,545	1,773,742	18,621,659
Total Cubic Meters	2,992,136	4,627,702	5,261,288	1,228,182	14,109,308
Total Turtle Takes/1000-y <sup>3</sup>	0.00281	0	0.00044	0.00169	0.00091
Total Turtle Takes/1000-m <sup>3</sup>	0.00368	0	0.00057	0.00244	0.00120

Dredging Summary Data	USACE District				
	Galveston	New Orleans	Mobile	Jacksonville	Total
Total Dredge Projects	4	1	7	4	16
Total Turtle Takes	11	0	1	5	17
Total Dredge Days	360	60	250	280	950
Total Turtle Takes/Days Dredged	0.0306	0	0.0040	0.0179	0.0179
Total Cubic Yards	4,583,566	5,382,806	4,819,092	3,836,195	18,621,659
Total Cubic Meters	3,504,388	4,115,450	3,684,430	2,805,040	14,109,308
Total Turtle Takes/1000-y <sup>3</sup>	0.00240	0	0.00021	0.00130	0.00091
Total Turtle Takes/1000-m <sup>3</sup>	0.00314	0	0.00027	0.00178	0.00120

**APPENDIX H**  
**Relocation Trawling Summary Data by Subregion and USACE District**  
**(FY07 Gulf of Mexico Hopper Dredging)**

Relocation Trawling Summary Data	Subregion				
	West Gulf	Northwest Gulf	Northeast Gulf	East Gulf	TOTAL
Total Trawl Projects	2	0	3	2	7
Total Turtles Relocated	102	N/A	45	31	178
Total Trawl Days	98	N/A	259	383	489
Total Tows	2511	N/A	1904	3318	7733
Total Turtles Trawled/Total Days	1.0408	N/A	0.1737	0.2348	0.3640
Total Turtles Trawled/Total Tows	0.0406	N/A	0.0236	0.0093	0.0230
Average Tows per day	25.62	N/A	7.35	25.14	15.81

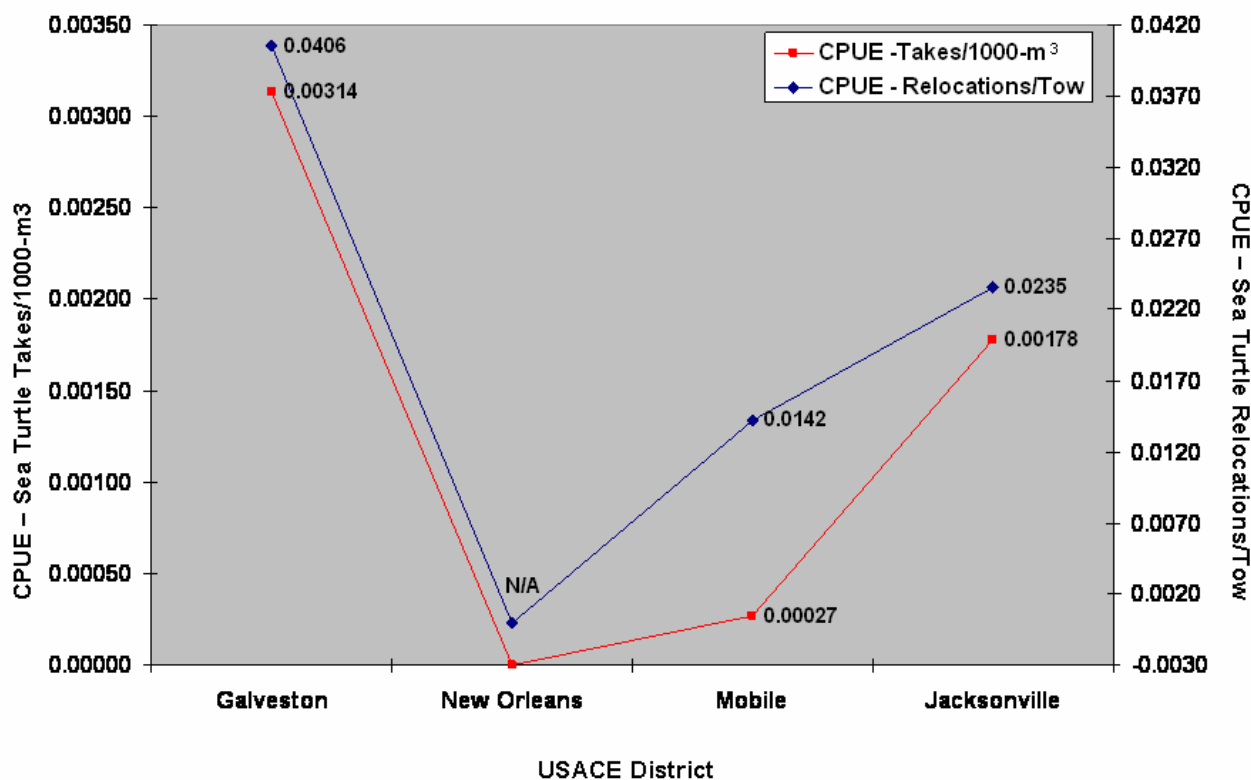
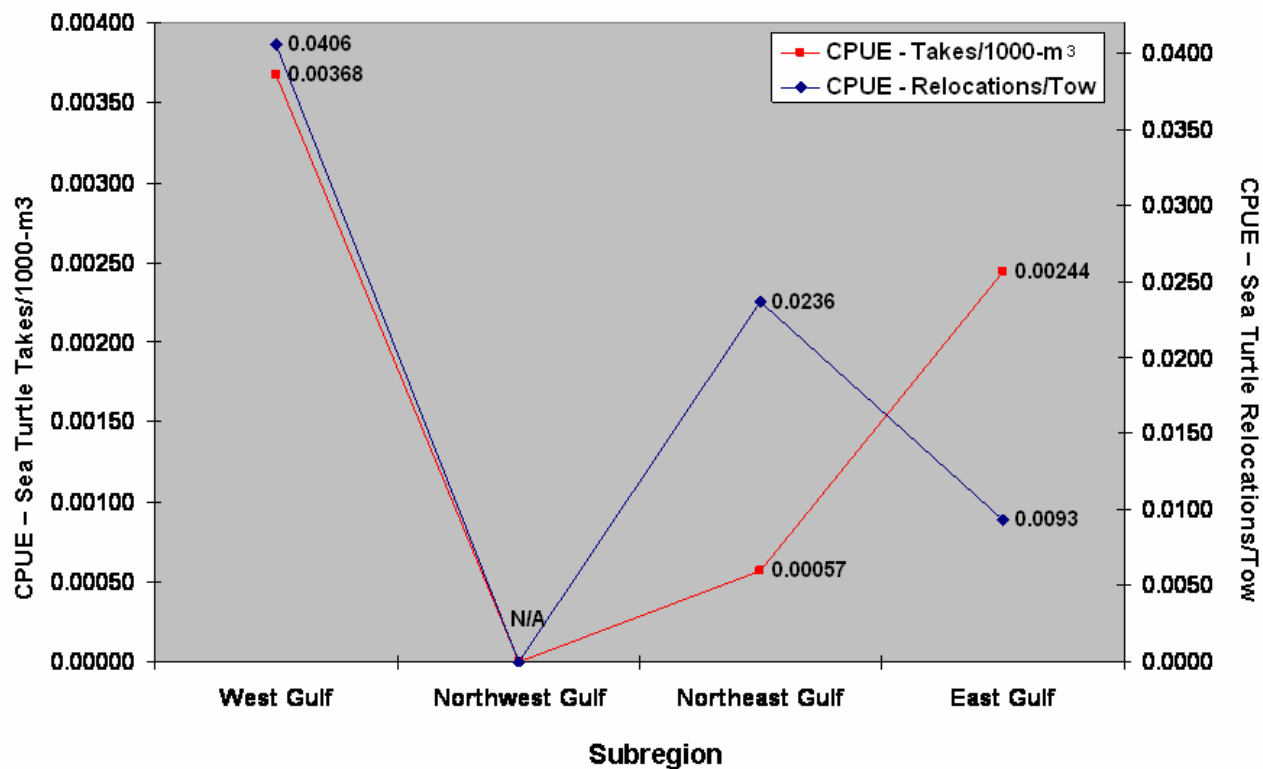
Relocation Trawling Summary Data	USACE District				
	Galveston	New Orleans	Mobile*	Jacksonville	Total
Total Trawl Projects	2	0	1	4	7
Total Turtles Relocated	102	N/A	3	73	178
Total Trawl Days	98	N/A	8	383	489
Total Tows	2511	N/A	211	5011	7733
Total Turtles Trawled/Total Days	1.0408	N/A	0.3750	0.3081	0.4560
Total Turtles Trawled/Total Tows	0.0406	N/A	0.0141	0.0235	0.0288
Average Tows per day	25.62	N/A	26.38	13.08	15.81

N/A = No relocation trawling performed

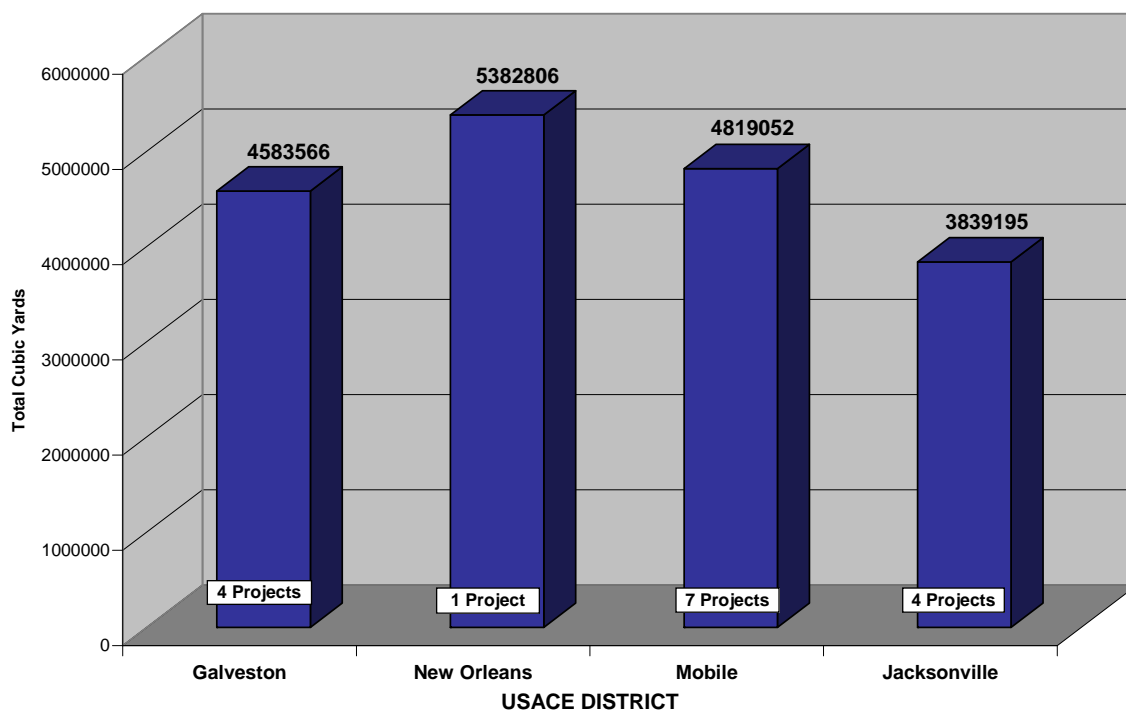
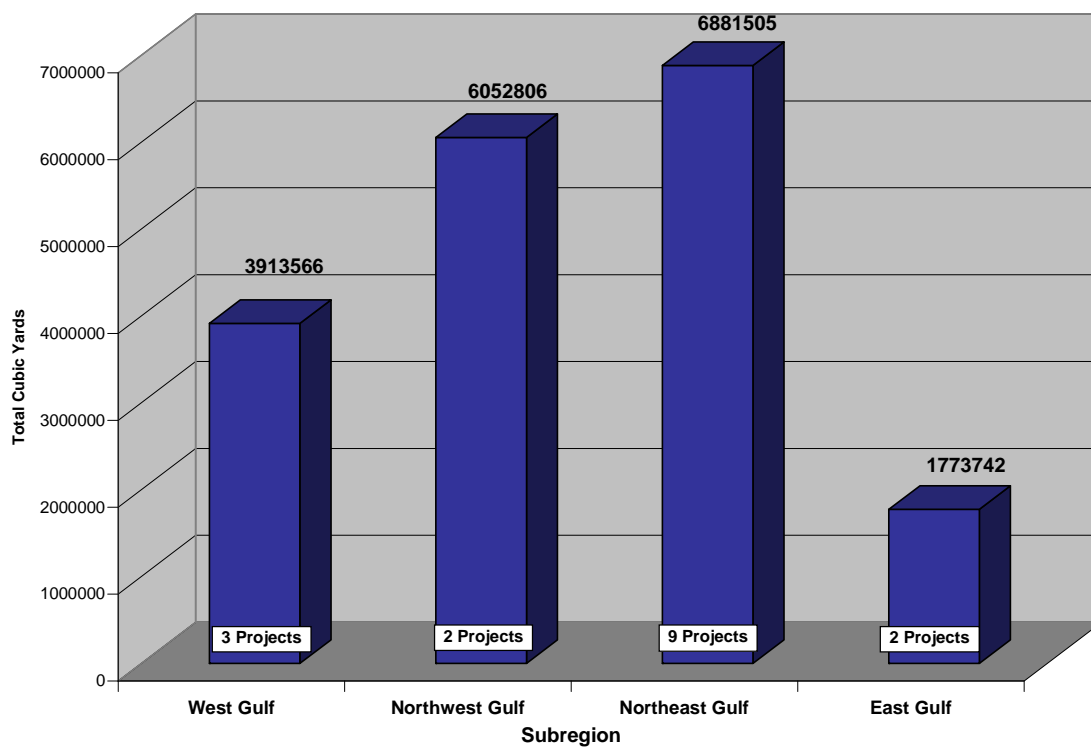
\* One Kemp's ridley was captured and relocated, but since this was not a hopper project it is not included in these data.

## APPENDIX I

### Catch per Unit Effort Comparisons for Sea Turtle Dredge Takes and Trawl Relocations by Subregion and USACE District (FY07 Gulf of Mexico Hopper Dredging)



**APPENDIX J**  
**Distribution of Dredged Material Quantities (Cubic Yards) by Geographic Subregion and**  
**USACE Districts**  
**(FY07 Gulf of Mexico Hopper Dredging)**





**APPENDIX K**  
**Distribution of Sea Turtle Takes by Month**  
**(FY07 Gulf of Mexico Hopper Dredging)**

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**APPENDIX L**  
**Distribution of Project Dredge Days by Month**  
**(FY07 Gulf of Mexico Hopper Dredging)**

[illegible]

**APPENDIX M**  
**Non-Sea Turtle Species Incidental Takes or Noted Occurrences**  
**(FY07 Gulf of Mexico Hopper Dredging)**

Species	Project	Observations/Remarks
Sturgeon	N/A	N/A
Whales/Manatees	N/A	N/A
Dolphin	<u>Corpus Christi Ship Channel</u>	A bottlenose dolphin was found entangled in the lazy line and presumed to have drowned on 4 April 2007 in tow #314 of 1723 total (trawling efforts 3/19/07-5/23/07 conducted by Coastwise Consulting). Animal was transferred to the Regional Coordinator of the Texas Marine Mammal Stranding Network.
Shark	<u>Corpus Christi Ship Channel</u>	9' – 13' tiger shark spotted at Jetty Entrance
Bycatch	N/A	N/A
N/A = No known significant occurrences		