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SUMMARY OF SEA TURTLE STRANDINGS, INCIDENTAL CAPTURES AND RELATED SURVEY EFFORT IN MISSISSIPPI DURING 2017

BY

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October 2018

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Cover photograph: Kemp's ridley sea turtle in Ocean Springs, Mississippi.
Photo Credit: NOAA/SEFSC under DOI USFWS TE 676395-5.

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Introduction

Five species of sea turtles can be found throughout the Gulf of Mexico (GOM): Kemp's ridley (*Lepidochelys kempii*), loggerhead (*Caretta caretta*), green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*) and hawksbill (*Eretmochelys imbricata*). All species are protected under the Endangered Species Act of 1973 (ESA). Loggerhead and green turtles inhabiting GOM waters are currently listed as threatened while Kemp's ridley, leatherback and hawksbill turtles are considered endangered throughout their entire range. As the number of sea turtles in the GOM rises following positive nesting trends, the probability of human encounters and interactions increases. Some of the more prevalent potential threats to turtles in their marine environment are incidental capture by recreational hook-and-line gear and commercial fishing gear as well as vessel strikes.

Kemp's ridley, loggerhead and green sea turtles are the primary species found along the Mississippi coast. Sea turtles that are killed or injured in the marine environment often wash ashore on nearby beaches or remain floating in open waters for a period of time. These turtles, dead or alive, are referred to as strandings. Peak stranding months in Mississippi are March to June, with 79% of strandings occurring during these months. Incidental captures typically peak shortly thereafter, with the majority (78%) occurring May to August (Figure 1). Juvenile Kemp's ridley turtles comprise the largest proportion of all sea turtle strandings and incidental captures along the Mississippi coast with lesser numbers of loggerhead and green sea turtles. Mississippi documents the occasional leatherback stranding and has had no reports of hawksbill strandings. The Sea Turtle Stranding and Salvage Network (STSSN) monitors and investigates all strandings and incidental captures that are reported by the public and member participants.

Mississippi has a relatively small coastline of 44 miles (71 km) of inshore sandy beaches and ~60 miles (97 km) of offshore barrier islands. The inshore habitat has an extensive tidal shoreline comprised of marshy tidal inlets and bays (~255 miles). Mississippi also has over 67 active fishing piers and 39 marinas (https://gis.dmr.ms.gov/PublicAccess/). Many of these areas have documented sea turtle strandings and incidental captures. Historically, Mississippi recorded a total of 251 strandings (annual average = 23) and 10 incidental captures from 1998 through 2009. This was followed by a dramatic increase of 315 strandings reported in 2010. The cause of increased strandings was attributed to multiple probable factors, including irregular fishing activities related to the Deepwater Horizon oil spill in April 2010; increased vessel traffic associated with the spill response; increased discovery of stranded turtles resulting from shoreline surveys and oil cleanup effort on barrier islands and mainland beaches following the spill; increased reporting awareness by the public; and greater numbers of sea turtles in the region relative to previous decades (Stacy and Schroeder 2015). During 2010, very few strandings in Mississippi were attributable to actual oiling (Stacy 2012; Stacy and Schroeder 2015).

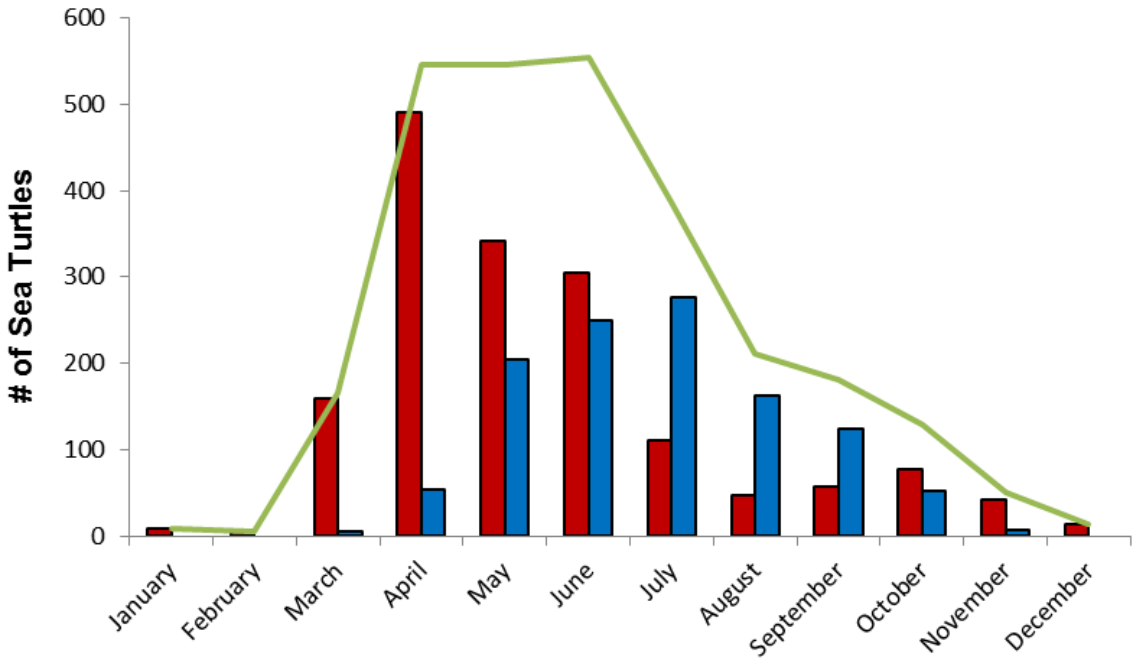

Figure 1. Summary of sea turtle strandings and incidental captures in Mississippi by month from 1998-2017. Depicted are the number of strandings (red), incidental captures (blue) and total annual interactions (green).

All sea turtle carcasses stranded during 2010-2014 in the northern GOM were salvaged and necropsied by Dr. Brian Stacy (DVM, Ph.D., DACVP; NOAA Fisheries, Office of Protected Resources). Necropsy results indicated several causes of strandings, including vessel strikes; however, a substantial proportion of cases were consistent with forced submergence. Incidental capture in fishing gear was the primary suspected cause (Stacy, 2012 and Stacy, 2015). Due to suspected fisheries interactions, in 2013, the Mississippi Department of Marine Resources began to conduct routine flights to document fishing effort, vessel activities, harmful algal blooms and protected species strandings.

Sea turtle incidental captures also increased in 2010 with 38 documented captures. The majority of incidental captures were by recreational anglers on fishing piers. While stranding numbers have trended downward since 2010, incidental captures rose exponentially to a peak of 304 in 2014. These numbers have since fallen to below 25 in both 2016 and 2017 (Figure 2). The majority of sea turtles captured on Mississippi fishing piers are Kemp's ridleys (mean straight carapace length (SCL) = 30.7 cm), likely 2 – 6 years old (Avens, et al., 2017).

This report summarizes sea turtle strandings and incidental captures during 2017 along the Mississippi coast. Cooperating agencies for stranding response in Mississippi include the

National Oceanic and Atmospheric Administration (NOAA) Mississippi Labs, Institute for Marine Mammal Studies (IMMS), Gulf Islands National Seashore - National Park Service (NPS), Mississippi Department of Marine Resources (MDMR), Grand Bay National Estuarine Research Reserve, Pascagoula River Audubon Center and U.S. Fish and Wildlife Service (FWS).

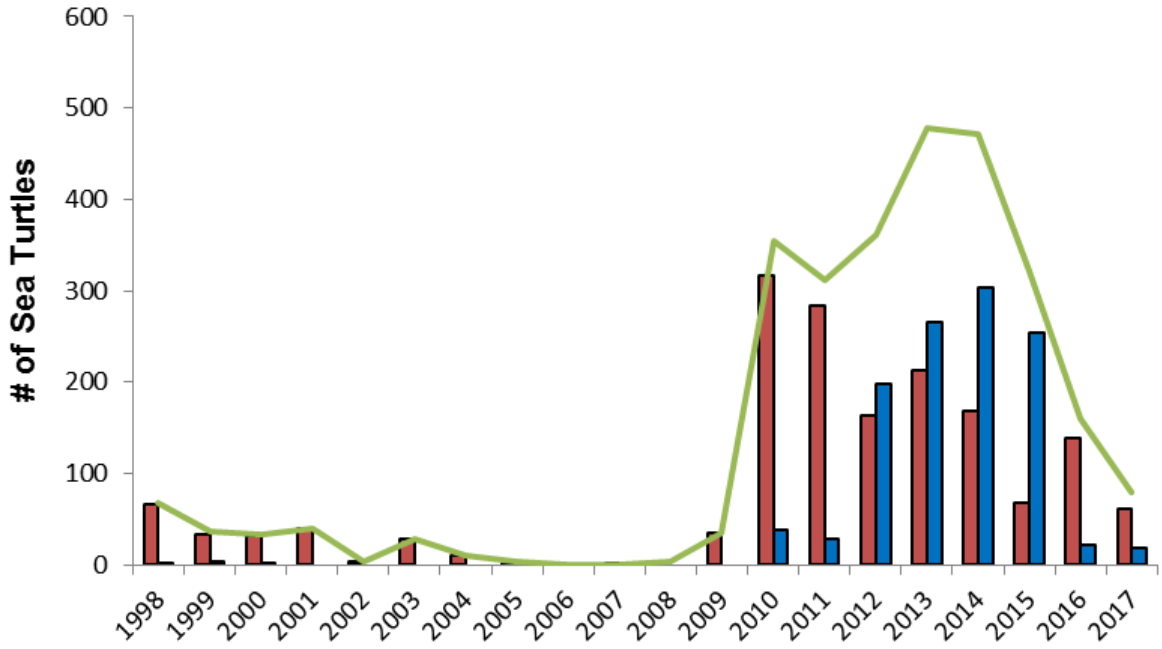

Figure 2. Summary of sea turtle strandings and incidental captures in Mississippi from 1998 – 2017. Depicted are the number of strandings (red), incidental captures (blue) and total annual interactions (green).

Methods

Most strandings and incidental captures in Mississippi are reported by the public to sea turtle stranding hotlines monitored by NOAA and IMMS. Personnel trained in nationwide STSSN protocols respond to all reports for documentation and data collection. Data collected on all sea turtles includes location, species, condition of animal, photographs, carapace measurements, weight, final disposition and any additional comments. All carcasses were assigned a visual mortality factor which followed classifications described in Stacy (2012), (Table 1) based on external observations by the STSSN responder and state coordinator. All species identifications are verified for accuracy by the State Sea Turtle Stranding Coordinator. Efforts are made to salvage carcasses for necropsy to determine sex and potential cause of death as well as to collect samples such as flippers for aging, stomach contents, foreign debris and/or tags for ongoing research. Incidentally captured or live strandings are transported to IMMS for rehabilitation and released, if medically approved. Any fishing gear (hooks, line, nets, etc.) is

carefully removed and archived by NOAA personnel at the NMFS Mississippi Laboratories. All stranding report forms are sent to the State Sea Turtle Stranding Coordinator who uploads all data to the STSSN online database.

Table 1. Mortality factors assigned to dead stranded sea turtles.

Mortality Factor	**Description**
Trauma	Includes vessel strikes, shark bites, trauma from hook and line interaction, entanglement, and any other major injuries - regardless of whether or not the injuries could be characterized as antemortem or postmortem.
Probable illness	Emaciation, tumors, skin lesions, presence of leech eggs (*Ozobranchus* sp.), lethargy, and an abnormally high coverage and variety of epibionts. Additional necropsy factors include either a major abnormality indicative of disease (e.g., pneumonia) and/or complete atrophy of fat.
No anomalies	Visually healthy looking animals with no traumatic injuries or evidence of disease. Additional necropsy factors include: fat not atrophied, no apparent anomalies, good nutritional condition, often evidence of feeding
Uncategorized	Decomposition too advanced to assign mortality factor, includes incomplete remains (includes codes 4 and 5 unless there are obvious injuries), also may include carcasses not fully examined. Additional necropsy factor includes inability to discern condition of fat.

Results

In 2017, three sea turtle species were reported as a stranding or incidental capture in Mississippi; the hawksbill and leatherback were not documented. The overwhelming majority of strandings and incidental captures were Kemp's ridley sea turtles (68% and 95%, respectively; Table 2).

Table 2. Summary of 2017 sea turtle strandings and incidental captures in Mississippi by species.

Interaction Type	**Total**	**Kemp's Ridley**	**Green**	**Loggerhead**	**Unknown**
Stranding	**66**	45	1	15	5
Incidental Capture	**19**	18	0	1	0
Total	**85**	**63**	**1**	**16**	**5**

Strandings

A total of 66 reported sea turtle strandings (65 dead and 1 alive) were reported in Mississippi during 2017, the lowest since 2009 (*n* = 35). Results from 2017 compared to 2016 and the 5-year and 10-year averages (Figure 3; Appendix A) indicate that 2017 was a below average year for sea turtle strandings in Mississippi. Stranding reporting effort did not change from 2016 to 2017. Figure 4 shows the total number of strandings by location across local inshore beaches and offshore barrier islands (Cat Island, Ship Island, Horn Island and Round Island). The majority of reported strandings occurred west of Biloxi. Strandings are further presented by specific location (i.e., town, island, or open-water) in Figure 5. The highest numbers of reported strandings were in Cat Island (*n* = 10) and Gulfport (*n* = 9). Additionally, 7 strandings were reported floating in GOM or Mississippi Sound waters and were never found beached. Backcast modeling was used to estimate the locations of the initial sea turtle mortality. During the peak stranding months of March through June, backcasting predicted that high mortality areas were the Mississippi Sound south of Gulfport and Biloxi, south of Cat Island, in Chandeleur Sound and in the northeastern Louisiana marshes (Figure 6).

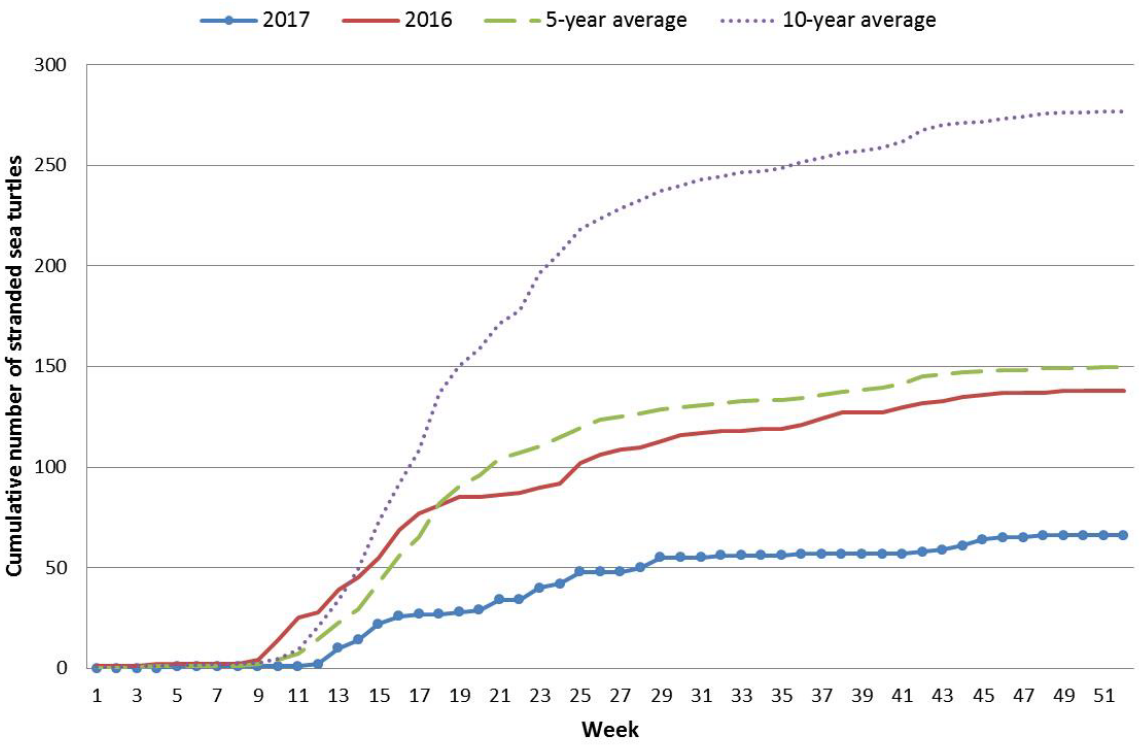

Figure 3. Cumulative number of stranded sea turtles in Mississippi during various time periods. The 5-year average (2012-2016) and 10-year average (2007-2016) are used for comparisons over time.

Figure 4. Location of sea turtle strandings (n = 66) in Mississippi in 2017. Kemp's ridley entangled in gillnet 30 miles south of Horn Island not shown.

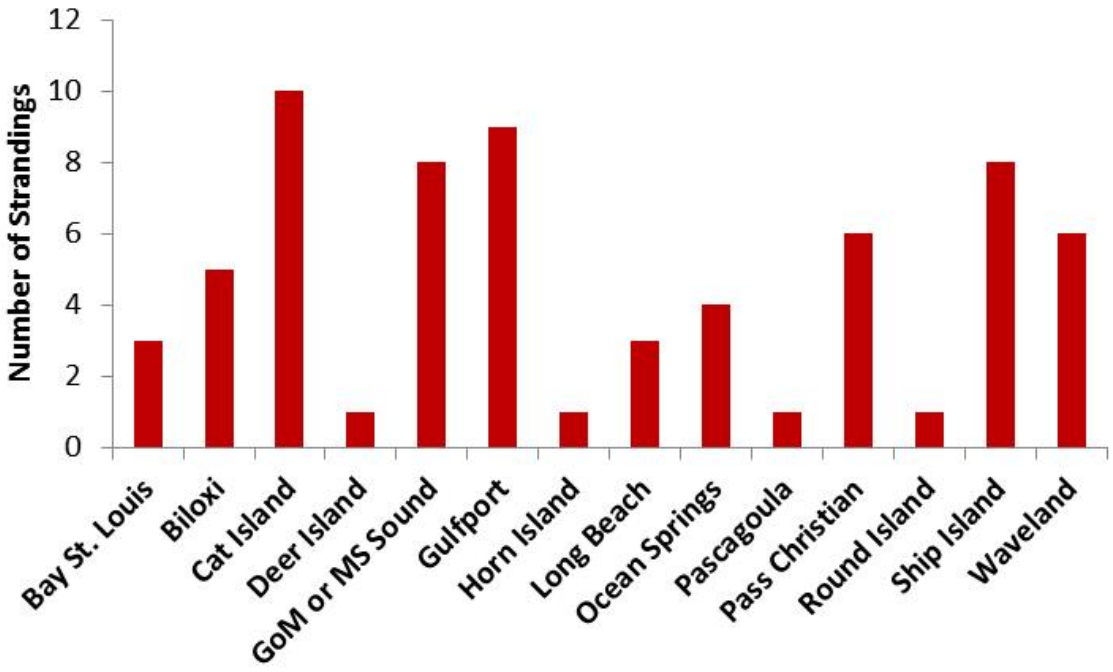

Figure 5. Summary of sea turtle strandings in Mississippi during 2017 by location.

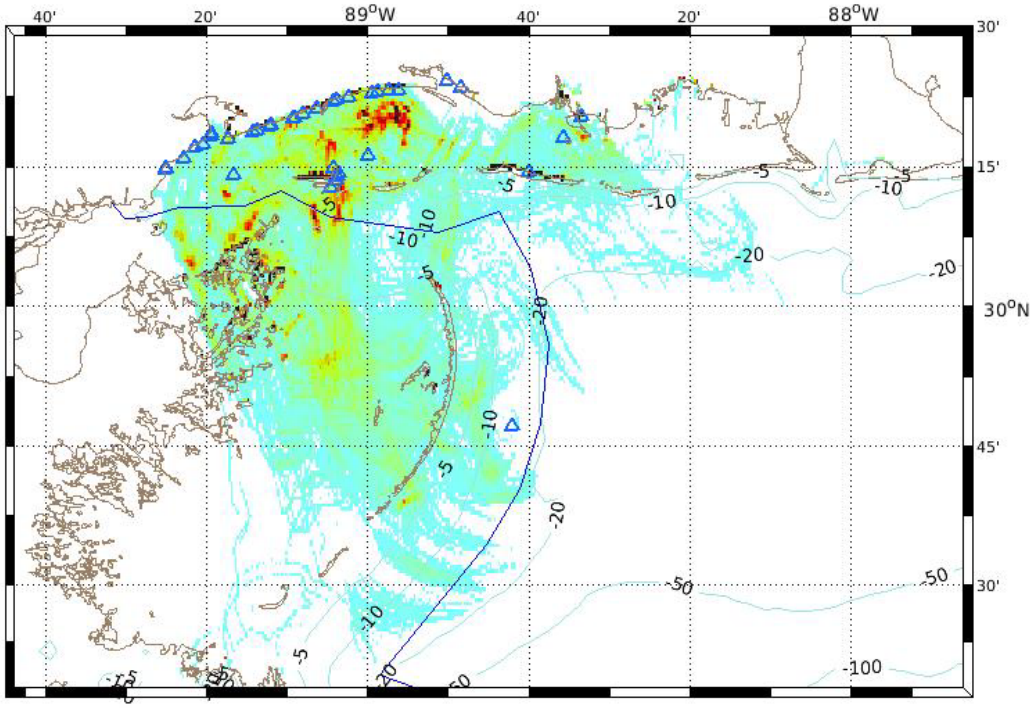

Figure 6. Summary output map showing cumulative backcast results of dead stranded sea turtles (*n* = 43) in the Mississippi coastal region during peak stranding months, March-June 2017. Blue triangles indicate standing locations, colored region is the accumulated.

Incidental Captures

In addition, sea turtles were also incidentally caught on recreational fishing gear and during commercial dredging operations (Figure 7). A total of 18 turtles, all Kemp's ridleys, were reported as incidentally caught by recreational fishermen in 2017, the lowest number of incidental captures since 2010 (Appendix B; Figure 8). These incidental captures were reported from only five towns across the state and included a total of nine fishing piers or marinas (Figure 9). Gulfport had reports from four separate piers. Reports originated from two different piers in Biloxi and from single piers in the other three towns. Seventeen turtles were transported to IMMS for rehabilitation and all were eventually released back into the wild. One turtle was released onsite by the fisherman who reported the interaction. A loggerhead was incidentally captured by a dredge during maintenance of the Gulfport Ship Channel. This turtle was dead upon retrieval and buried offsite.

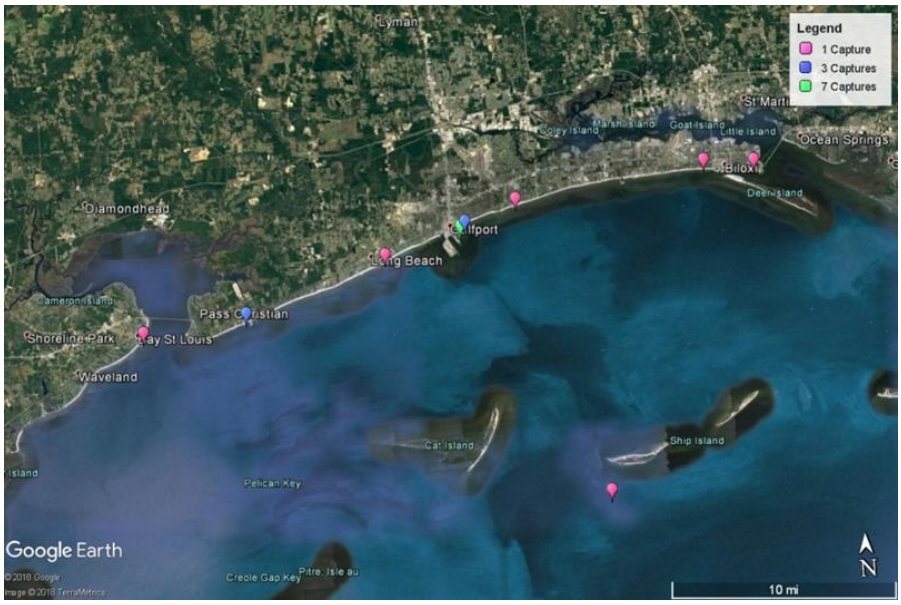

Figure 7. Total number of sea turtle incidental captures (n = 19) by location.

Figure 8. Number of incidentally captured sea turtles in Mississippi from 2010-2017.

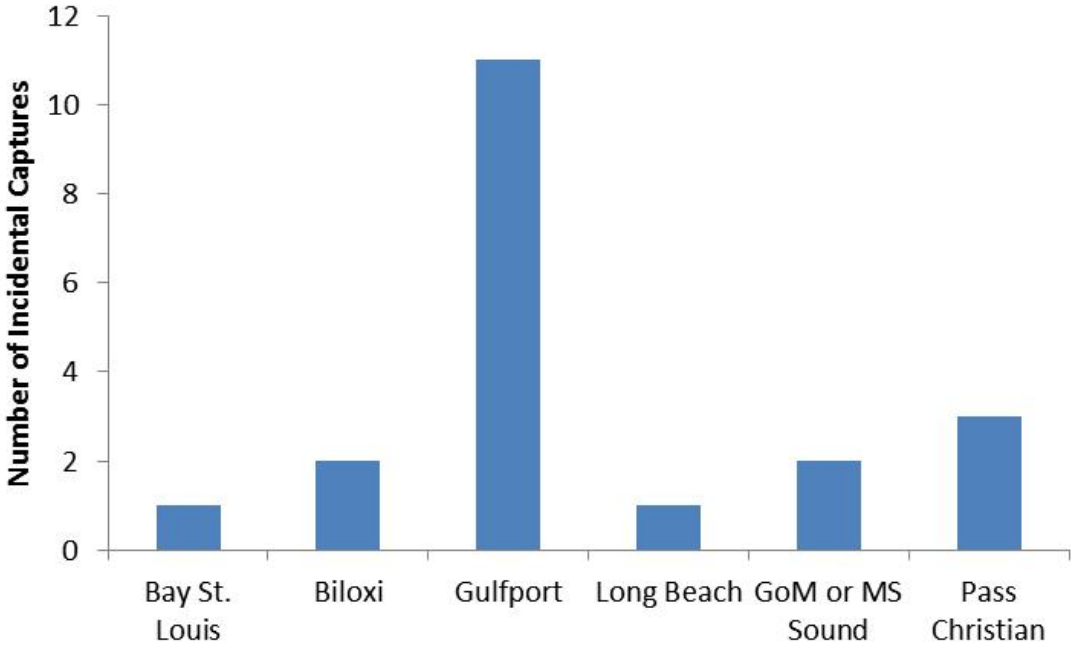

Figure 9. Location of sea turtle incidental captures (*n* = 19) in Mississippi in 2017.

Mortality Factors and Necropsies

The primary objective of the STSSN is to document sea turtle mortality and to identify mortality factors such as trauma, illness, or fisheries interactions. The ability to identify cause of mortality is greatly influenced by the condition of the carcass. Only carcasses classified as fresh dead, moderately decomposed and early severely decomposed were salvaged for necropsy. Remaining carcasses were externally inspected for obvious wounds, entangling objects or material, anomalous epibiota, and other abnormalities, which were documented on the STSSN form. Two carcasses were classified as fresh dead and 36% (*n* = 24) were moderately decomposed. The majority, 52% (34/66), of stranded carcasses were classified as severely decomposed carcasses and 8% (*n* = 5) were dried carcasses or bones.

Mortality factors assigned based on external examination at stranding and later by necropsy (*n* = 20) were identical in all cases except two. Both animals were assigned as no anomalies upon stranding but necropsy revealed trauma in one case and determined the second to be uncategorized due to poor condition. This consistency indicates that visual classifications are useful for assessing mortality factors. The majority of stranded sea turtles found in Mississippi in 2017 were classified as having no anomalies (Figure 10). Trauma, primarily from vessel strikes, made up the next largest classification and only a single loggerhead was classified as diseased. A Kemp's ridley found offshore, approximately 30 miles south of Horn Island,

entangled in a gillnet was the only animal with evidence of entanglement (Appendix C). Based on the backcasting, it appears that the net originated in the Chandeluer Sound.

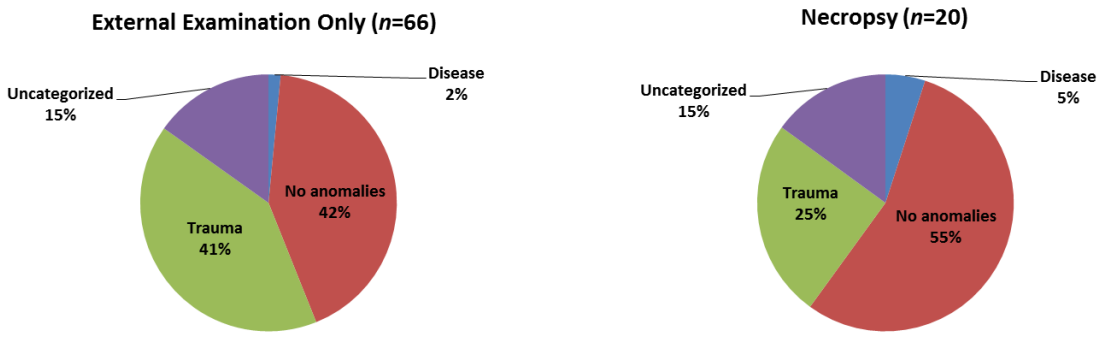

Figure 10. External examination and necropsy mortality factors assigned to stranded sea turtles in Mississippi during 2017. All necropsied carcasses were also assigned an external examination mortality factor.

A total of 20 carcasses (16 Kemp's ridleys, 3 loggerheads and 1 green sea turtle) were salvaged for necropsy in 2017. Necropsies are a useful tool for determining sex, characterizing nutritional condition and diet, and ascertaining potential cause of death. In addition, samples are taken for various research projects in an effort to better understand topics such as diet and life history. Humeri and rear toenails were collected from nearly every carcass (n = 18 and 16, respectively) to be analyzed as part of age and growth studies in North Carolina and Florida. Additionally, stomach contents from four carcasses and samples from all major organs were archived from the single green turtle necropsied. These samples were collected and archive by Brian Stacy (DVM, Ph.D., DACVP; NOAA Fisheries, Office of Protected Resources) for archival purposes related to health and mortality monitoring.

All carcasses necropsied were considered immature. Adult classification SCL is generally $\geq$ 60 cm for Kemp's ridleys, $\geq$ 92 cm for loggerheads and > 90 cm for green turtles. The Kemp's ridleys averaged 40.6 cm SCL (Range: 22.9 – 53.8 cm). Two of the three loggerheads necropsied had damaged carapaces but were estimated to be between 62 – 75 cm SCL. The green turtle had a SCL of 59.7 cm. Sex was evaluated for all carcasses, however three were undeterminable (Figure 11). Seven were determined to be male while ten were identified as female.

Nutritional condition was evaluated in 90% (17/20) of necropsied carcasses. All sea turtles were considered in fair or good nutritional condition. Of the sea turtles where stomach contents could be evaluated (16/20), 75% had food in their stomachs. Ingested fish was found in the stomachs and also digestive tracts of four Kemp's ridleys. Unlike past years, no ingested shrimp were found in the stomachs of any stranded sea turtles from Mississippi. Due to decomposition, evaluation of the respiratory tract was only possible in 40% (8/20) of necropsied

carcasses. Sediment was found in the trachea of two Kemp's ridleys and a third Kemp's ridley had sediment in the trachea, esophagus, and lungs. All three turtles had no anomalies.

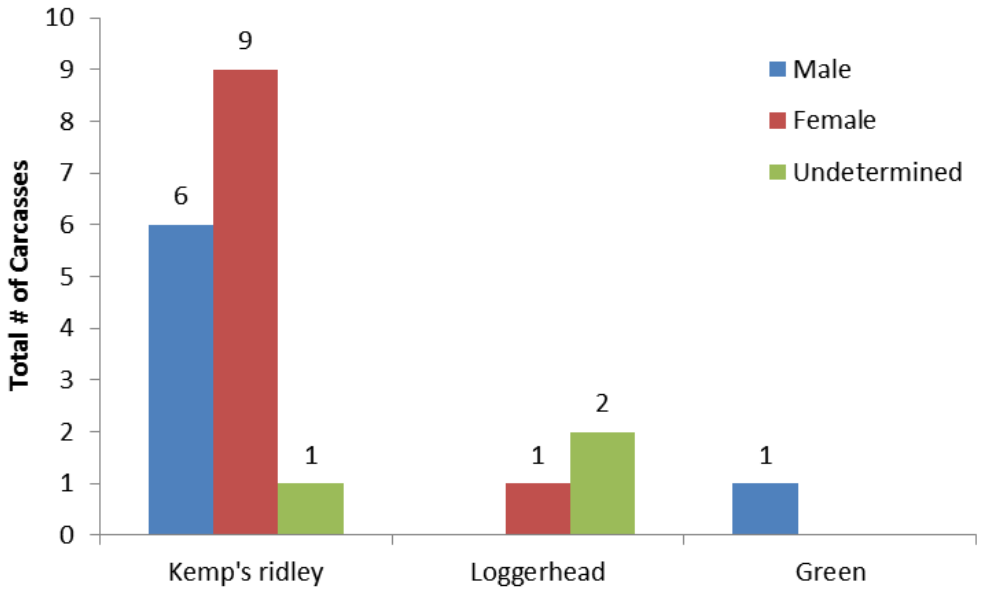

Figure 11. Summary of sex determination by species for 20 necropsied carcasses in 2017.

Mississippi Shrimping and Fishing Effort

In April, the Mississippi Department of Marine Resources (MDMR), along with the Gulf Coast Research Laboratory (GCRL), began brown shrimp sampling within the Mississippi Sound to determine an opening date for the 2017 shrimp season. The opening is determined when the majority of brown shrimp sampled are of legal size (100 mm or 3.9 in). Important environmental factors such as water temperature, salinity, rainfall and moon phases are used to set an opening date (MDMR 2017).

MDMR established the opening date and time of the 2017-2018 shrimp season in state territorial waters to be 6 am on June 7, 2017. Recreational and commercial shrimping north of the Intracoastal Waterway officially closed December 31, 2017. Waters west of the Gulfport Ship Channel and south of the Intracoastal Water remained open for fishing until May 1, 2018. Federal waters off of Mississippi are open year round. Shrimping is prohibited inland and within 1 mile (1.6 km) of the Gulf Islands National Seashore (offshore barrier islands). Additionally, only licensed live bait shrimpers are allowed to shrimp within ½ mile (0.8 km) of the Mississippi shoreline (Figure 12, MDMR 2017).

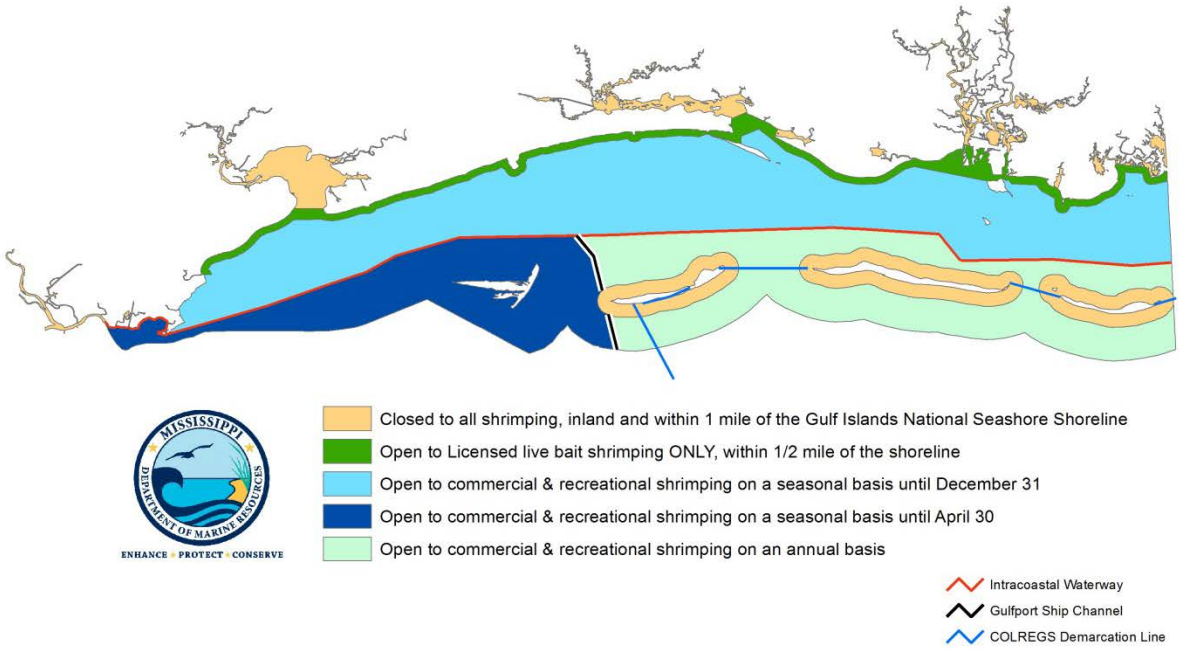

Figure 12. Map of shrimping zones and closure dates for Mississippi waters. Map from the Shrimp and Crab Bureau at the Mississippi Department of Marine Resources' 2017 Shrimping the Sound Newsletter.

Mississippi Department of Marine Resources (MDMR) Aerial Surveys

MDMR staff also conducts aerial reconnaissance surveys over Mississippi and nearby waters. The purpose of the flights is to gauge the fishing effort and vessel activity in near and offshore waters. Other vessels documented during survey effort include recreational, crab, oyster, work, dredge and menhaden. In addition, surveyors document any harmful algae blooms as well as stranded marine animals (sea turtles and marine mammals). MDMR completed 12 surveys between February and November 2017. See Appendix D for the full flight reports.

Discussion

The information presented in this technical memorandum represents an annual update of ongoing monitoring of sea turtle strandings and incidental captures in Mississippi. Sea turtle strandings and incidental captures may exhibit considerable inter-annual variation due to myriad possible factors. These factors include variability in regional abundance and density due to environmental conditions, foraging, and recruitment; changes in activities that lead to human

interaction (e.g., sea turtle distribution, fishing effort and location); and variation in probability of discovery, particularly environmental conditions that favor or reduce the probability of stranding in locations where turtles are likely to be found. Therefore, long-term trends are more meaningful than year-to-year variation. Even with the relatively small number of reported strandings and incidental captures, occurrences in 2017 followed the same general temporal pattern observed during previous years. Strandings were most common in March-July, peaking in April. Another small spike was seen in October and November. Incidental captures followed onset of strandings, but peaked later than historical records.

Most of the strandings that were found in suitable condition for examination had no apparent cause of stranding or were found to have traumatic injuries, including those attributable to vessel strikes. For sea turtles in which the cause of stranding was unapparent, around half of strandings in Mississippi, observations are consistent with death by forced submergence or underwater entrapment based on exclusion of other possible causes. No harmful algal blooms, evidence of disease, or other findings were associated with these strandings. Drift analyses suggest that many turtles originated from three primary areas within and outside of the Sound; however, a specific mortality source(s) was not identified.

Acknowledgments

We would like to thank all of the staff and participants from our Sea Turtle Stranding and Salvage Network partners across Mississippi: National Oceanic and Atmospheric Administration (NOAA) Mississippi Labs, Institute for Marine Mammal Studies (IMMS), Gulf Islands National Seashore - National Park Service (NPS), Mississippi Department of Marine Resources (MDMR), Grand Bay National Estuarine Research Reserve, Pascagoula River Audubon Center and U.S. Fish and Wildlife Service (FWS). Without their dedication and response effort this data would not be possible. Sea turtle stranding data is collected under DOI USFWS TE 676395-5 issued to the Southeast Fisheries Science Center (PI: Dr. Bonnie J. Ponwith) and USFWS designated agent letter issued to Dr. Melissa Cook.

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Appendix A. Sea turtle strandings by species and week in Mississippi in 2017. Weekly totals from 2017 are compared to total from 2016 and the average weekly totals and average cumulative totals from 2012-2016 and 2007-2016. Strandings include both live and dead stranded sea turtles.

										2012-2016		2007-2016	
		Species				2017		2016		5-Year Average		10-Year Average	
Dates	Week Number	Green	Kemp's ridley	Loggerhead	Unidentified	Weekly Total	Cumulative Total	Weekly Total	Cumulative Total	Weekly	Cumulative	Weekly	Cumulative
Jan 01 - 07, 2017	1					0	0	1	1	0.2	0.2	0.4	0.4
Jan 08 - 14, 2017	2					0	0	0	1	0	0.2	0	0.4
Jan 15 - 21, 2017	3					0	0	0	1	0.6	0.2	0.8	1.2
Jan 22 - 28, 2017	4					0	0	1	2	0.2	0.4	0.2	1.4
Jan 29 - 04, 2017	5		1			1	1	0	2	0.2	0.6	0.4	1.8
Feb 05 - 11, 2017	6					0	1	0	2	0	0.6	0.2	2
Feb 12 - 18, 2017	7					0	1	0	2	0.2	0.8	0.2	2.2
Feb 19 - 25, 2017	8					0	1	0	2	0	0.8	0	2.2
Feb 26 - 04, 2017	9					0	1	2	4	0.6	1.2	0.6	2.8
Mar 05 - 11, 2017	10					0	1	10	14	2	3.2	2.2	5
Mar 12 - 18, 2017	11					0	1	11	25	3.2	5.4	4.4	9.4
Mar 19 - 25, 2017	12		1			1	2	3	28	7.4	6.4	11.6	21
Mar 26 - 01, 2017	13		6	2		8	10	11	39	8	12.2	15	36
Apr 02 - 08, 2017	14		2	2		4	14	6	45	6.6	17.6	16	52
Apr 09 - 15, 2017	15		4	3	1	8	22	10	55	13.4	29.8	25.2	77.2
Apr 16 - 22, 2017	16	1	3			4	26	14	69	13.2	41	19.8	97
Apr 23 - 29, 2017	17		1			1	27	8	77	9.6	50	16.8	113.8
Apr 30 - 06, 2017	18					0	27	4	81	16.6	62.8	28.6	142.4
May 07 - 13, 2017	19		1			1	28	4	85	8.2	70.4	13.4	155.8
May 14 - 20, 2017	20			1		1	29	0	85	6	76.2	9.2	165
May 21 - 27, 2017	21		3	2		5	34	1	86	8.2	85.4	13.2	178.2
May 28 - 03, 2017	22					0	34	1	87	3	88	6.4	184.6
Jun 04 - 10, 2017	23		4	2		6	40	3	90	2.8	91.8	19.8	204.4
Jun 11 - 17, 2017	24		1	1		2	42	2	92	4.6	95.2	10.2	214.6
Jun 18 - 24, 2017	25		4	1	1	6	48	10	102	4.8	100.4	13.2	227.8
Jun 25 - 01, 2017	26					0	48	4	106	3.8	104	5.4	233.2
Jul 02 - 08, 2017	27					0	48	3	109	2	105.4	5	238.2
Jul 09 - 15, 2017	28		1	1		2	50	1	110	1.4	107	4.4	242.6
Jul 16 - 22, 2017	29		4		1	5	55	3	113	2	109.2	5.6	248.2
Jul 23 - 29, 2017	30					0	55	3	116	1	110.2	2.8	251
Jul 30 - 05, 2017	31					0	55	1	117	1.2	111.4	2.8	253.8
Aug 06 - 12, 2017	32		1			1	56	1	118	0.6	112.2	1.6	255.4
Aug 13 - 19, 2017	33					0	56	0	118	1.2	113.4	2	257.4
Aug 20 - 26, 2017	34					0	56	1	119	0.4	113.8	0.8	258.2
Aug 27 - 02, 2017	35					0	56	0	119	0.4	114.2	1.6	259.8
Sep 03 - 09, 2017	36		1			1	57	2	121	1	115.4	3.2	263
Sep 10 - 16, 2017	37					0	57	3	124	1.2	116.4	2	265
Sep 17 - 23, 2017	38					0	57	3	127	1.8	117.6	2.6	267.6
Sep 24 - 30, 2017	39					0	57	0	127	0.8	118.4	1.2	268.8
Oct 01 - 07, 2017	40					0	57	0	127	1	119.2	1.2	270
Oct 08 - 14, 2017	41					0	57	3	130	2.4	121.6	3.4	273.4
Oct 15 - 21, 2017	42		1			1	58	2	132	3.6	125	5.6	279
Oct 22 - 28, 2017	43		1			1	59	1	133	1	126.2	2.6	281.6
Oct 29 - 04, 2017	44		1		1	2	61	2	135	1	127.4	1.6	283.2
Nov 05 - 11, 2017	45		2		1	3	64	1	136	0.4	128.4	1.2	284.4
Nov 12 - 18, 2017	46		1			1	65	1	137	0.4	128.8	1.8	286.2
Nov 19 - 25, 2017	47					0	65	0	137	0.2	129	1	287.2
Nov 26 - 02, 2017	48		1			1	66	0	137	0.6	129.8	1.4	288.6
Dec 03 - 09, 2017	49					0	66	1	138	0.2	130	0.8	289.4
Dec 10 - 16, 2017	50					0	66	0	138	0	130	0	289.4
Dec 17 - 23, 2017	51					0	66	0	138	0.4	130.4	0.4	289.8
Dec 24 - 31, 2017	52					0	66	0	138	0	130.4	0	289.8
2017 Grand Totals		1	45	15	5	66	66						

Appendix B. Sea turtle incidental captures by species and week in Mississippi in 2017. Weekly totals from 2017 are compared to totals from 2016 and the average weekly totals and average cumulative totals from 2012-2016 and 2007-2016. Incidental captures are primarily comprised of sea turtles incidentally caught on recreational hook-and-line gear, as well as in commercial shrimp trawls and dredges.

										2012-2016		2007-2016	
		Species				2017		2016 Totals		5-Year Average		10-Year Average	
Dates	Week Number	Loggerhead	Green	Kemp's ridley	Unidentified	Weekly Total	Cumulative Total	Weekly Total	Cumulative Total	Weekly	Cumulative	Weekly	Cumulative
Jan 01 - 07, 2017	1					0	0	0	0	0	0	0	0
Jan 08 - 14, 2017	2					0	0	0	0	0	0	0	0
Jan 15 - 21, 2017	3					0	0	0	0	0	0	0	0
Jan 22 - 28, 2017	4					0	0	0	0	0	0	0	0
Jan 29 - 04, 2017	5					0	0	0	0	0	0	0	0
Feb 05 - 11, 2017	6					0	0	0	0	0	0	0	0
Feb 12 - 18, 2017	7					0	0	0	0	0	0	0	0
Feb 19 - 25, 2017	8					0	0	0	0	0	0	0	0
Feb 26 - 04, 2017	9					0	0	0	0	0	0	0	0
Mar 05 - 11, 2017	10					0	0	0	0	0	0	0	0
Mar 12 - 18, 2017	11					0	0	0	0	0	0	0	0
Mar 19 - 25, 2017	12					0	0	1	1	0.4	0.4	0.4	0.4
Mar 26 - 01, 2017	13			2		2	2	0	1	0.8	1.2	0.8	1.2
Apr 02 - 08, 2017	14					0	2	0	1	3.2	4.4	3.4	4.6
Apr 09 - 15, 2017	15					0	2	1	2	1.6	6	1.6	6.2
Apr 16 - 22, 2017	16					0	2	0	2	2.2	8.2	2.6	8.8
Apr 23 - 29, 2017	17					0	2	0	2	2.2	10.4	2.4	11.2
Apr 30 - 06, 2017	18					0	2	1	3	5	15.4	5.2	16.4
May 07 - 13, 2017	19					0	2	0	3	7.2	22.6	9	25.4
May 14 - 20, 2017	20					0	2	1	4	9	31.6	10	35.4
May 21 - 27, 2017	21					0	2	3	7	10	41.6	11.4	46.8
May 28 - 03, 2017	22					0	2	2	9	7.4	49	7.4	54.2
Jun 04 - 10, 2017	23			2		2	4	3	12	10.6	59.6	11.4	65.6
Jun 11 - 17, 2017	24					0	4	0	12	10.2	69.8	11.8	77.4
Jun 18 - 24, 2017	25					0	4	1	13	9.8	79.6	10.8	88.2
Jun 25 - 01, 2017	26			1		1	5	0	13	10	89.6	10.8	99
Jul 02 - 08, 2017	27			1		1	6	0	13	12	101.6	12.6	111.6
Jul 09 - 15, 2017	28					0	6	1	14	10.2	111.8	10.2	121.8
Jul 16 - 22, 2017	29					0	6	0	14	13.8	125.6	13.8	135.6
Jul 23 - 29, 2017	30					0	6	0	14	16.2	141.8	16.2	151.8
Jul 30 - 05, 2017	31			1		1	7	2	16	6.8	148.6	6.8	158.6
Aug 06 - 12, 2017	32					0	7	0	16	8.4	157	8.6	167.2
Aug 13 - 19, 2017	33			1		1	8	0	16	6.2	163.2	7	174.2
Aug 20 - 26, 2017	34					0	8	0	16	5.8	169	6	180.2
Aug 27 - 02, 2017	35					0	8	1	17	7.2	176.2	7.4	187.6
Sep 03 - 09, 2017	36			1		1	9	1	18	6.4	182.6	7	194.6
Sep 10 - 16, 2017	37			1		1	10	1	19	6.2	188.8	6.6	201.2
Sep 17 - 23, 2017	38			2		2	12	0	19	5.4	194.2	6	207.2
Sep 24 - 30, 2017	39			2		2	14	0	19	2.2	196.4	2.4	209.6
Oct 01 - 07, 2017	40			1		1	15	0	19	2	198.4	2	211.6
Oct 08 - 14, 2017	41			1		1	16	1	20	2.8	201.2	2.8	214.4
Oct 15 - 21, 2017	42			1		1	17	0	20	2.8	204	2.8	217.2
Oct 22 - 28, 2017	43					0	17	1	21	1.8	205.8	1.8	219
Oct 29 - 04, 2017	44			1		1	18	1	22	2.6	208.4	2.6	221.6
Nov 05 - 11, 2017	45	1				1	19	0	22	0.2	208.6	0.2	221.8
Nov 12 - 18, 2017	46					0	19	0	22	0	208.6	0	221.8
Nov 19 - 25, 2017	47					0	19	0	22	0	208.6	0	221.8
Nov 26 - 02, 2017	48					0	19	0	22	0	208.6	0	221.8
Dec 03 - 09, 2017	49					0	19	0	22	0	208.6	0	221.8
Dec 10 - 16, 2017	50					0	19	0	22	0	208.6	0	221.8
Dec 17 - 23, 2017	51					0	19	0	22	0	208.6	0	221.8
Dec 24 - 31, 2017	52					0	19	0	22	0	208.6	0	221.8
2017 Grand Totals		1	0	18	0	19	19						

Appendix C. Summary of Kemp's ridley incidental capture in gillnet

STSSN ID: JLR20170509-01
State ID: NOAA DT17-007

Drafted by Melissa Cook, MS Sea Turtle Stranding and Salvage Network Coordinator

Description of incident: NOAA Fisheries found a gillnet ghost fishing in about 55 ft of water, 10 miles east of the Chandeleur Islands on 5/9/2017 (Figure 1). It was only a portion of the net and there was not a lot of growth on it. A 55 cm straight carapace length Kemp's ridley sea turtle was entangled in the net and was likely the reason the net floated to the surface (Figure 2a-d).

Gillnet description:
The leadline length was 112 ft. (but we could see it was cut). The gillnet had a double leadline with a 3/8 inch leadcore rope and a twisted poly rope with three (4.5 oz. each) lead weights per yard (Figure 3a). The stretched mesh was 9 inches with ~1.1 mm diameter; the gillnet was 15.5 meshes deep (Figure 3b). There were 5 inch floats placed 6 ¾ ft. apart on the top of the gillnet (Figure 3c).

Species found in the Gillnet:

- 1 large (>1ft total width) Common Spider Crab (*Libinia emarginata*)
- 1 Spotted Porcelain Crab (*Porcellana sayana*)
- 4 blue crabs (*Callinectes sapidus*)
- Several unidentified small crabs
- 2 stone crabs- possible hybrid between *Menippe mercenaria* and *M. nodifrons*
- 3 swimming crabs- most likely *Achelous spinicarpus*
- 4 long nose spider crabs (*Libinia dubia*)
- Bones from 2 sharks- possibly from the ground shark family (Carcharhinidae) ~1-1.5 meters in length.
- *Lysmata intermedia* (the tiny shrimp) were noted on the boat and still in the net. Approximately 20-30 small, unidentified crabs were in the net and released.

On 5/11/2017 an email was sent to the following informing them about the incident and asking for information on what fishery would use this type of net.

Roy Lipscomb, Mike Brainard, Pat O'Shaughnessy, Lyndsey Howell, Mark Schexnayder, Mandy Tumlin, Jackie Isaacs Sablan, Bannon, Scott, Allen Foley, Donna Shaver, Charlie Bergman, John Mitchell, Jeff Gearhart, Dale Stevens Drew Hopper, Barbara Schroeder, Brian Stacy, Stacy

Hargrove, Sara Wissmann, Matt Clark, Charles Tyer, Canh Nguyen, Mary Streich, Jaymie Reneker and nmfs.law.enforcement@noaa.gov

Responses to email:

Charles Burgmann: Maybe flounder or drum

Roy Lipscomb: Officers on patrol on 5/11/2017 saw a boat reeling a net in, but could not get in the shallow water to determine the type of net. Darrin Stewart has seen gill netters in that area on some of his flyovers. Gill netting for king mackerel is open in areas of the Gulf of Mexico. MS has had gill netters selling pompano caught in Federal waters; which according to NOAA Officers was legal, however, pompano strike nets are allowed only in Louisiana August 1 through October 31 (p. 26 http://www.wlf.louisiana.gov/sites/default/files/pdf/page/41407-regulations/commercialfishingbrochure20188-23-18.pdf).

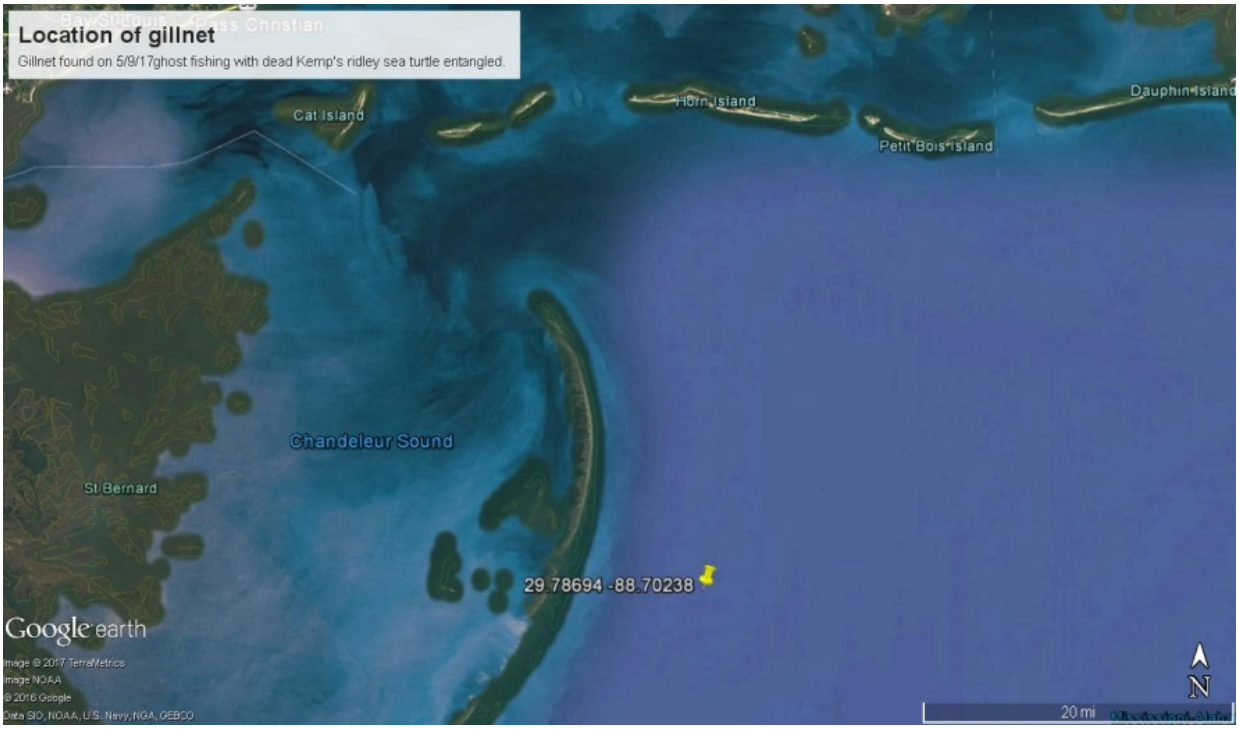


Figure 1. Location of gillnet with entangled Kemp's ridley.

Figure 2. Kemp's ridley sea turtle entangled in gillnet, a) Kemp's ridley sea turtle and float visible at the surface, b) turtle and gillnet pulled up to the boat, c) entangled Kemp's ridley, d) Kemp's ridley entangled in the front flipper and neck.

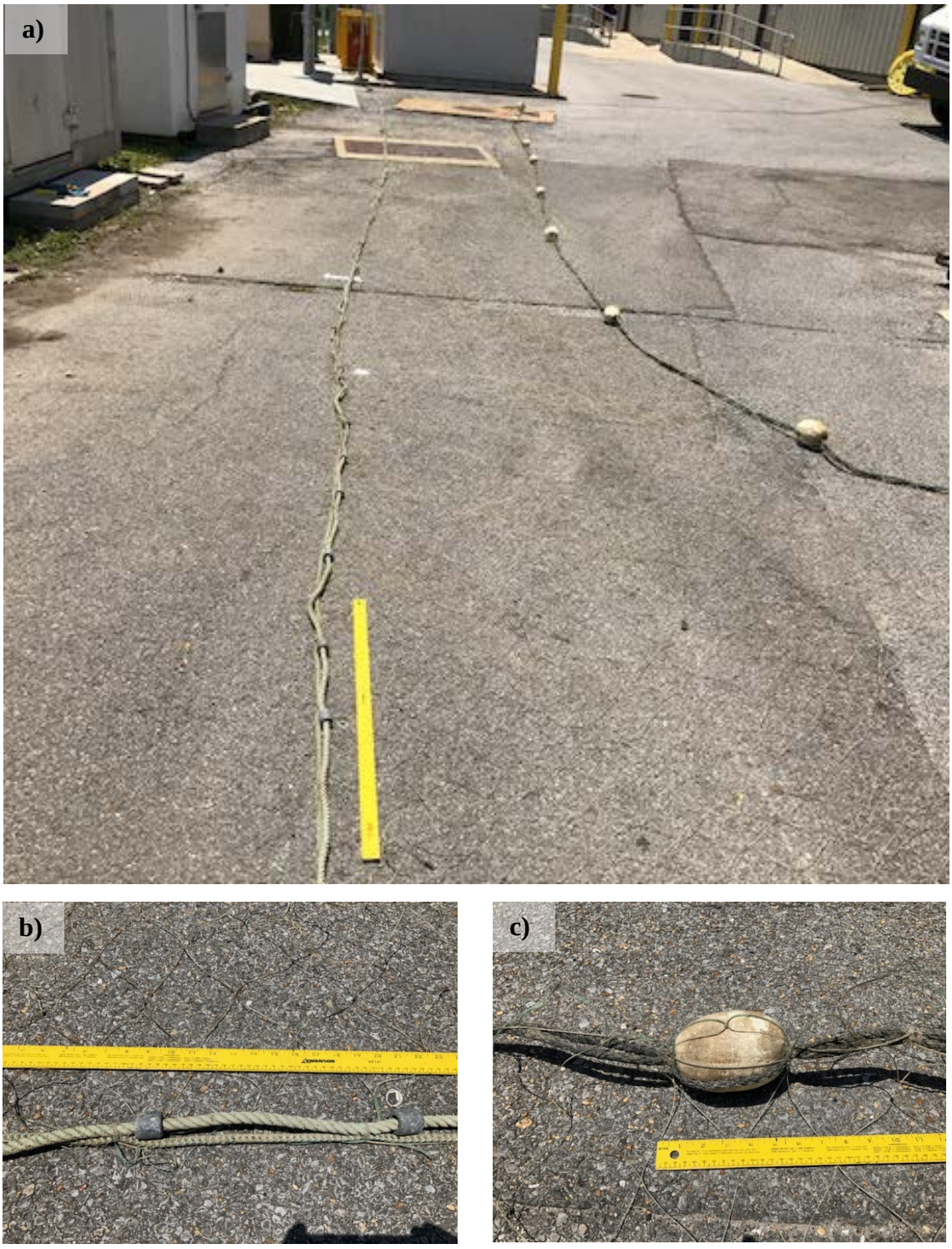


Figure 3. Characteristics of the gillnet, a) the gillnet had a double leadline with a 3/8 inch leadcore rope and a twisted poly rope with three (4.5 oz. each) lead weights per yard, b) gillnet stretched mesh was 9 inches with ~1.1 mm diameter; the gillnet was 15.5 meshes deep, c) top of the gillnet had 5 inch floats placed 6 ¾ ft. apart.

Backcasting of net and carcass:

Backcast modeling was used in order to determine the potential location where the gillnet was originally deployed. Figure 4a depicts the location (blue dot) where the carcass and net were recovered on May 9, 2017 and backtracked 10 days to April 29, 2017. The red dots represent a cloud of possible locations where the net could have been located on April 29. The net and carcass were drifting much slower than a typical carcass due to the drag of the net so a leeway of 0.001 was used. Figure 4b depicts the possible net locations on April 19, 2017, an additional 10 days earlier (red dots). The net did not have a lot of growth on it so it likely was not drifting too long. Based on the backcasting, it appears that the net originated in the Chandeluer Sound. The water depth in the Sound ranges from 6-18 ft deep. The surface water temperature in that area was approximately 22° to 24°C. The Kemp's ridley likely took approximately 60-75 hr (2.5-3.1 days) to generate enough gasses to float and was likely floating for about 3 days based on the degree of decomposition.

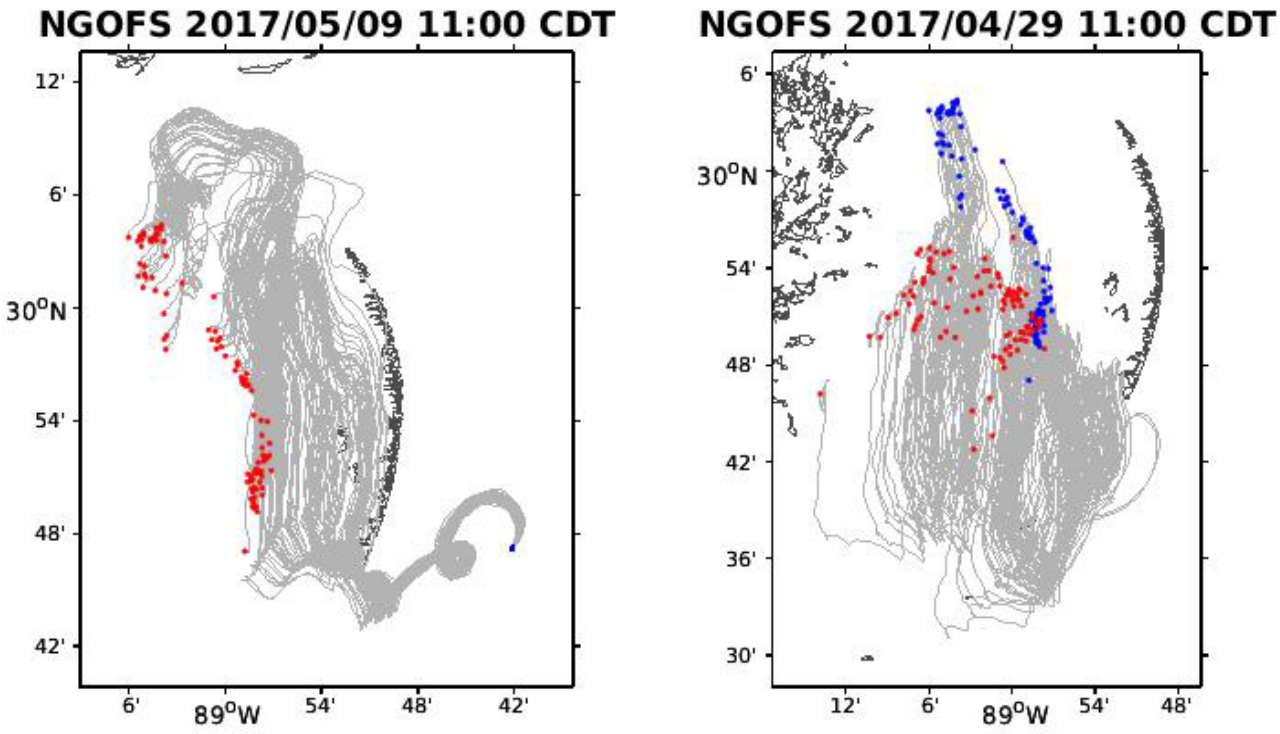


Figure 4. Backcast models used to estimate initial location of gillnet deployment, a) backcast of gillnet from May 9 (blue dot) to April 29, 2017 (red dots), b) backcast of gillnet from April 29 (blue dots) to April 19, 2017 (red dots).

Appendix D. Mississippi Department of Marine Resources aerial reconnaissance vessel activity reports.

February 1, 2017 23

March 29, 2017 26

April 27, 2017 29

May 10, 2017 32

May 25, 2017 35

June 8, 2017 38

July 6, 2017 41

July 19, 2017 44

August 1, 2017 47

August 21, 2017 50

September 28, 2017 53

November 15, 2017 56

MDMR Aerial Reconnaissance – February 1, 2017

The purpose of today's flight was to gauge the fishing effort and other vessel activities in the near shore and offshore waters of Mississippi and adjacent waters as well as document any harmful algae blooms, stranded sea turtles or marine mammals. Onboard the aircraft were MDMR employee Darrin Stewart, Projects Officer and Capt. George Hill, Civil Air Patrol pilot.

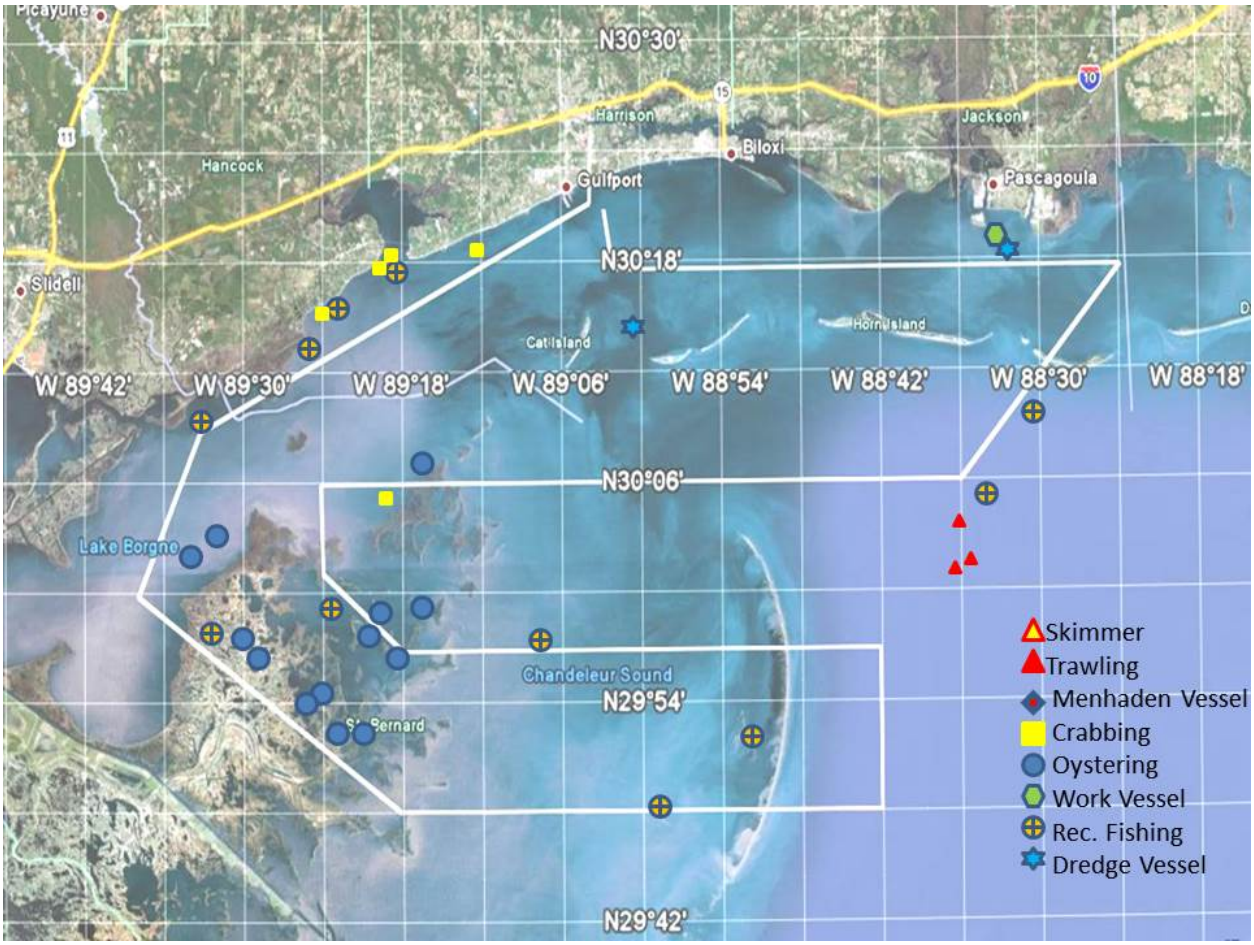
During our flight we observed three (3) trawl vessels, thirteen (13) oyster vessels and two (2) dredge vessels all of which is indicated on the attached map. Also on the map is the approximate flight path.

We departed Gulfport Airport at 1030L and turned west along the mainland shoreline to Bayou Caddie and then south to Half Moon Island. We then flew southwest over Lake Borgne to the W89°42' line and then turned southeast to the N29°48' line beginning our east/west transects with 9 mile spacing working our way back to the north. After finishing our westward track on the N30°06' until intersecting W88°36' we turned northeast toward N30°18'/W88°24' and then turned west on the N30°18' line until south of Gulfport and landed.

WEATHER (https://www.weather.gov/)

INSHORE: SOUTH WINDS 5 TO 10 KNOTS. WAVES 1 FOOT OR LESS. DOMINANT PERIOD 4 SECONDS. PATCHY FOG AFTER MIDNIGHT.

OFFSHORE: SOUTHEAST WINDS 5 TO 10 KNOTS. SEAS 1 TO 2 FEET. DOMINANT PERIOD 4 SECONDS. PATCHY FOG AFTER MIDNIGHT.



Description / (Number of vessels)

Recreational

Gene Taylor Key (1)
Jail House Key (1)
2 Miles West of Pearl River (1)
LA Marsh (2)
North Islands Chandeleur (1)
Chandeleur Sound (1)
Free Mason (1)
3 Miles South of Petit Bios (1)
8 Miles South of Horn Island (1)

Oyster Vessel

LA Marsh Gear Down – Dredge (8)
LA Marsh Anchored – Dredge (3)
Lake Borgne Gear Up – Dredge (2)

Trawl Vessel

10 Miles South of Horn Island Anchored 80'-90' (1)
13 Miles South of Horn Island Anchored 80'-90' (2)

Crab Vessel

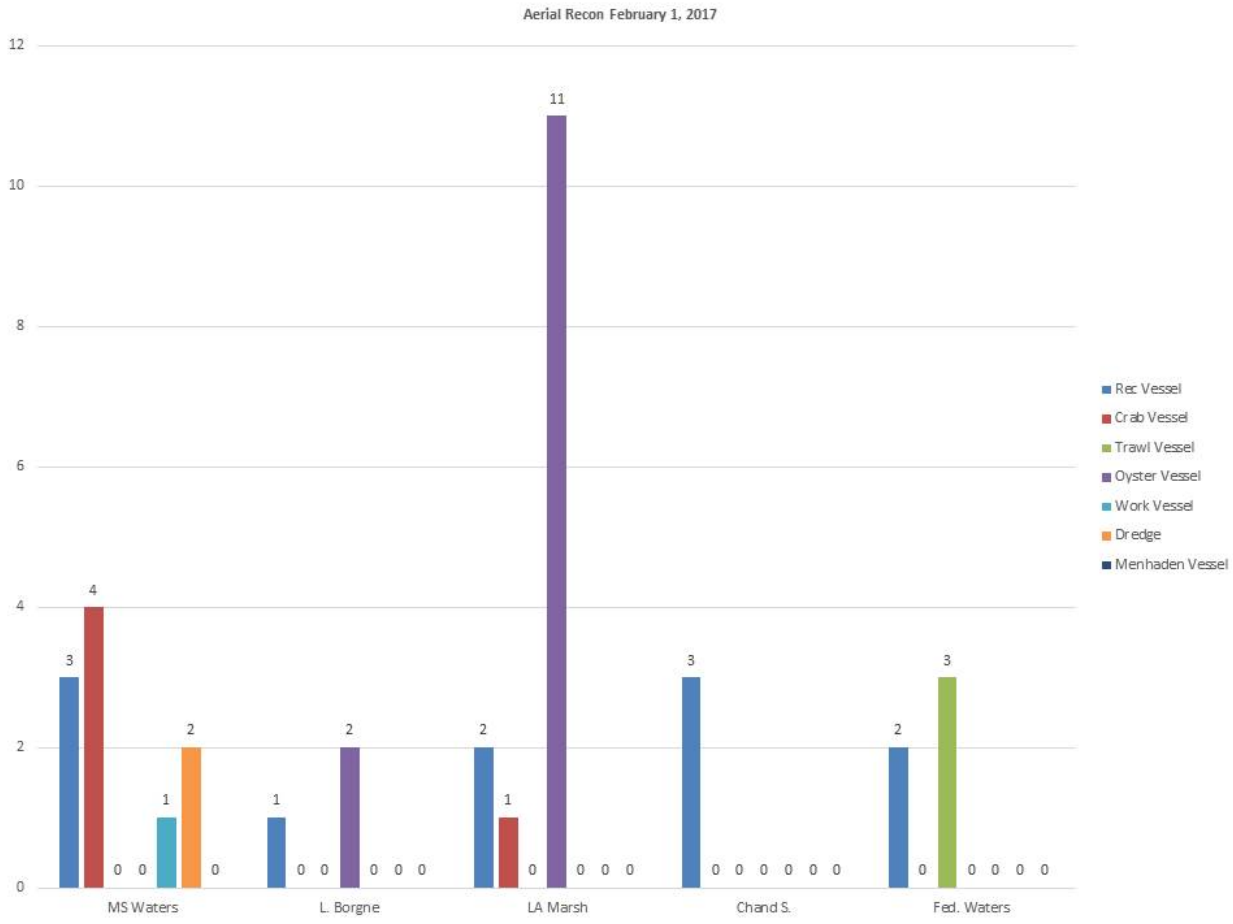
2 Miles East of Pass Christian Harbor (1)
Mouth of Saint Louis Bay (2)
½ Mile East of Jail House Key (1)
LA Marsh (1)

Dredge Vessel

2 Miles Southwest of Bayou Casotte Non-Active (1)
3 Miles Northwest of West Ship Island Non-Active (1)

Work Vessel

1 Mile Southeast of Singing River Island Dredge Pipe (1)


Aerial Recon February 1, 2017
12
10
8
6
4
2
0
MS Waters
L. Borgne
LA Marsh
Chand S.
Fed. Waters
Rec Vessel
Crab Vessel
Trawl Vessel
Oyster Vessel
Work Vessel
Dredge
Menhaden Vessel

MDMR Aerial Reconnaissance – March 29, 2017

The purpose of today's flight was to gauge the fishing effort and other vessel activities in the near shore and offshore waters of Mississippi and adjacent waters as well as document any harmful algae blooms, stranded sea turtles or marine mammals. Onboard the aircraft were MDMR employee Darrin Stewart, Projects Officer, Jack Husley, Marine Scientist and Capt. George Hill, Civil Air Patrol pilot.

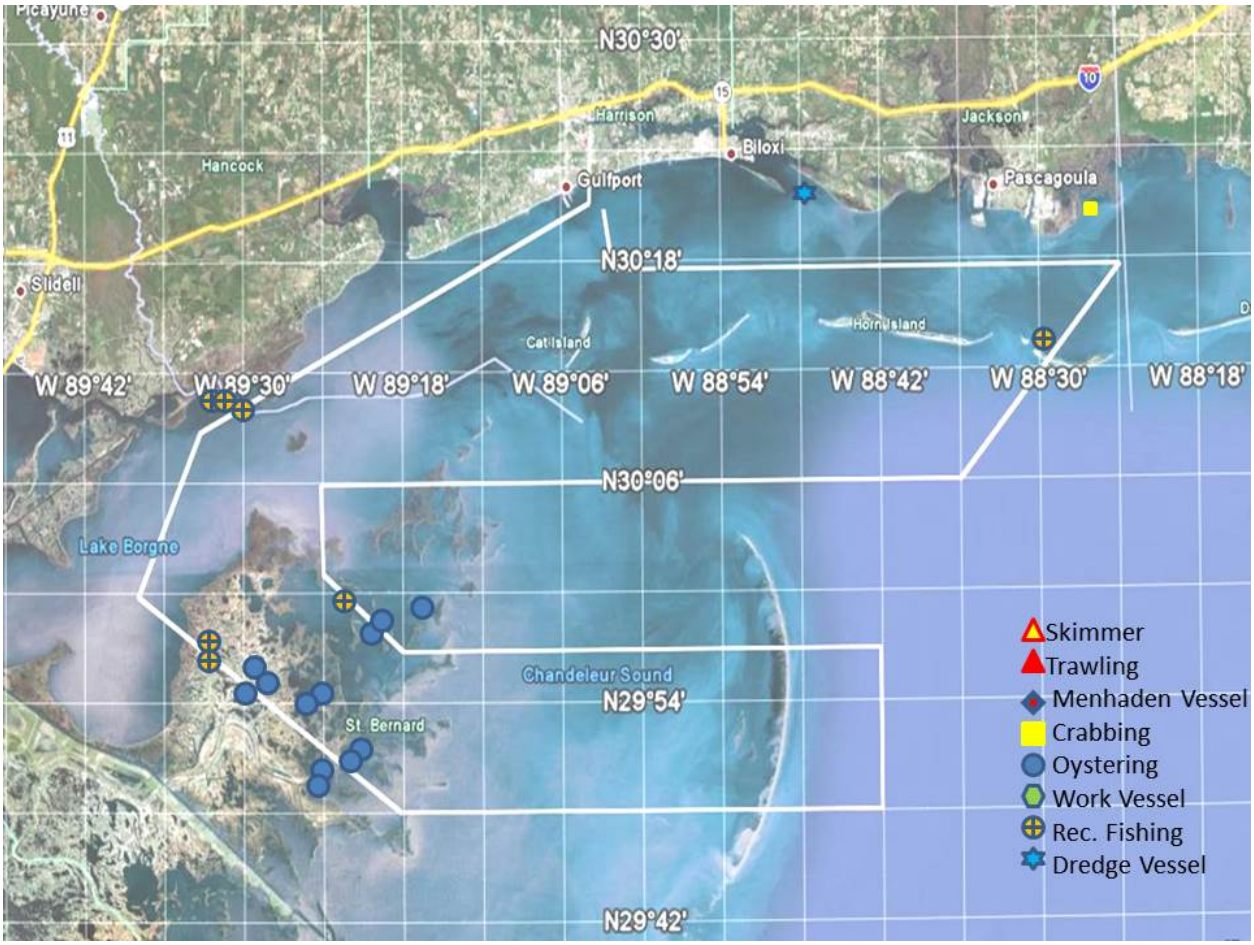
During our flight we observed twelve (12) oyster vessels and one (1) dredge vessel all of which is indicated on the attached map. Also on the map is the approximate flight path.

We departed Gulfport Airport at 1042L and turned west along the mainland shoreline to Bayou Caddie and then south to Half Moon Island. We then flew southwest over Lake Borgne to the W89°42' line and then turned southeast to the N29°48' line beginning our east/west transects with 9 mile spacing working our way back to the north. After finishing our westward track on the N30°06' until intersecting W88°36' we turned northeast toward N30°18'/W88°24' and then turned west on the N30°18' line until south of Gulfport and landed.

WEATHER (https://www.weather.gov/)

INSHORE: SOUTHEAST WINDS 10 KNOTS. WAVES 2 FOOT OR LESS. DOMINANT PERIOD 4 SECONDS.

OFFSHORE: SOUTHEAST WINDS 10 TO 15 KNOTS BECOMING SOUTHEAST LATE IN THE AFTERNOON. SEAS 3 TO 5 FEET. DOMINANT PERIOD 7 SECONDS.



Description / (Number of vessels)

Recreational

Pearl River (3)
LA Marsh (3)
West End Petit Bois (1)

Oyster Vessel

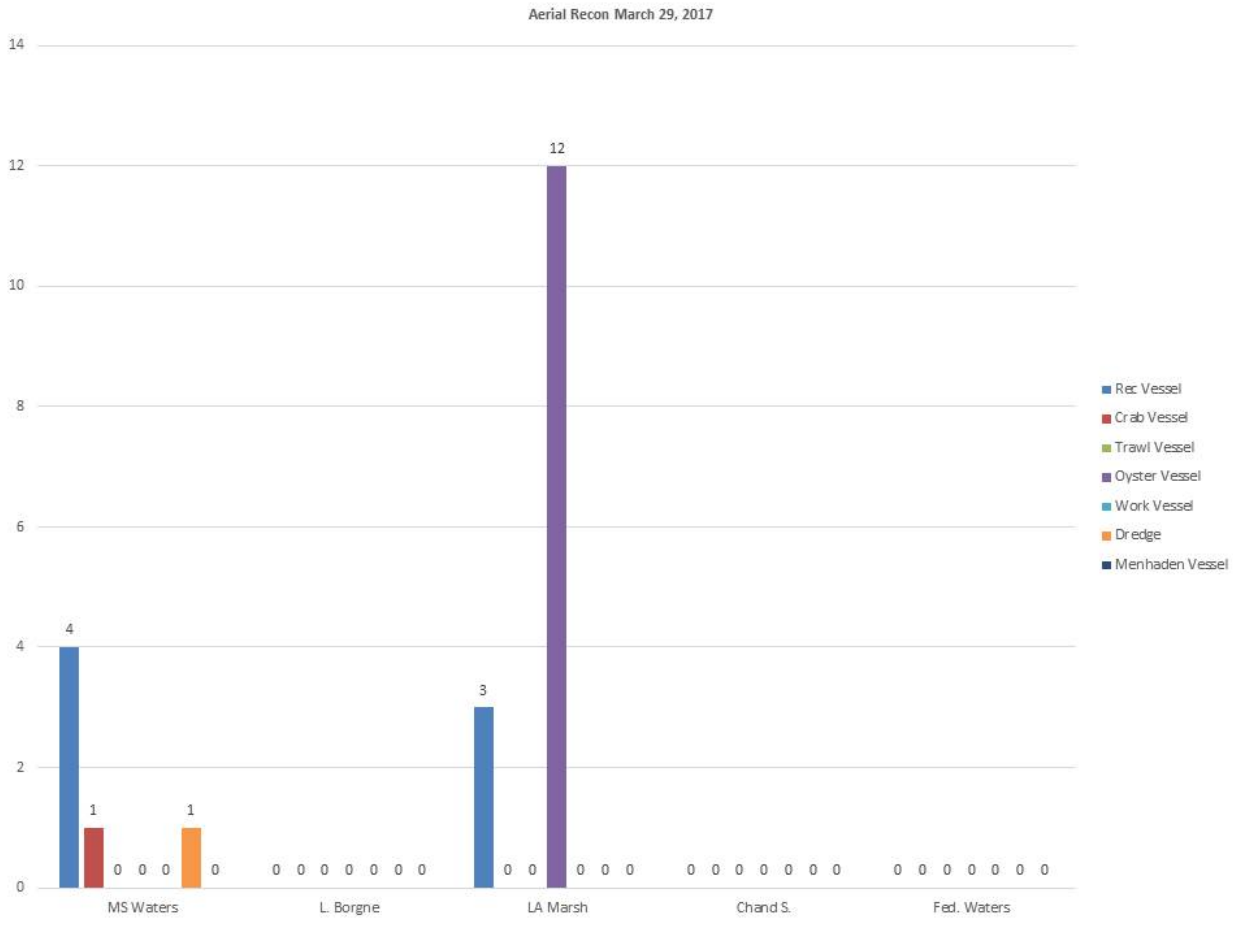
LA Marsh Gear Down – Dredge (8)
Lake Borgne Gear Up – Dredge (4)

Crab Vessel

Bangs Lake (1)

Dredge Vessel

Biloxi East Channel Non-Active (1)


Aerial Recon March 29, 2017
14
12
10
8
6
4
2
0
4
1
0 0 0
1
0
0 0 0 0 0 0 0
3
0 0
12
0 0 0
0 0 0 0 0 0 0
0 0 0 0 0 0 0
MS Waters
L. Borgne
LA Marsh
Chand S.
Fed. Waters
Rec Vessel
Crab Vessel
Trawl Vessel
Oyster Vessel
Work Vessel
Dredge
Menhaden Vessel

MDMR Aerial Reconnaissance – April 27, 2017

The purpose of today's flight was to gauge the fishing effort and other vessel activities in the near shore and offshore waters of Mississippi and adjacent waters as well as document any harmful algae blooms, stranded sea turtles or marine mammals. Onboard the aircraft were MDMR employee Darrin Stewart, Projects Officer, Emily Satterfield, Marine Scientist and Capt. George Hill, Civil Air Patrol pilot.

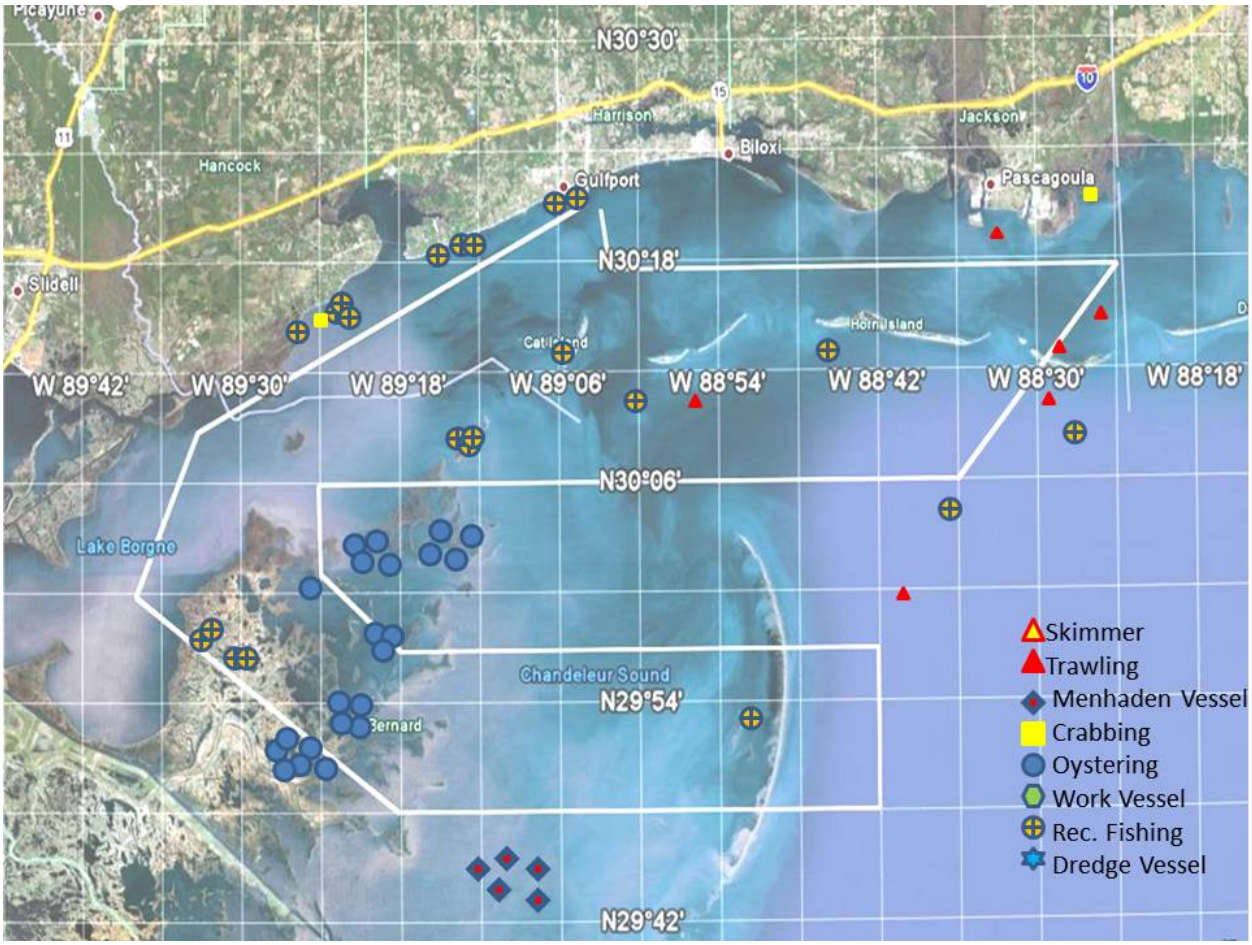
During our flight we observed twenty two (22) oyster vessels, six (6) trawl vessels and five (5) menhaden vessels all of which is indicated on the attached map. Also on the map is the approximate flight path.

We departed Gulfport Airport at 1037L and turned west along the mainland shoreline to Bayou Caddie and then south to Half Moon Island. We then flew southwest over Lake Borgne to the W89°42' line and then turned southeast to the N29°48' line beginning our east/west transects with 9 mile spacing working our way back to the north. After finishing our westward track on the N30°06' until intersecting W88°36' we turned northeast toward N30°18'/W88°24' and then turned west on the N30°18' line until south of Gulfport and landed.

WEATHER (https://www.weather.gov/)

INSHORE: NORTH WINDS 10 KNOTS. WAVES 1 FOOT OR LESS. DOMINANT PERIOD 4 SECONDS.

OFFSHORE: NORTH WINDS 10 KNOTS BECOMING SOUTHEAST LATE IN THE AFTERNOON. SEAS 1 TO 2 FEET.



Description / (Number of vessels)

Recreational

Gulfport Harbor (2)
Pass Christian Harbor (2)
1 Mile West of Pass Christian Harbor (1)
Jail House Key (2)
Bayou Caddy (1)
LA Marsh (4)
Isle Le Pitre (3)
Chandeleur North Islands (1)
Cat Island (1)
2 Miles Southwest of Ship Island (1)
1 Mile South of Petit Bois (1)
10 Miles South of Petit Bois (1)
3 Miles South of Petit Bois (1)

Oyster Vessel

LA Marsh Gear Down – Dredge (14)
Lake Borgne Gear Up – Dredge (8)

Crab Vessel

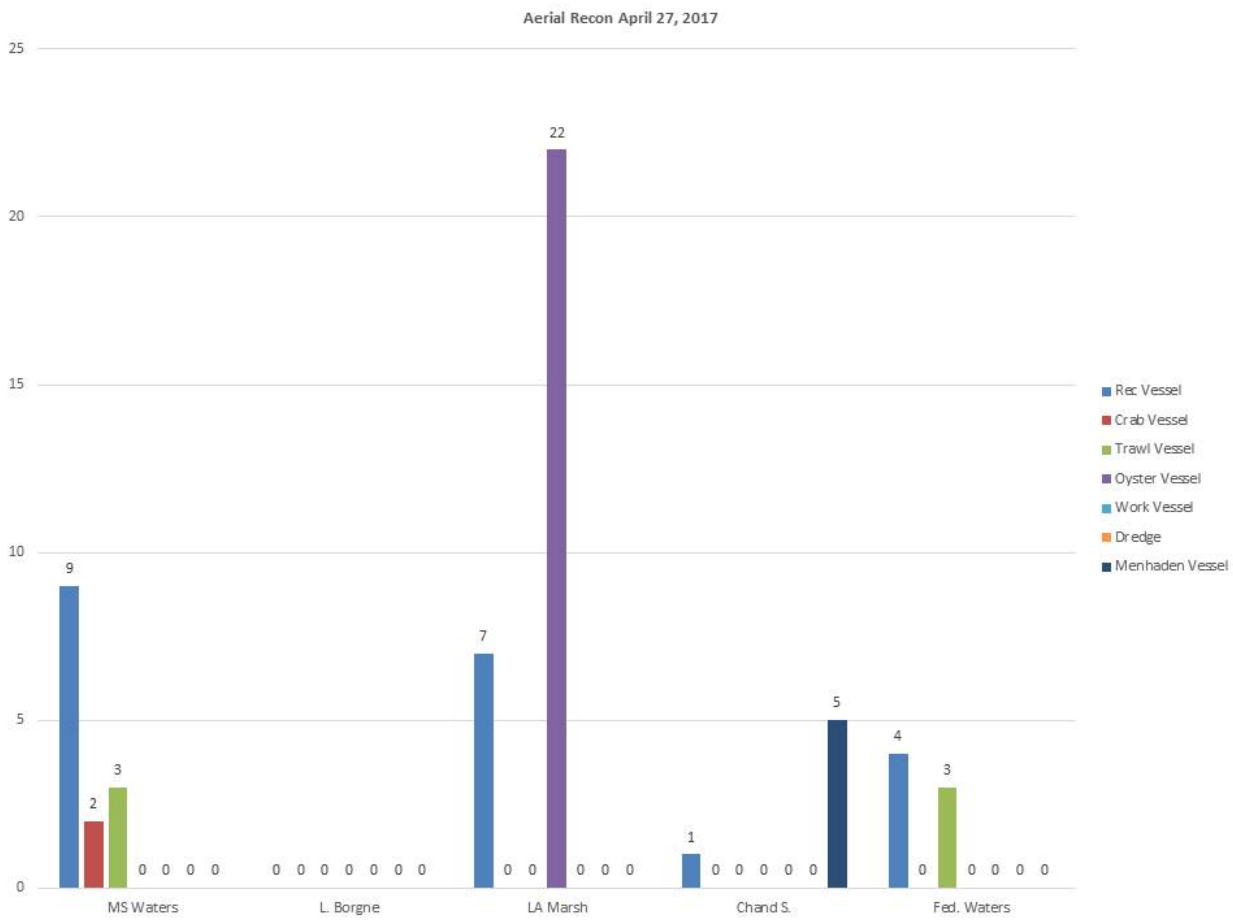
1 Mile East of Bayou Caddy (1)
Bangs Lake (1)

Trawl Vessel

3 Miles South of West Ship Island Gear Up Heading Southwest 80'-90'(1)
3 Miles South of Petit Bois Anchored 80'-90' (1)
1 Mile North of Petit Bois Anchored 60'-70' (1)
4 Miles North of Petit Bois Gear Up Heading Southwest 80'-90' (1)
1 Mile Southeast of Singing River Island- Live Bait (1)

Menhaden Vessel

14 Miles West of South Tip of Chandeleur Gear Down (5)


Aerial Recon April 27, 2017
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MS Waters
L. Borgne
LA Marsh
Chand S.
Fed. Waters
Rec Vessel
Crab Vessel
Trawl Vessel
Oyster Vessel
Work Vessel
Dredge
Menhaden Vessel

MDMR Aerial Reconnaissance – May 10, 2017

The purpose of today's flight was to gauge the fishing effort and other vessel activities in the near shore and offshore waters of Mississippi and adjacent waters as well as document any harmful algae blooms, stranded sea turtles or marine mammals. Onboard the aircraft were MDMR employee Darrin Stewart, Projects Officer and Capt. Irv Hansen, Civil Air Patrol pilot.

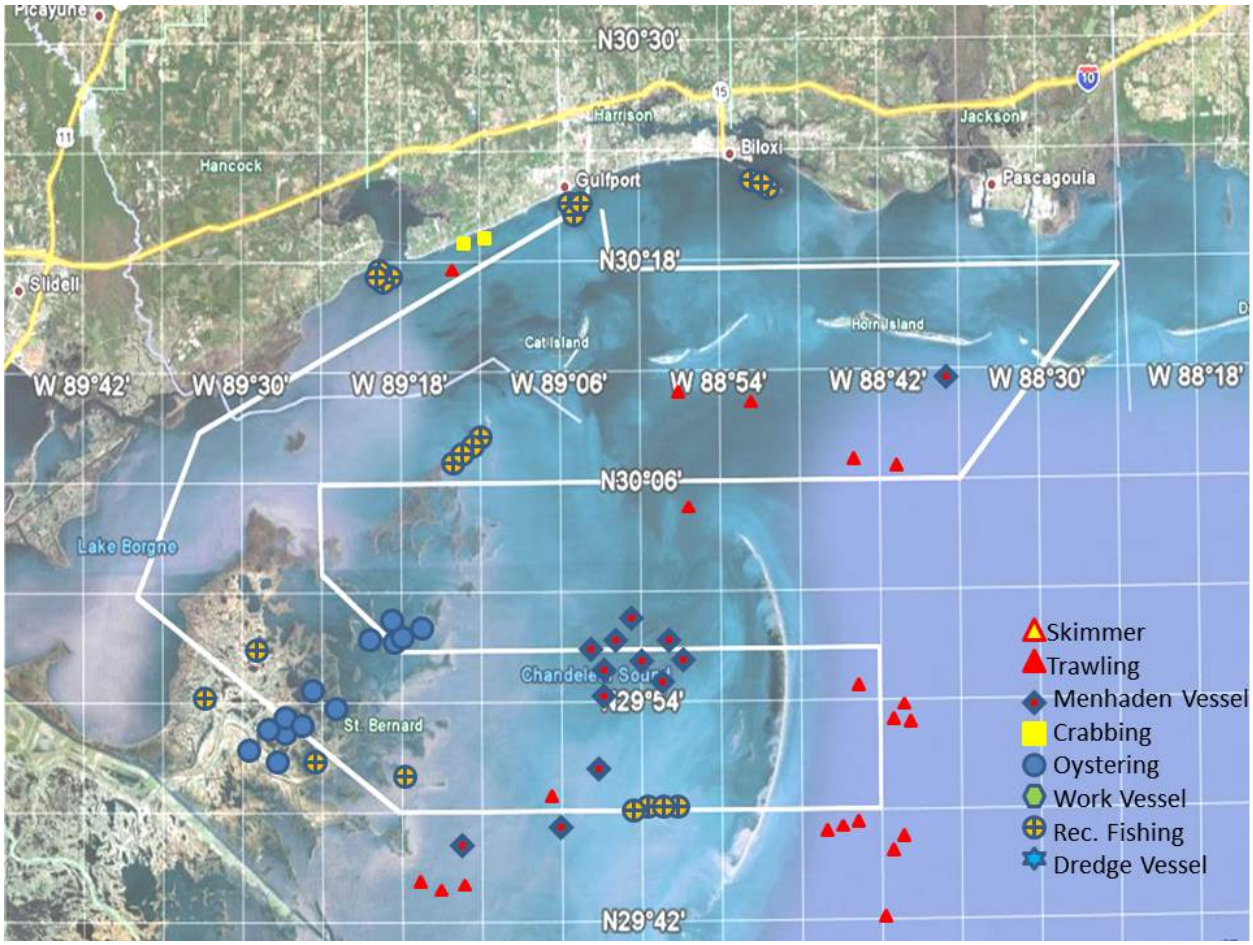
During our flight we observed thirteen (13) oyster vessels, twenty (20) trawl vessels and twelve (12) menhaden vessels all of which is indicated on the attached map. Also on the map is the approximate flight path.

We departed Gulfport Airport at 1033L and turned west along the mainland shoreline to Bayou Caddie and then south to Half Moon Island. We then flew southwest over Lake Borgne to the W89°42' line and then turned southeast to the N29°48' line beginning our east/west transects with 9 mile spacing working our way back to the north. After finishing our westward track on the N30°06' until intersecting W88°36' we turned northeast toward N30°18'/W88°24' and then turned west on the N30°18' line until south of Gulfport and landed.

WEATHER (https://www.weather.gov/)

INSHORE: NORTH WINDS NEAR 5 KNOTS BECOMING EAST LATE IN THE MORNING, THEN BECOMING SOUTH IN THE AFTERNOON. WAVES LESS THAN 1 FOOT. DOMINANT PERIOD 4 SECONDS. WAVES OR SEAS BUILDING TO 1 TO 2 FEET. DOMINANT PERIOD 4 SECONDS IN THE AFTERNOON.

OFFSHORE: SOUTHEAST WINDS 5 TO 10 KNOTS. SEAS 1 FOOT OR LESS. DOMINANT PERIOD 4 SECONDS.



Description / (Number of vessels)

Recreational

Katrina Key (5)
Gulfport Harbor (3)
Gene Taylor Key (6)
LA Marsh (4)
Isle Le Pitre (4)
Free Mason (4)

Oyster Vessel

LA Marsh Gear Down – Dredge (8)
Lake Borgne Gear Up – Dredge (5)

Crab Vessel

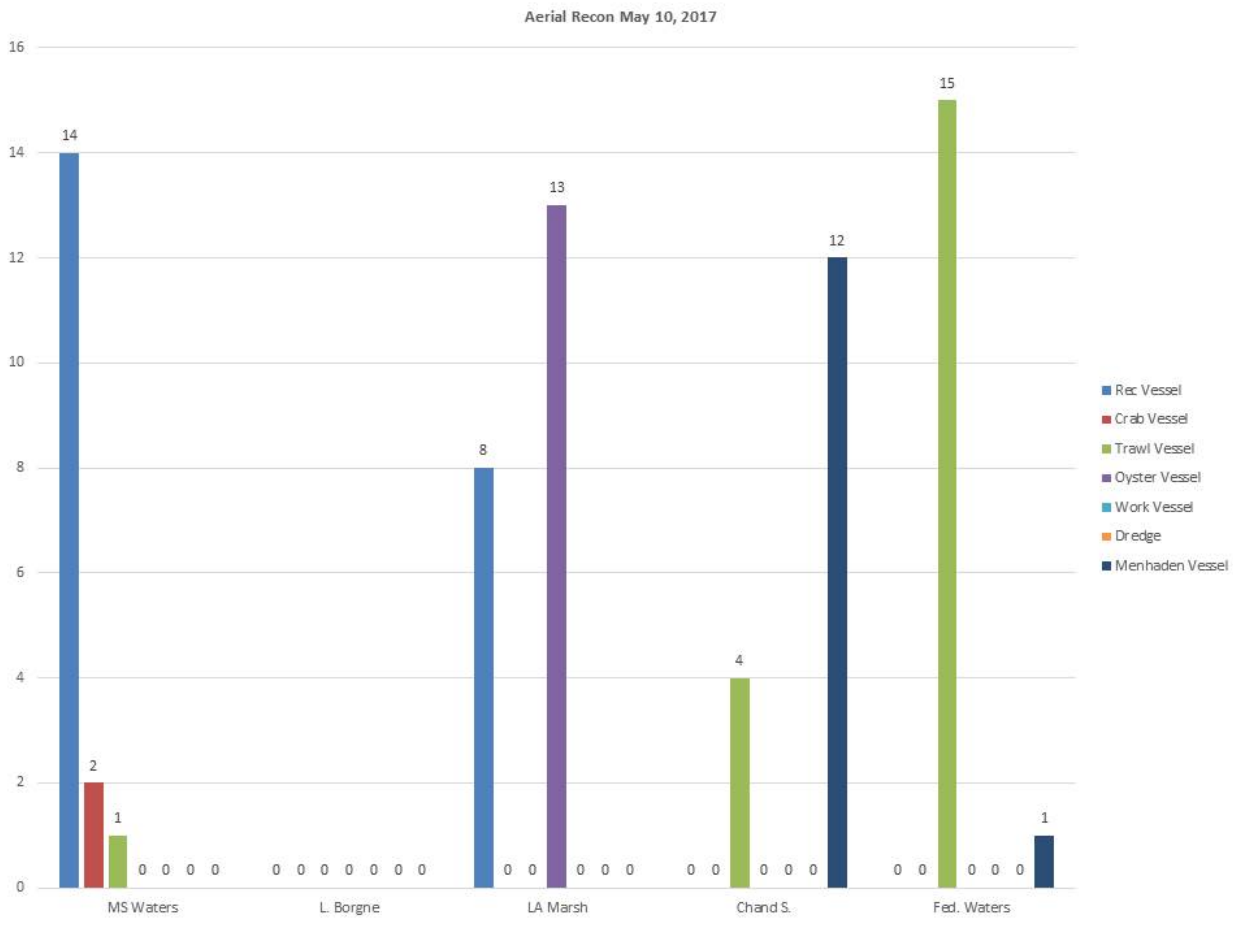
1 Mile East of Pass Christian Harbor (2)

Trawl Vessel

20 Miles West of South Tip of Chandeleur Anchored 60'-70' (3)
7 Miles West of Free Mason Gear Up Heading West 60'-70' (1)
6-7 Miles East of South Tip of Chandeleur Anchored 80'-90' (6)
21 Miles South of Horn Island Anchored 80'-90' (4)
5 Miles Northwest of North Tip of Chandeleur Gear Up Heading North 80'-90' (1)
3 Miles South of West Ship Island Anchored 80'-90' (1)
7 Miles South of East Ship Island Anchored 80'-90' (1)
10 Miles South of Horn Island Anchored 80'-90' (2)

Menhaden Vessel

Chandeleur Sound Gear Down (12)
3 Miles South of Horn Island Gear Up Heading West (1)


Aerial Recon May 10, 2017
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0 0 0
12
0 0
15
0 0 0
1
MS Waters
L. Borgne
LA Marsh
Chand S.
Fed. Waters
Rec Vessel
Crab Vessel
Trawl Vessel
Oyster Vessel
Work Vessel
Dredge
Menhaden Vessel

MDMR Aerial Reconnaissance – May 25, 2017

The purpose of today's flight was to gauge the fishing effort and other vessel activities in the near shore and offshore waters of Mississippi and adjacent waters as well as document any harmful algae blooms, stranded sea turtles or marine mammals. Onboard the aircraft were MDMR employee Darrin Stewart, Projects Officer, Megan Fleming, Fisheries Scientist and Capt. Irv Hansen, Civil Air Patrol pilot.

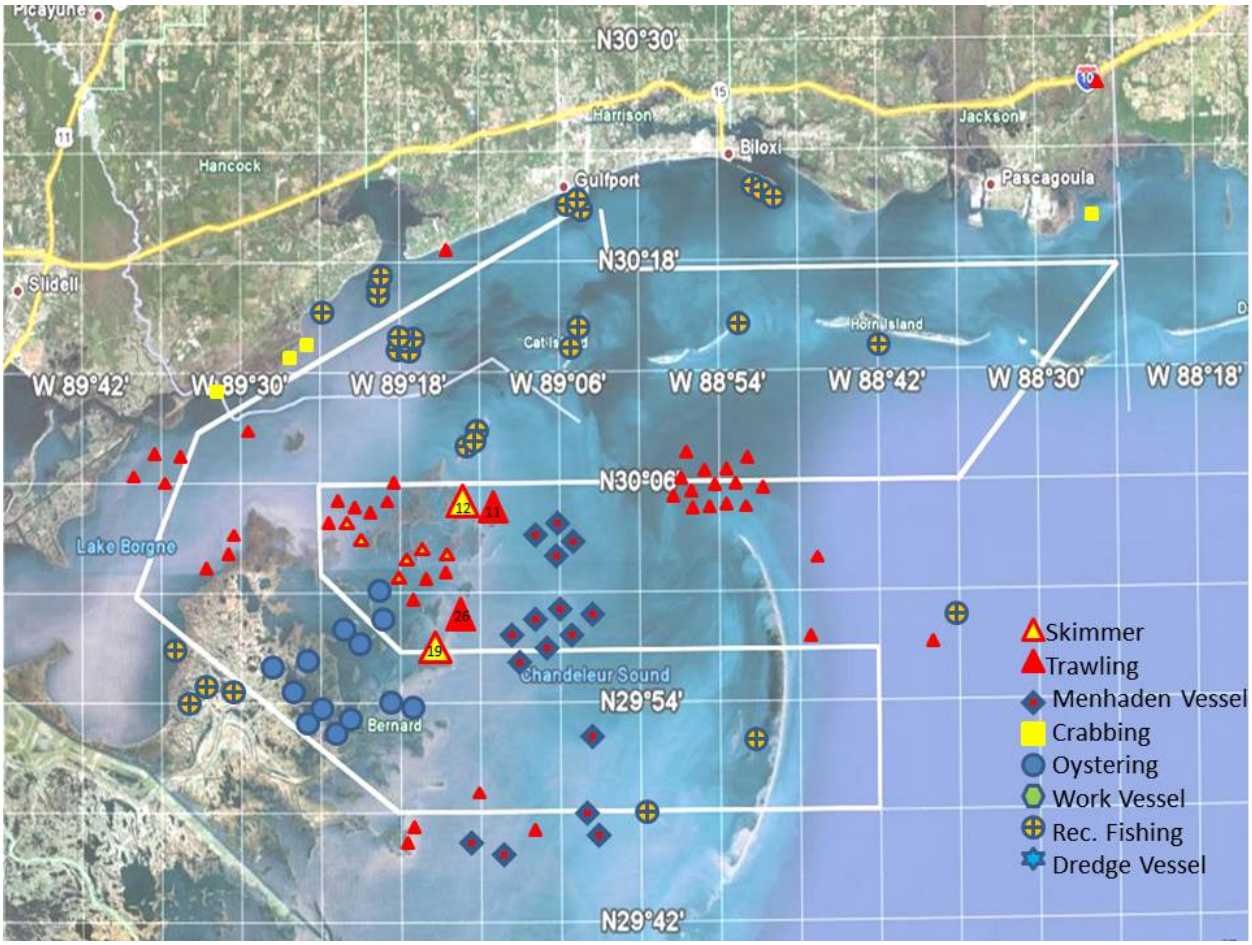
During our flight we observed one hundred thirteen (113) trawl vessels, thirteen (13) oyster vessels and sixteen (16) menhaden vessels all of which is indicated on the attached map. Also on the map is the approximate flight path.

We departed Gulfport Airport at 1037L and turned west along the mainland shoreline to Bayou Caddie and then south to Half Moon Island. We then flew southwest over Lake Borgne to the W89°42' line and then turned southeast to the N29°48' line beginning our east/west transects with 9 mile spacing working our way back to the north. After finishing our westward track on the N30°06' until intersecting W88°36' we turned northeast toward N30°18'/W88°24' and then turned west on the N30°18' line until south of Gulfport and landed.

WEATHER (https://www.weather.gov/)

INSHORE: WEST WINDS 5 TO 10 KNOTS IN MORNING INCREASING TO 15 KNOTS IN AFTERNOON SEAS 2 TO 3 FEET.

OFFSHORE: SOUTHWEST WINDS 10 KNOTS IN MORNING SEAS 2 TO 3 FEET INCREASING TO 15 KNOTS IN AFTERNOON WAVE HEIGHT 4 FOOT.



Description / (Number of vessels)

Recreational

Katrina Key (3)
Gulfport Harbor (3)
Cat Island (2)
Gene Taylor Key (3)
Bayou Caddy (1)
Pass Marianne (4)
East Ship Island (1)
Horn Island (1)
LA Marsh (4)
Isle Le Pitre (3)
Free Mason (1)

Oyster Vessel

LA Marsh Gear Down – Dredge (7)
Lake Borgne Gear Up – Dredge (6)

Crab Vessel

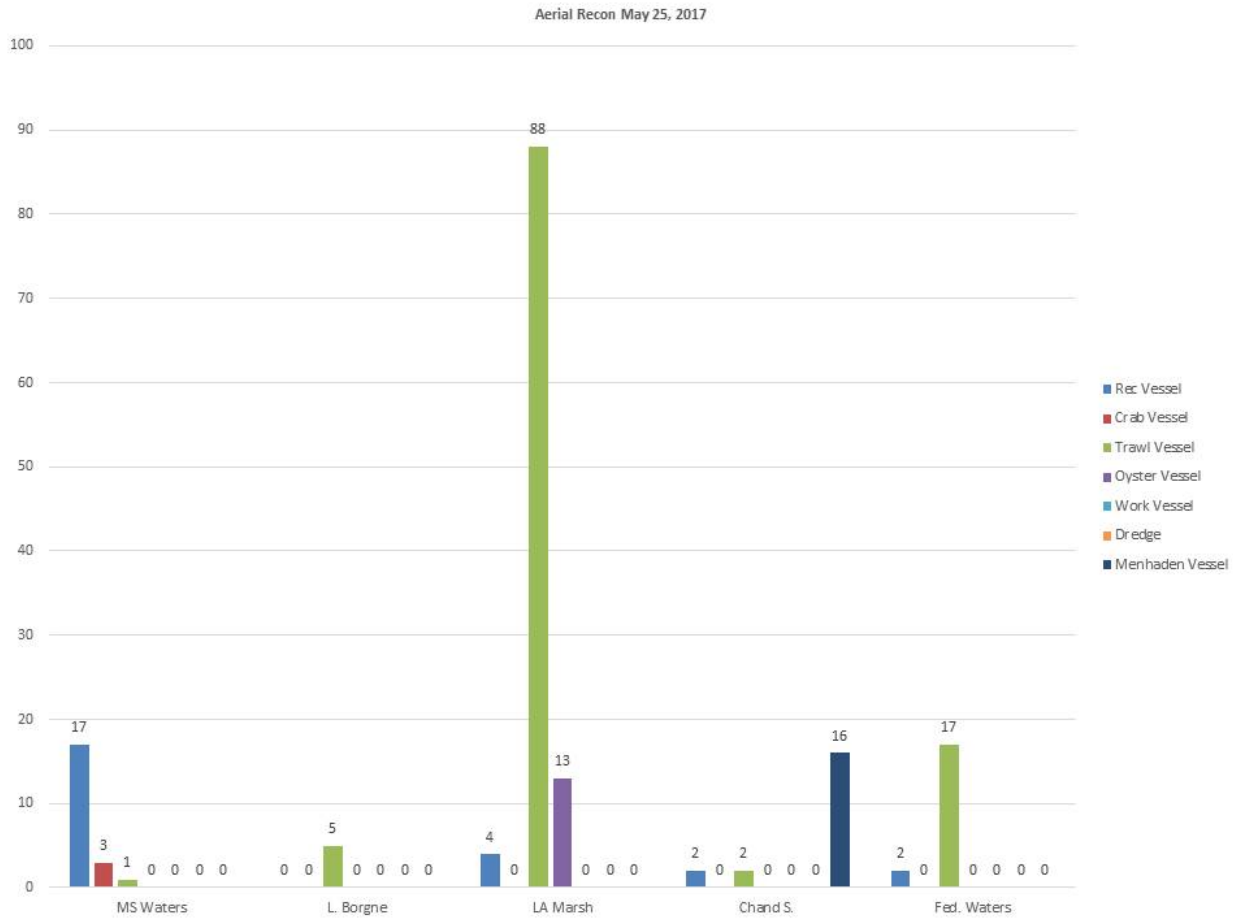
Heron Bay (2)
½ Mile South of Pearl River (1)
Bangs Lake (1)

Trawl Vessel

Pass Christian Harbor Gear Up Heading South 60'-70' (1)
Lake Borgne Gear Down 50'-60' (5)
LA Marsh Gear Down 50'-60' (38)
LA Marsh Gear Up Anchored 50'-60' (13)
Skimmer-Gear Down 50'-60' (28)
Skimmer-Gear Up Anchored 50'-60' (9)
Chandeleur Sound Gear Up Heading North 60'-70' (2)
2-4 Miles North of North Tip of Chandeleur 90'-100' (14)
2-3 Miles East of Chandeleur Anchored 90'-100' (2)
11 Miles East of Chandeleur Anchored 90'-100' (1)

Menhaden Vessel

Chandeleur Sound Gear Down (10)
Chandeleur Sound Gear Up (6)


Aerial Recon May 25, 2017
100
90
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0 0 0
16
2
0
17
0 0 0 0
MS Waters
L. Borgne
LA Marsh
Chand S.
Fed. Waters
Rec Vessel
Crab Vessel
Trawl Vessel
Oyster Vessel
Work Vessel
Dredge
Menhaden Vessel

MDMR Aerial Reconnaissance – June 8, 2017

The purpose of today's flight was to gauge the fishing effort and other vessel activities in the near shore and offshore waters of Mississippi and adjacent waters as well as document any harmful algae blooms, stranded sea turtles or marine mammals. Onboard the aircraft were MDMR employee Darrin Stewart, Projects Officer and Capt. Irv Hansen, Civil Air Patrol pilot.

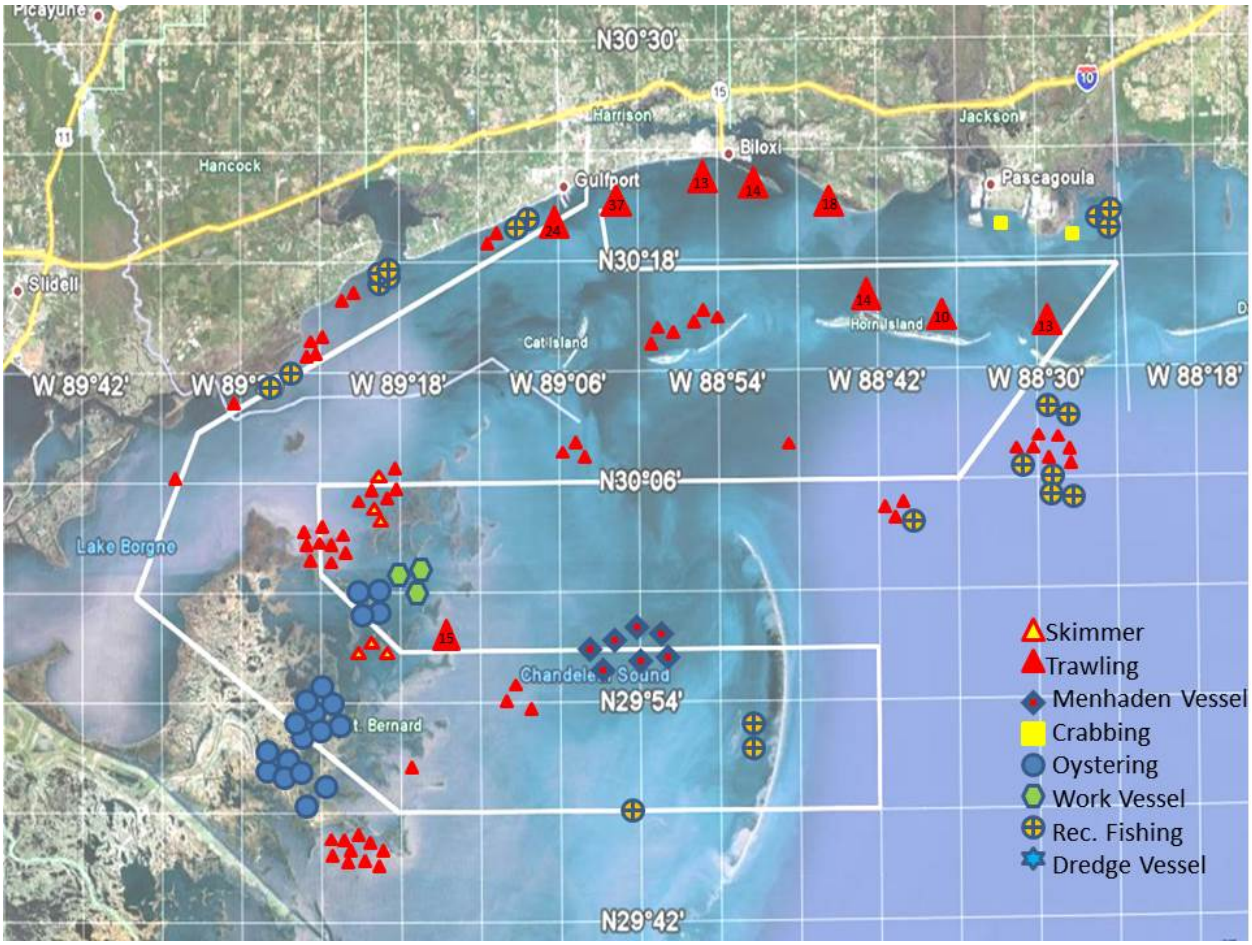
During our flight we observed two hundred and twenty one (221) trawl vessels, nineteen (19) oyster vessels and seven (7) menhaden vessels all of which is indicated on the attached map. Also on the map is the approximate flight path.

We departed Gulfport Airport at 1015L and turned west along the mainland shoreline to Bayou Caddie and then south to Half Moon Island. We then flew southwest over Lake Borgne to the W89°42' line and then turned southeast to the N29°48' line beginning our east/west transects with 9 mile spacing working our way back to the north. After finishing our westward track on the N30°06' until intersecting W88°36' we turned northeast toward N30°18'/W88°24' and then turned west on the N30°18' line until south of Gulfport and landed.

WEATHER (https://www.weather.gov/)

INSHORE: NORTH WINDS 15 TO 20 KNOTS EASING TO NEAR 5 KNOTS EARLY IN THE AFTERNOON, THEN BECOMING WEST LATE. WAVES 3 TO 5 FEET SUBSIDING TO 1 FOOT. DOMINANT PERIOD 4 SECONDS.

OFFSHORE: NORTH WINDS 15 TO 20 KNOTS BECOMING NORTHEAST 5 TO 10 KNOTS IN THE LATE MORNING AND AFTERNOON. SEAS 3 TO 5 FEET SUBSIDING TO 2 FEET. DOMINANT PERIOD 5 SECONDS.



Description / (Number of vessels)

Recreational

1 Mile West of Long Beach Harbor (3)
Gene Taylor Key (3)
Heron Bay (2)
Free Mason (1)
Chandeleur North Island (2)
11 Miles South of Horn Island (1)
3-8 Miles South of Petit Bois Island (6)
Bangs Lake (3)

Oyster Vessel

LA Marsh Gear Down – Dredge (12)
LA Marsh Gear Up – Dredge (7)

Crab Vessel

1 Mile West of Bayou Casotte (2)

Work Vessel

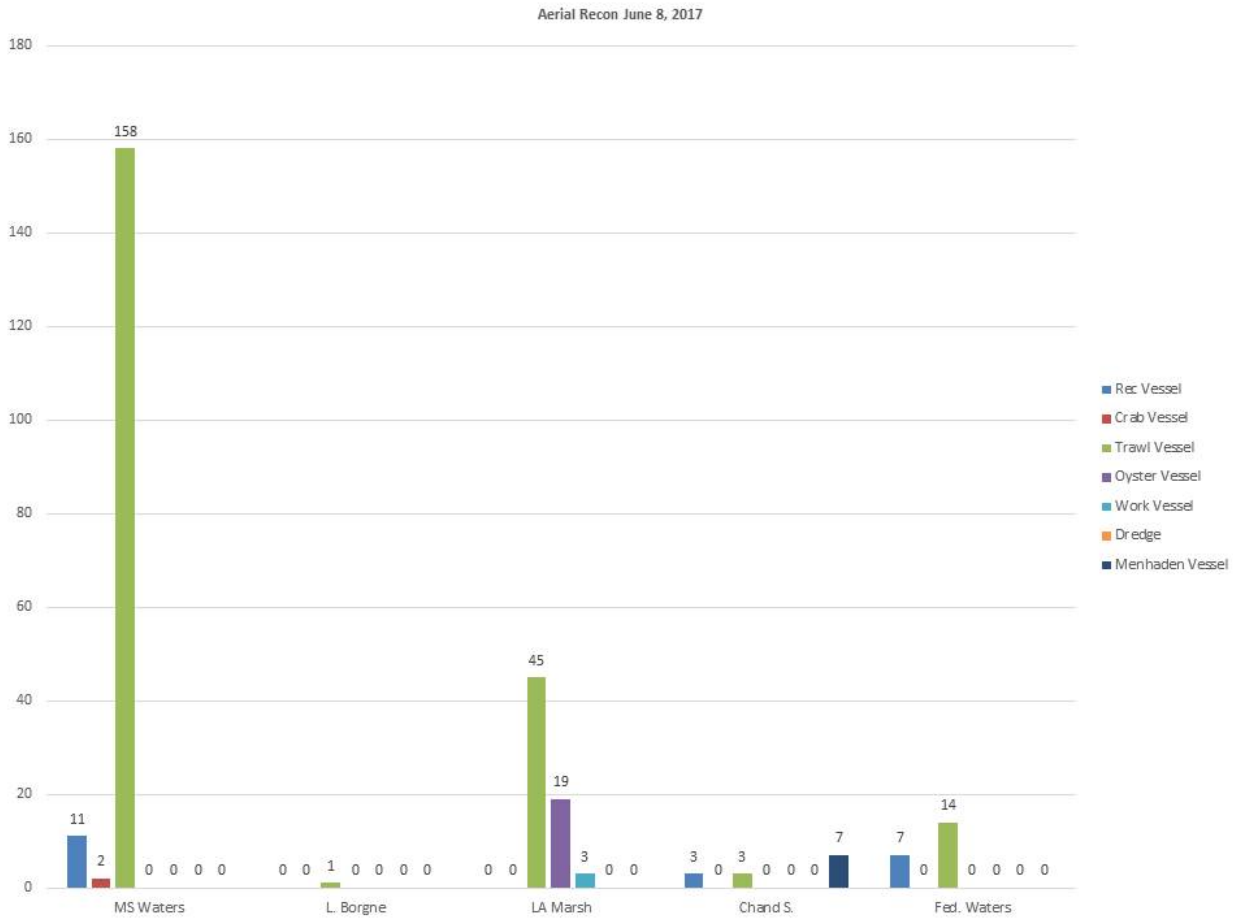
LA Marsh Shell Plant – Barges (3)

Menhaden Vessel

Chandeleur Sound Gear Down (7)

Trawl Vessel

3-5 Miles North of Petit Bois Gear Down 50'-60' (13)
3-4 Miles North of Horn Island Gear Down 50'-60' (24)
2-3 Miles North of Ship Island Gear Down 60'-70' (6)
1-2 Miles South of Bellefontaine Beach Gear Down 40'-50' (18)
1 Mile South of Deer Island Gear Down 40'-50' (14)
5 Miles West of Deer Island Gear Down 40'-50' (13)
5 Miles Southeast of Gulfport Harbor Gear Down 40'-60' (37)
2 Miles Southwest of Gulfport Harbor Gear Down 40'-60' (24)
3 Miles West of Long Beach Harbor Gear Down 50'-60' (2)
4 Miles East of Bayou Caddy Gear Down 50'-60' (2)
2 Miles South of Bayou Caddy Anchored 40'-50' (4)
Mouth of Pearl River Gear Down 40'-50' (1)
Lake Borgne Gear Up Heading North 50'-60' (1)
LA Marsh Skimmer Gear Down 50'-60' (6)
LA Marsh Gear Down 50'-60' (16)
LA Marsh Gear Up 50'-60' (9)
Chandeleur Sound Gear Up Heading North 80'-90' (3)
5 Miles South of Cat Island Gear Up Heading North 60'-70' (3)
5 Miles North of Chandeleur Gear Up Heading North 80'-90' (1)
11 Miles South of Horn Island Anchored 90'-100' (3)
6-8 Miles South of Petit Bois Anchored 90'-100' (7)


Aerial Recon June 8, 2017
180
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3 0 3 0 0 0 7
7 0 14 0 0 0 0
MS Waters
L. Borgne
LA Marsh
Chand S.
Fed. Waters
Rec Vessel
Crab Vessel
Trawl Vessel
Oyster Vessel
Work Vessel
Dredge
Menhaden Vessel

MDMR Aerial Reconnaissance – July 6, 2017

The purpose of today's flight was to gauge the fishing effort and other vessel activities in the near shore and offshore waters of Mississippi and adjacent waters as well as document any harmful algae blooms, stranded sea turtles or marine mammals. Onboard the aircraft were MDMR employee Darrin Stewart, Projects Officer and Capt. George Hill, Civil Air Patrol pilot.

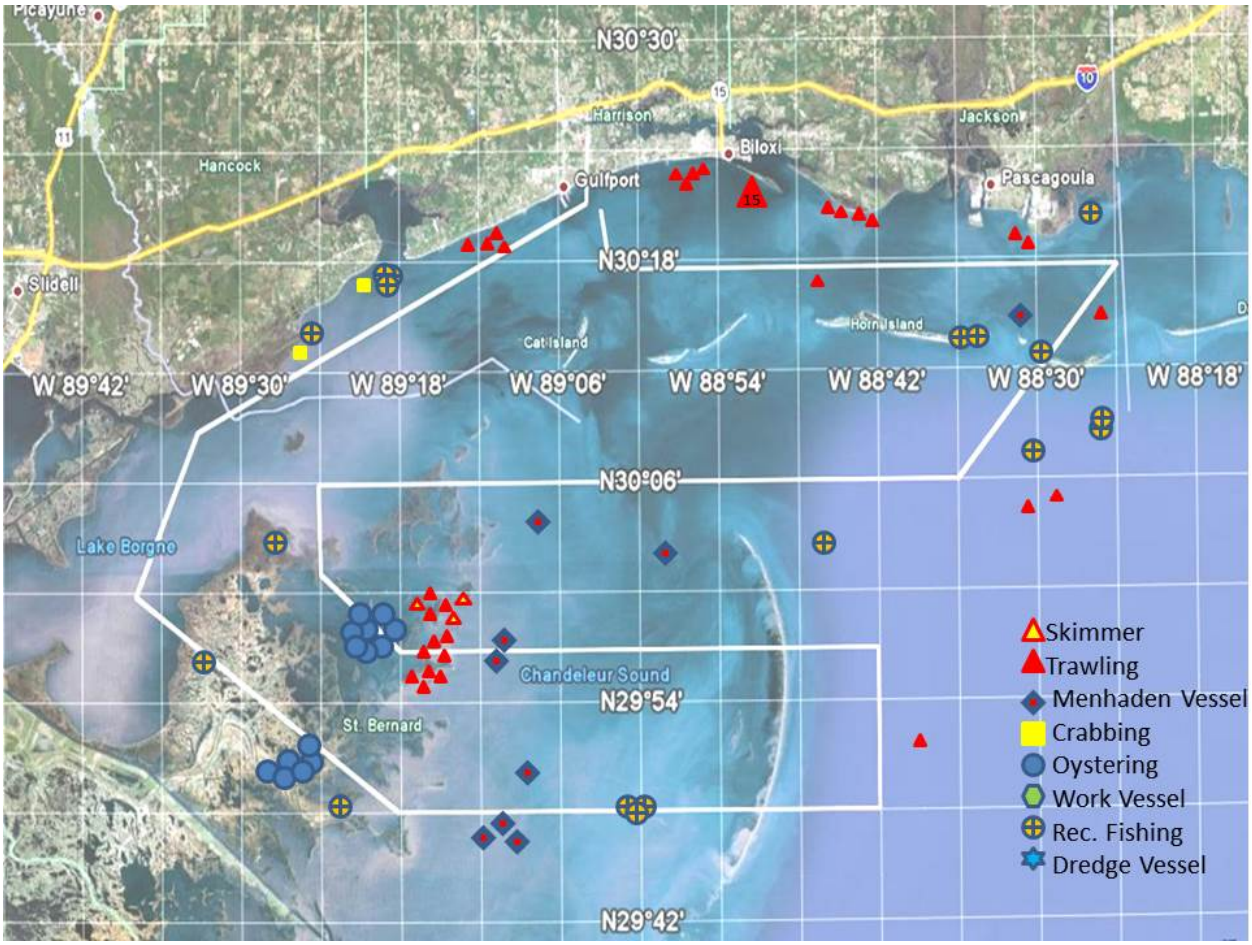
During our flight we observed forty eight (48) trawl vessels, fourteen (14) oyster vessels and nine (9) menhaden vessels all of which is indicated on the attached map. Also on the map is the approximate flight path.

We departed Gulfport Airport at 0933L and turned west along the mainland shoreline to Bayou Caddie and then south to Half Moon Island. We then flew southwest over Lake Borgne to the W89°42' line and then turned southeast to the N29°48' line beginning our east/west transects with 9 mile spacing working our way back to the north. After finishing our westward track on the N30°06' until intersecting W88°36' we turned northeast toward N30°18'/W88°24' and then turned west on the N30°18' line until south of Gulfport and landed.

WEATHER (https://www.weather.gov/)

INSHORE: SOUTH WINDS 5 TO 10 KNOTS. WAVES 1 TO 2 FEET. DOMINANT PERIOD 4 SECONDS. CHANCE OF SHOWERS AND THUNDERSTORMS.

OFFSHORE: SOUTHEAST WINDS 5 TO 10 KNOTS. SEAS 1 TO 2 FEET. DOMINANT PERIOD 5 SECONDS. SLIGHT CHANCE OF SHOWERS AND THUNDERSTORMS THROUGH THE DAY.



Description / (Number of vessels)

Recreational

Gene Taylor Key (3)
Bayou Caddy (1)
LA Marsh (3)
Free Mason (3)
3 Miles East of Chandeleur (1)
5 Miles South of Sand Island (1)
Triple Rigs (3)
Petit Bois Island (1)
Horn Island (2)
Bangs Lake (3)

Oyster Vessel

LA Marsh Gear Down – Dredge (12)
LA Marsh Gear Up – Dredge (2)

Menhaden Vessel

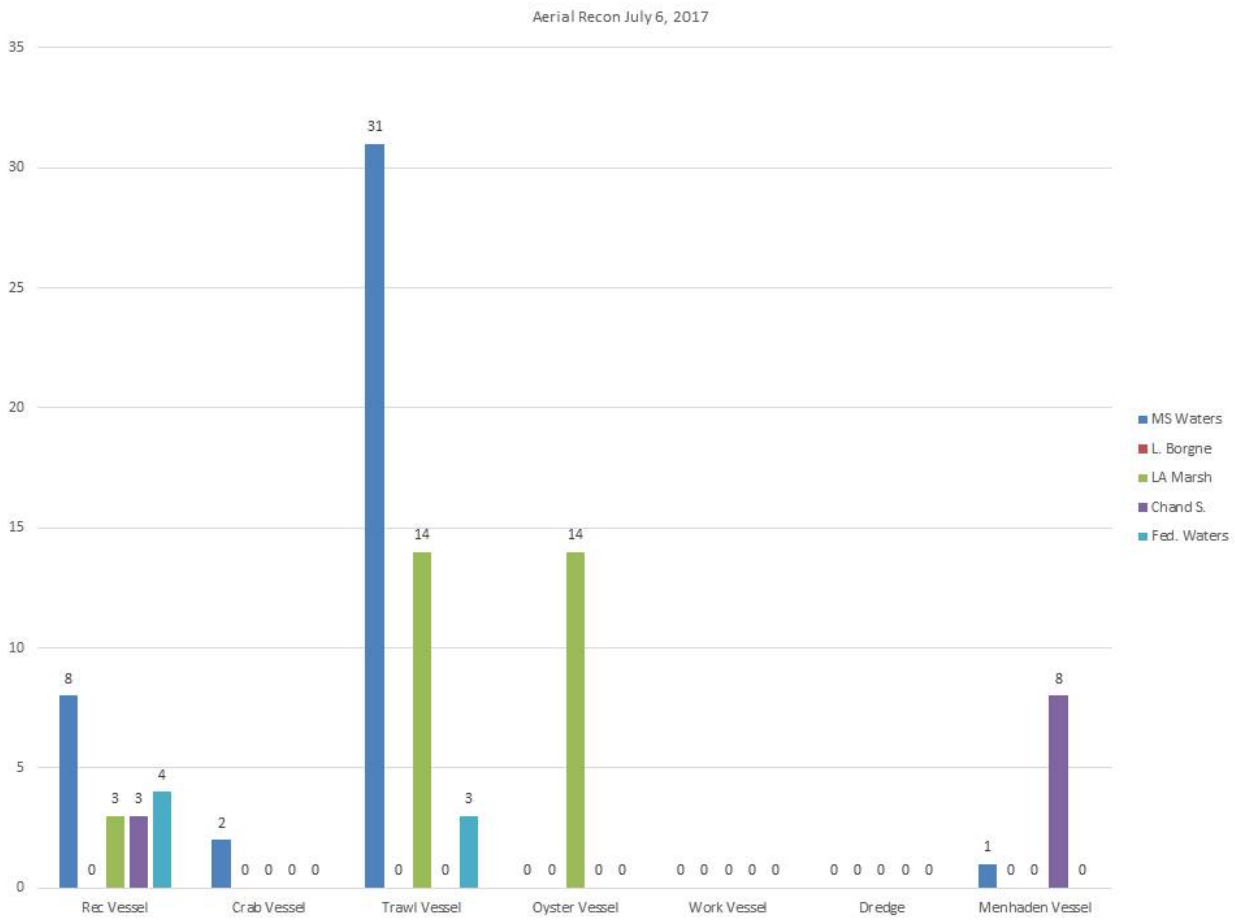
Chandeleur Sound Gear Down (7)
Chandeleur Sound Heading South Gear Up (1)
2 Miles North of Sand Island Gear Up Heading South (1)

Trawl Vessel

2-4 Miles East of Pass Christian Harbor Gear Down 50'-60' (4)
LA Marsh Gear Down 40'-60' (11)
LA Marsh Skimmer Gear Down 50'-60' (3)
11 Miles East of Chandeleur Gear Up Heading South 90'-100' (1)
8 Miles South of Petit Bois Anchored 90'-100' (2)
3 Miles North of Petit Bois Anchored 60'-70' (1)
2 Miles South of Bayou Casotte Gear Down 30'-40' (2)
2 Miles North of Horn Island Anchored 60'-70' (1)
1 Mile South of Bellefontaine Beach Gear Down 50'-60' (4)
1-3 Miles South of Deer Island Gear Down 40'-60' (15)
5 Miles West of West Tip of Deer Island Gear Down 50'-60' (4)

Crab Vessel

3 Miles West of St. Louis Bay (1)
Heron Bay (1)


Aerial Recon July 6, 2017
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1
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8
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Rec Vessel
Crab Vessel
Trawl Vessel
Oyster Vessel
Work Vessel
Dredge
Menhaden Vessel
MS Waters
L. Borgne
LA Marsh
Chand S.
Fed. Waters

MDMR Aerial Reconnaissance – July 19, 2017

The purpose of today's flight was to gauge the fishing effort and other vessel activities in the near shore and offshore waters of Mississippi and adjacent waters as well as document any harmful algae blooms, stranded sea turtles or marine mammals. Onboard the aircraft were MDMR employee Darrin Stewart, Projects Officer and Capt. George Hill, Civil Air Patrol pilot.

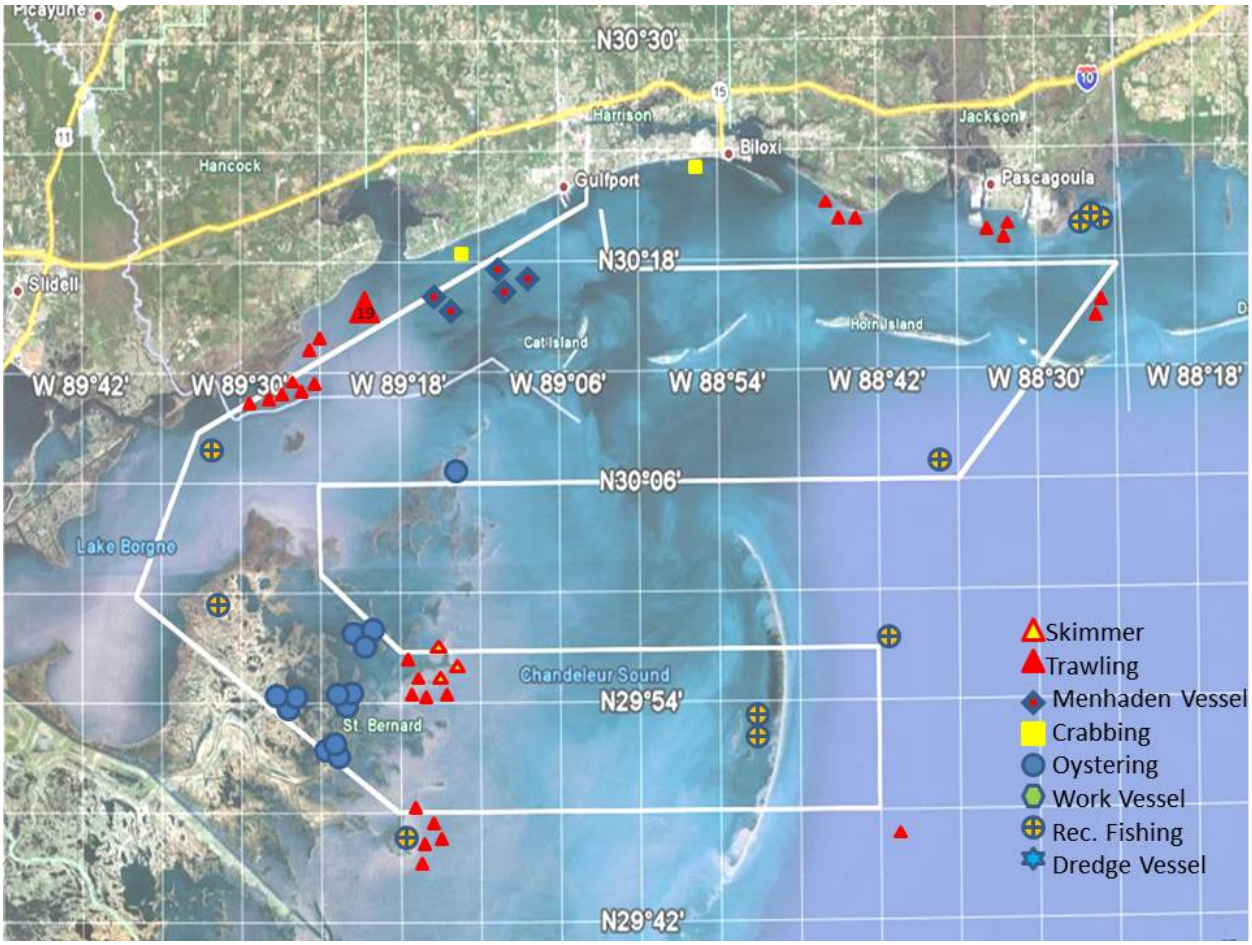
During our flight we observed forty nine (49) trawl vessels, twelve (12) oyster vessels and five (5) menhaden vessels all of which is indicated on the attached map. Also on the map is the approximate flight path..

We departed Gulfport Airport at 0927L and turned west along the mainland shoreline to Bayou Caddie and then south to Half Moon Island. We then flew southwest over Lake Borgne to the W89°42' line and then turned southeast to the N29°48' line beginning our east/west transects with 9 mile spacing working our way back to the north. After finishing our westward track on the N30°06' until intersecting W88°36' we turned northeast toward N30°18'/W88°24' and then turned west on the N30°18' line until south of Gulfport and landed.

WEATHER (https://www.weather.gov/)

INSHORE: SOUTH WINDS 5 KNOTS. WAVES 1 FOOT OR LESS. DOMINANT PERIOD 4 SECONDS. CHANCE OF SHOWERS AND THUNDERSTORMS.

OFFSHORE: SOUTHEAST WINDS 5 KNOTS. SEAS 1 FOOT. DOMINANT PERIOD 5 SECONDS. SLIGHT CHANCE OF SHOWERS AND THUNDERSTORMS THROUGH THE DAY.



Description / (Number of vessels)

Recreational

Lake Borgne (1)
LA Marsh (2)
Chandeleur North Islands (2)
8 Miles East of Chandeleur (1)
7 Miles South of Horn Island (1)
Bangs Lake (3)

Oyster Vessel

LA Marsh Gear Down – Dredge (8)
LA Marsh Gear Up – Dredge (4)

Menhaden Vessel

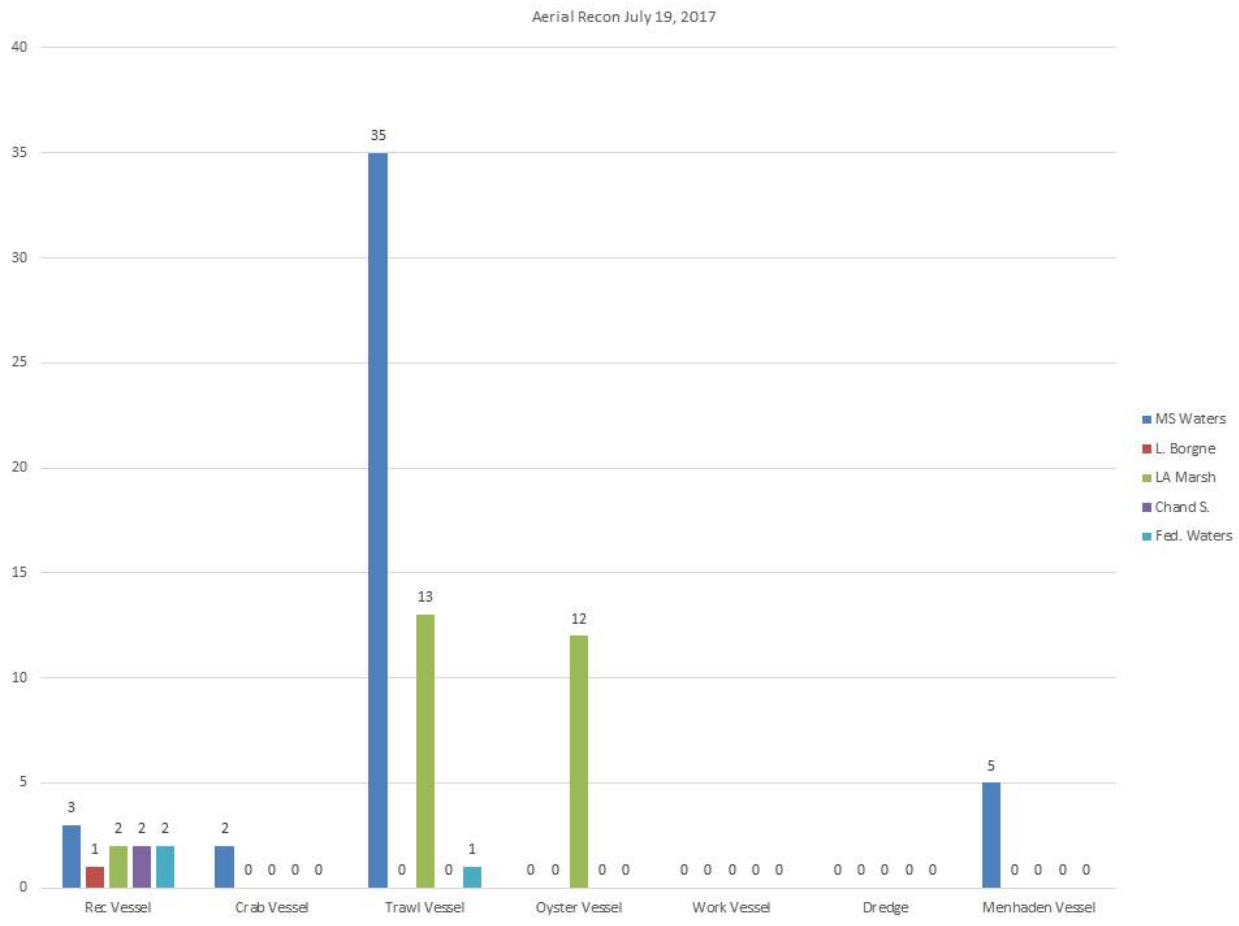
4 Miles Southwest of Long Beach Harbor Gear Up (3)
3 Miles South of Pass Christian Harbor Gear Up (2)

Trawl Vessel

4-6 Miles Southwest of St. Louis Bay Gear Down 40'-60' (19)
2 Miles South of Bayou Caddy Gear Down 40'-50' (2)
St. Joe Channel Gear Down 50'-60' (6)
LA Marsh Gear Down 50'-60' (7)
LA Marsh Gear Up 50'-60' (3)
LA Marsh Skimmer Gear Down 50'-60' (3)
11 Miles East of Chandeleur Anchored 80'-90' (1)
4 Miles North of Petit Bois Anchored 60'-70' (2)
1-3 Miles East of Singing River Island Gear Down 40'-50' (3)
1 Mile South of Bellefontaine Beach Gear Down 50'-60' (3)

Crab Vessel

3 Miles West of Deer Island (1)
1 Mile East of Pass Christian Harbor (1)


Aerial Recon July 19, 2017
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0 0 0 0 0
0 0 0 0 0
5 0 0 0 0
Rec Vessel
Crab Vessel
Trawl Vessel
Oyster Vessel
Work Vessel
Dredge
Menhaden Vessel
MS Waters
L. Borgne
LA Marsh
Chand S.
Fed. Waters

MDMR Aerial Reconnaissance – August 1, 2017

The purpose of today's flight was to gauge the fishing effort and other vessel activities in the near shore and offshore waters of Mississippi and adjacent waters as well as document any harmful algae blooms, stranded sea turtles or marine mammals. Onboard the aircraft were MDMR employee Darrin Stewart, Projects Officer and Capt. Irv Hansen, Civil Air Patrol pilot.

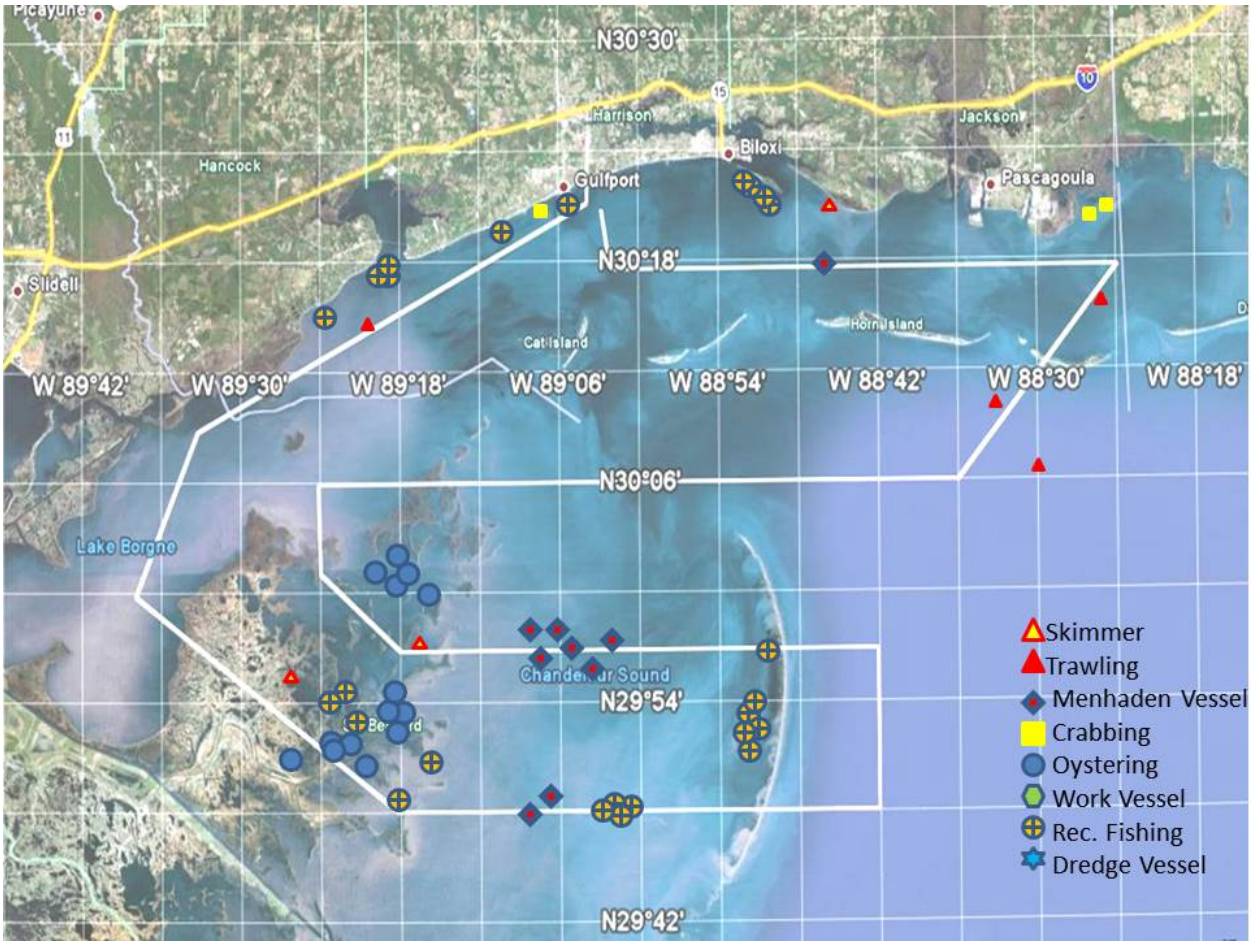
During our flight we observed seven (7) trawl vessels, fourteen (14) oyster vessels and nine (9) menhaden vessels all of which is indicated on the attached map. Also on the map is the approximate flight path.

We departed Gulfport Airport at 1024L and turned west along the mainland shoreline to Bayou Caddie and then south to Half Moon Island. We then flew southwest over Lake Borgne to the W89°42' line and then turned southeast to the N29°48' line beginning our east/west transects with 9 mile spacing working our way back to the north. After finishing our westward track on the N30°06' until intersecting W88°36' we turned northeast toward N30°18'/W88°24' and then turned west on the N30°18' line until south of Gulfport and landed.

WEATHER (https://www.weather.gov/)

INSHORE: SOUTHEAST WINDS 5 KNOTS. WAVES 1 FOOT OR LESS. DOMINANT PERIOD 3 SECONDS. CHANCE OF SHOWERS AND THUNDERSTORMS.

OFFSHORE: SOUTHEAST WINDS 5 KNOTS. SEAS 1 FOOT. DOMINANT PERIOD 5 SECONDS. SLIGHT CHANCE OF SHOWERS AND THUNDERSTORMS THROUGH THE DAY.



Description / (Number of vessels)

Recreational

Gulfport Harbor (1)
2 Miles West of Long Beach Harbor (1)
Gene Taylor Key (3)
Jail House Key (1)
LA Marsh (5)
Free Mason (4)
Chandeleur (6)
Katrina Key (4)

Oyster Vessel

LA Marsh Gear Down – Dredge (8)
LA Marsh Gear Up – Dredge (6)

Menhaden Vessel

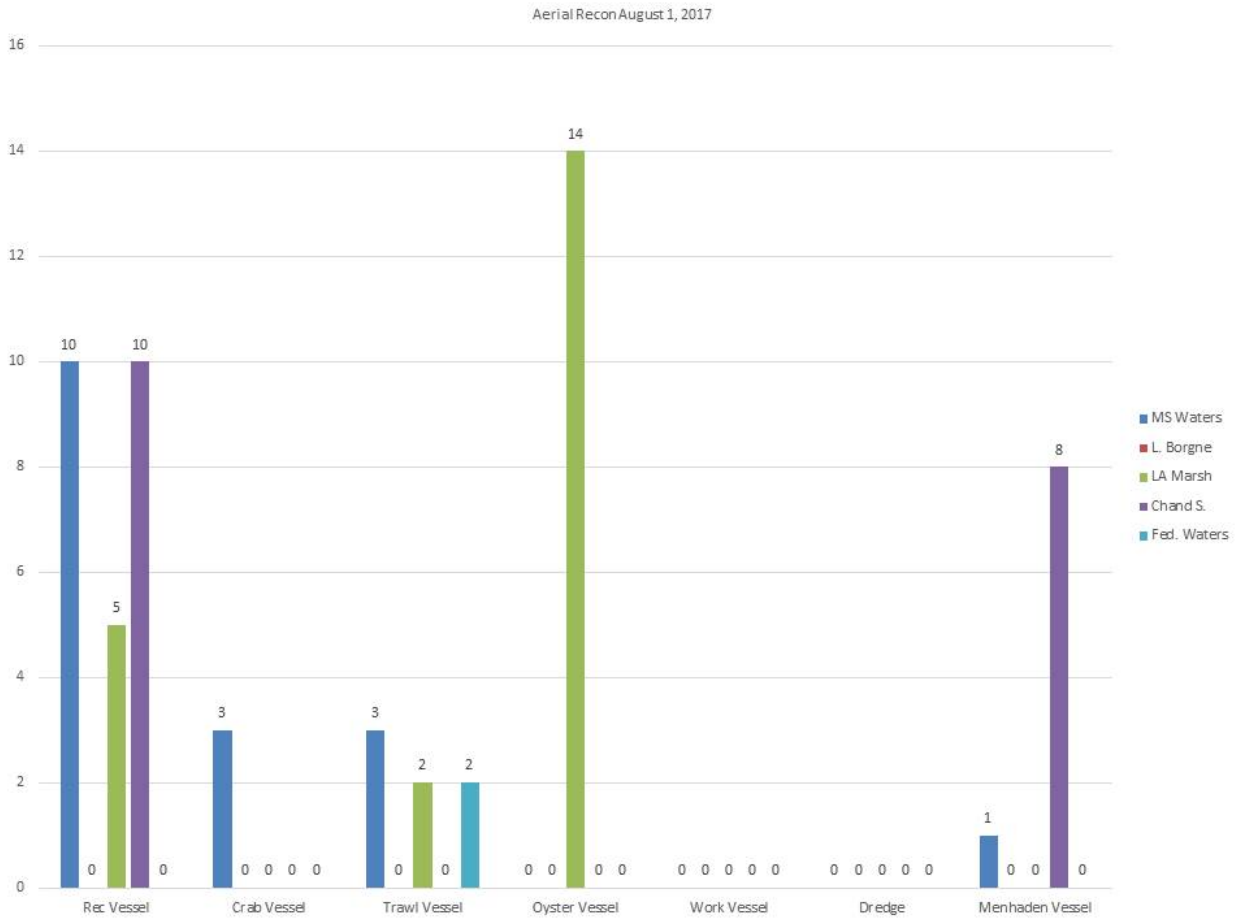
Chandeleur Sound Gear Down (8)
3 Miles North of Horn Island Gear Up (1)

Trawl Vessel

4 Miles East of Bayou Caddy Gear Up Heading North 40'-50' (1)
LA Marsh Skimmer Anchored 50'-60' (2)
7 Miles South of Sand Island Anchored 80'-90' (1)
3 Miles South of East Tip of Horn Island Anchored 60'-70' (1)
3 Miles North of East Tip of Petit Bois 60'-70' (1)
½ Mile South of Bellefontaine Beach Skimmer Anchored 50'-60' (1)

Crab Vessel

2 Mile West of Gulfport Harbor (1)
Bangs Lake (2)


Aerial Recon August 1, 2017
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0 0 0 0 0
1
0 0
8
0
Rec Vessel
Crab Vessel
Trawl Vessel
Oyster Vessel
Work Vessel
Dredge
Menhaden Vessel
MS Waters
L. Borgne
LA Marsh
Chand S.
Fed. Waters

MDMR Aerial Reconnaissance – August 21, 2017

The purpose of today's flight was to gauge the fishing effort and other vessel activities in the near shore and offshore waters of Mississippi and adjacent waters as well as document any harmful algae blooms, stranded sea turtles or marine mammals. Onboard the aircraft were MDMR employee Darrin Stewart, Projects Officer and Capt. Irv Hansen, Civil Air Patrol pilot.

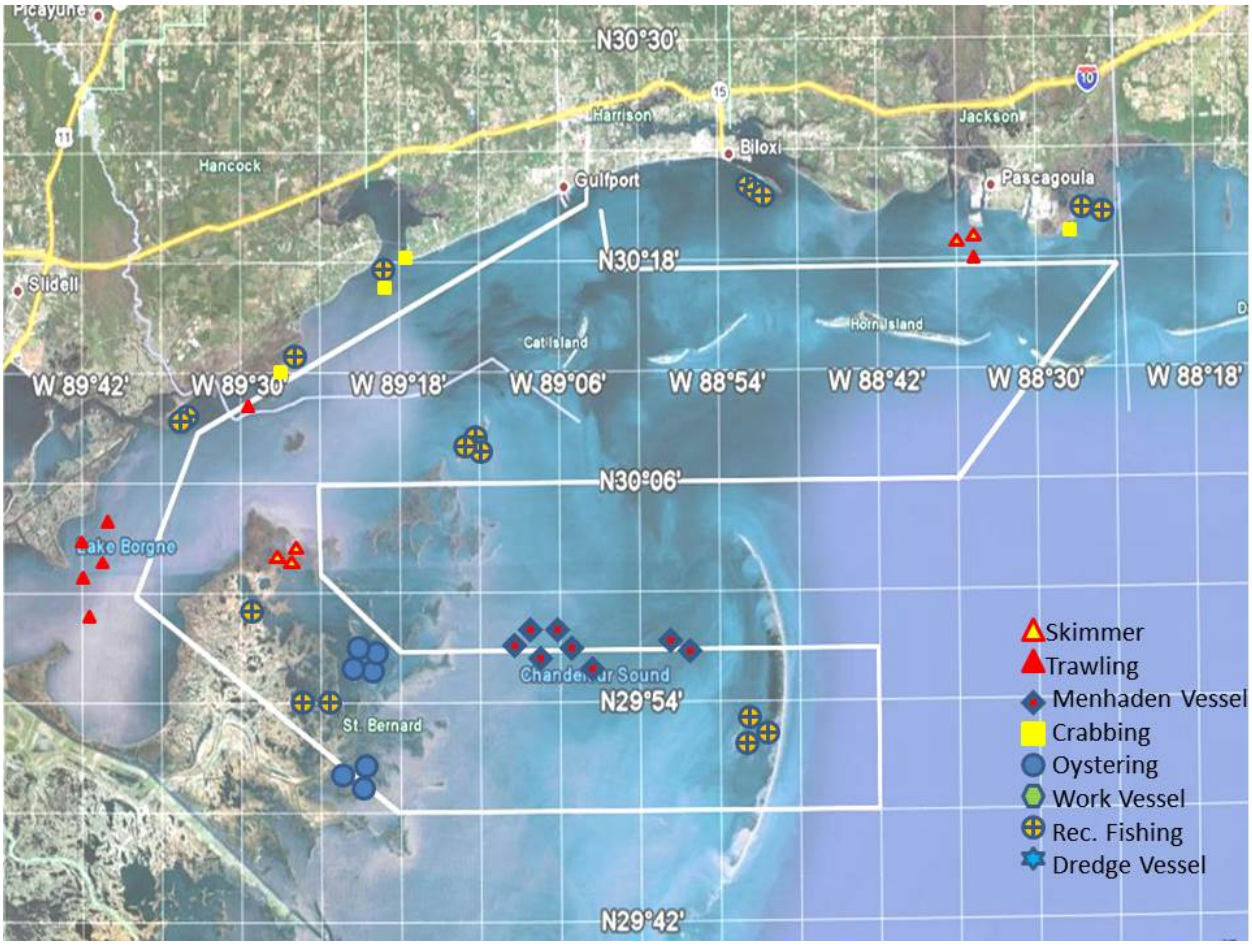
During our flight we observed twelve (12) trawl vessels, seven (7) oyster vessels and eight (8) menhaden vessels all of which is indicated on the attached map. Also on the map is the approximate flight path.

We departed Gulfport Airport at 0937L and turned west along the mainland shoreline to Bayou Caddie and then south to Half Moon Island. We then flew southwest over Lake Borgne to the W89°42' line and then turned southeast to the N29°48' line beginning our east/west transects with 9 mile spacing working our way back to the north. After finishing our westward track on the N30°06' until intersecting W88°36' we turned northeast toward N30°18'/W88°24' and then turned west on the N30°18' line until south of Gulfport and landed.

WEATHER (https://www.weather.gov/)

INSHORE: SOUTHEAST WINDS 5 TO 10 KNOTS. WAVES 1 TO 2 FEET. DOMINANT PERIOD 4 SECONDS. SLIGHT CHANCE OF SHOWERS AND THUNDERSTORMS IN THE LATE MORNING AND AFTERNOON.

OFFSHORE: EAST WINDS 10 TO 15 KNOTS. SEAS 2 TO 3 FEET. DOMINANT PERIOD 4 SECONDS. SLIGHT CHANCE OF SHOWERS AND THUNDERSTORMS IN THE AFTERNOON.



Description / (Number of vessels)

Recreational

Taylor Key (3)
2 Miles Southwest of Bayou Caddy (1)
2 Miles west of Pearl River (2)
LA Marsh (3)
Chandeleur (3)
Isle Le Petre (3)
Bangs Lake (2)
Katrina Key (3)

Oyster Vessel

LA Marsh Gear Down – Dredge (5)
LA Marsh Gear Up – Dredge (2)

Menhaden Vessel

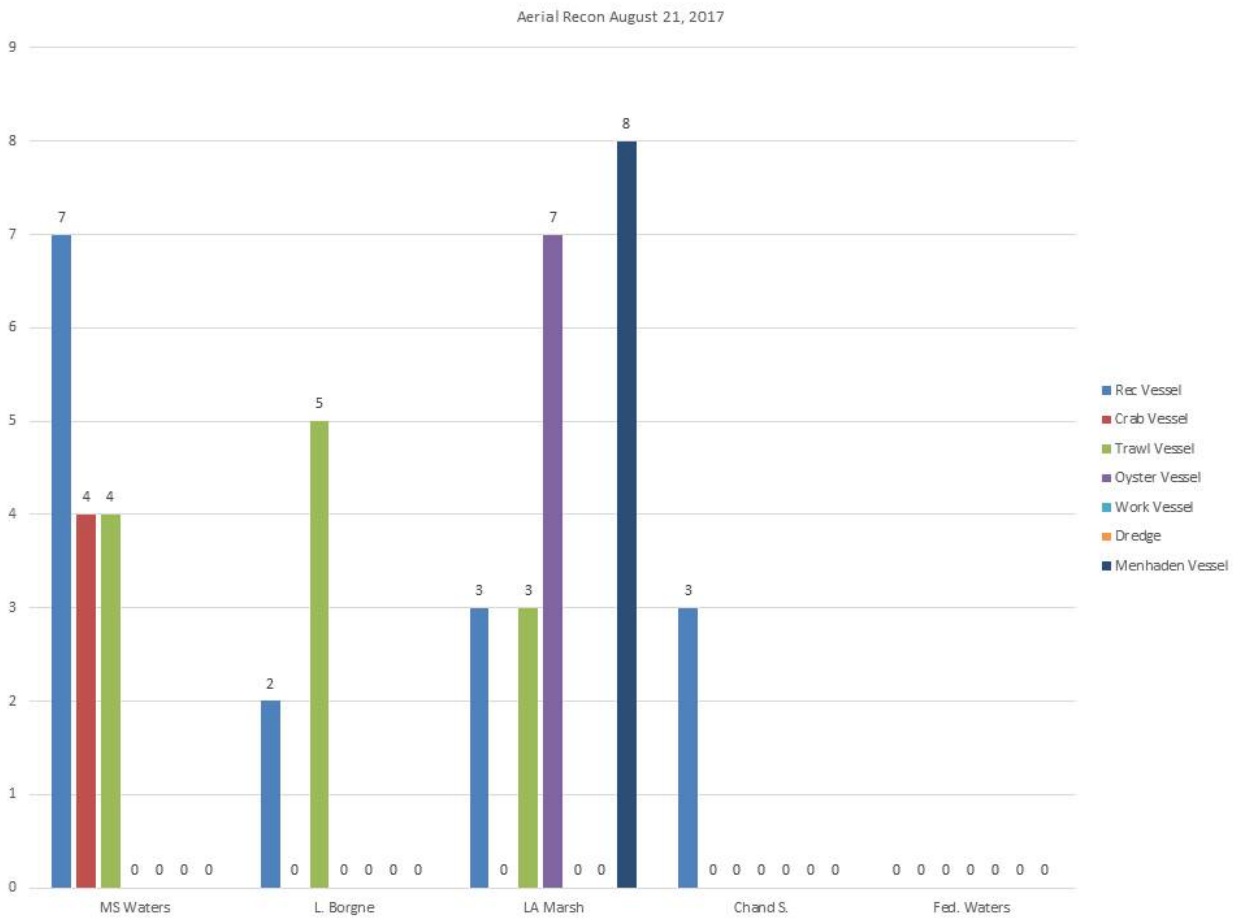
Chandeleur Sound Gear Down (8)

Trawl Vessel

St. Joe Anchored 60'-70' (1)
Lake Borgne Gear Down 50'-60' (5)
LA Marsh-Skimmer-Anchored 50'-60' (3)
1-2 Miles South of Singing River Island-Skimmer-Gear Down 50'-60' (2)
2 Miles South of Singing River Island Gear Down 50'-60' (1)

Crab Vessel

3 Miles Northeast of Taylor Key (1)
½ Mile South of Taylor Key (1)
Heron Bay (1)
Bangs Lake (1)


Aerial Recon August 21, 2017
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MS Waters
L. Borgne
LA Marsh
Chand S.
Fed. Waters
Rec Vessel
Crab Vessel
Trawl Vessel
Oyster Vessel
Work Vessel
Dredge
Menhaden Vessel

MDMR Aerial Reconnaissance – September 28, 2017

The purpose of today's flight was to gauge the fishing effort and other vessel activities in the near shore and offshore waters of Mississippi and adjacent waters as well as document any harmful algae blooms, stranded sea turtles or marine mammals. Onboard the aircraft were MDMR employee Darrin Stewart, Projects Officer and Capt. Irv Hansen, Civil Air Patrol pilot.

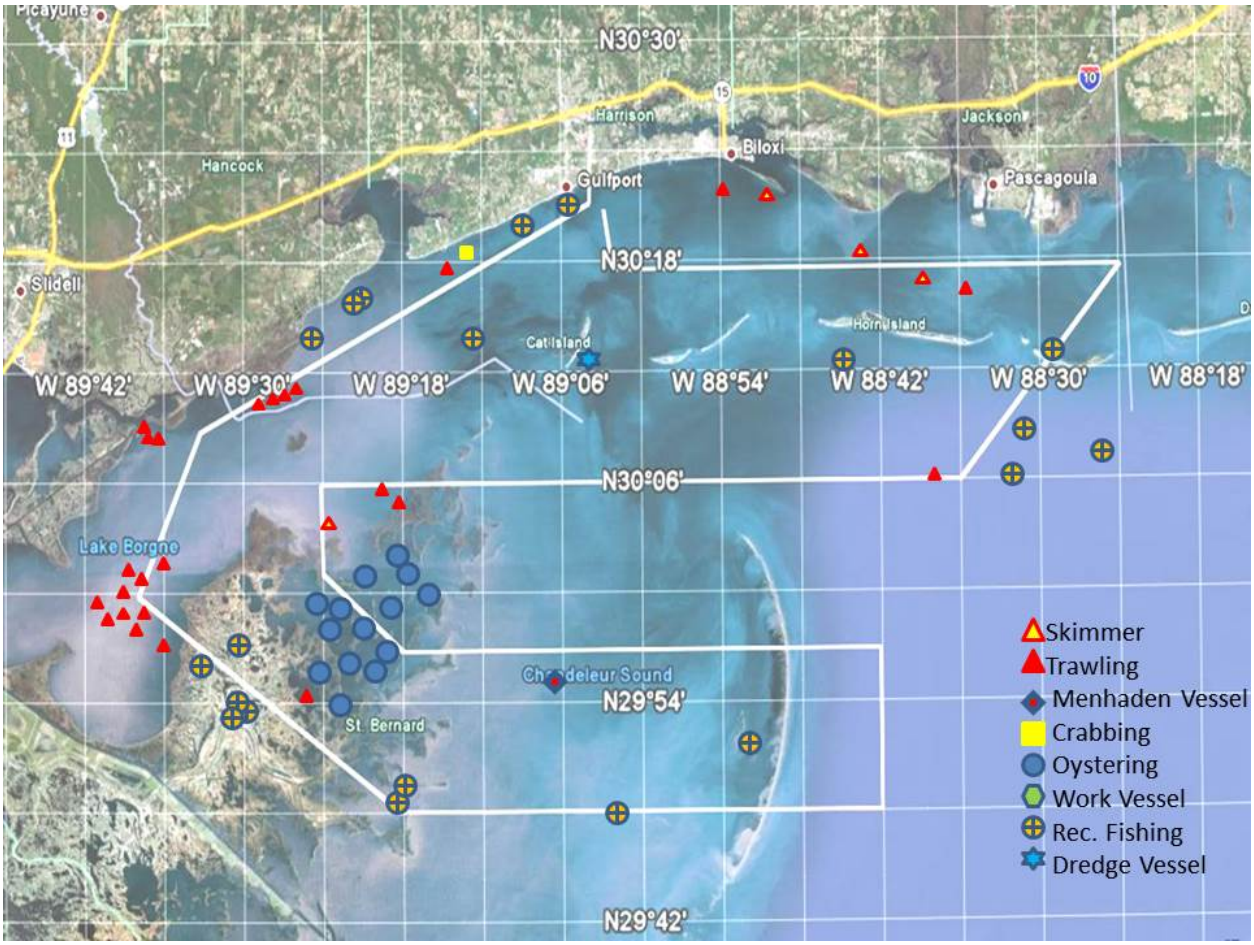
During our flight we observed twenty eight (28) trawl vessels, fourteen (14) oyster vessels and one (1) menhaden vessel all of which is indicated on the attached map. Also on the map is the approximate flight path.

We departed Gulfport Airport at 1013L and turned west along the mainland shoreline to Bayou Caddie and then south to Half Moon Island. We then flew southwest over Lake Borgne to the W89°42' line and then turned southeast to the N29°48' line beginning our east/west transects with 9 mile spacing working our way back to the north. After finishing our westward track on the N30°06' until intersecting W88°36' we turned northeast toward N30°18'/W88°24' and then turned west on the N30°18' line until south of Gulfport and landed.

WEATHER (https://www.weather.gov/)

INSHORE: NORTHEAST WINDS 10 KNOTS. WAVES 1 FOOT. DOMINANT PERIOD 3 SECONDS.

OFFSHORE: NORTHEAST WINDS 10 KNOTS. SEAS 2 FOOT. DOMINANT PERIOD 5 SECONDS.



Description / (Number of vessels)

Recreational

Gulfport Harbor (1)
Long Beach Harbor (1)
Pass Marianne Light (1)
Jail House Key (2)
Bayou Caddy (1)
LA Marsh (7)
Free Mason (1)
Chandeleur North Island (1)
3 Miles South of Horn Island (1)
6-9 Miles South of Sand Island (2)
Triple Rigs (1)
West Tip Petit Bois Island (1)

Oyster Vessel

LA Marsh Gear Down – Dredge (12)
LA Marsh Gear Up – Dredge (2)

Menhaden Vessel

Chandeleur Sound Gear Up (1)

Trawl Vessel

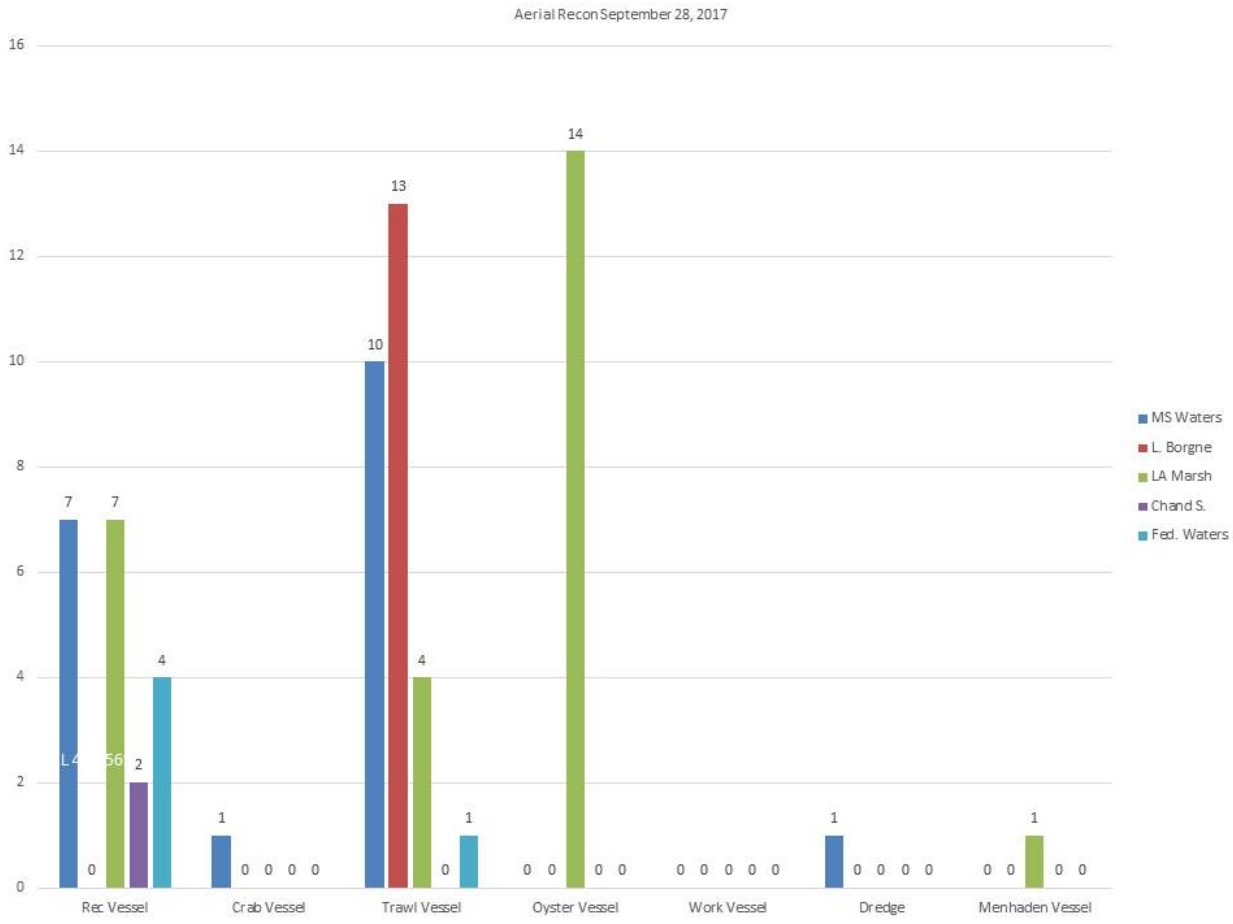
2 Miles South of Pass Christian Harbor Anchored 50'-60' (1)
Saint Joe Channel Gear Down 50'-70' (4)
Mouth of Rigolets Gear Down 50'-60' (3)
Lake Borgne Gear Down 50'-70' (10)
LA Marsh Anchored 40'-50' (2)
LA Marsh Skimmer Gear Down 50'-60' (1)
9 Miles South of Horn Island Gear Up Heading South 90'-100' (1)
½ Mile West of Round Island Anchored 50-'60' (1)
1 Mile West of Round Island Skimmer Anchored 50'-60' (1)
2 Miles South of Bellefontaine Beach Skimmer Anchored 40'-50' (1)
½ Mile South of Katrina Key Skimmer Anchored 50'-60' (1)
Biloxi Channel Gear Up Heading North 60'-70' (1)

Crab Vessel

1 Mile East of Pass Christian Harbor (1)

Dredge Vessel

½ Mile East of Cat Island Active (1)


Aerial Recon September 28, 2017
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Rec Vessel
Crab Vessel
Trawl Vessel
Oyster Vessel
Work Vessel
Dredge
Menhaden Vessel
MS Waters
L. Borgne
LA Marsh
Chand S.
Fed. Waters

MDMR Aerial Reconnaissance – November 15, 2017

The purpose of today's flight was to gauge the fishing effort and other vessel activities in the near shore and offshore waters of Mississippi and adjacent waters as well as document any harmful algae blooms, stranded sea turtles or marine mammals. Onboard the aircraft were MDMR employee Darrin Stewart, Projects Officer and Capt. Irv Hansen, Civil Air Patrol pilot.

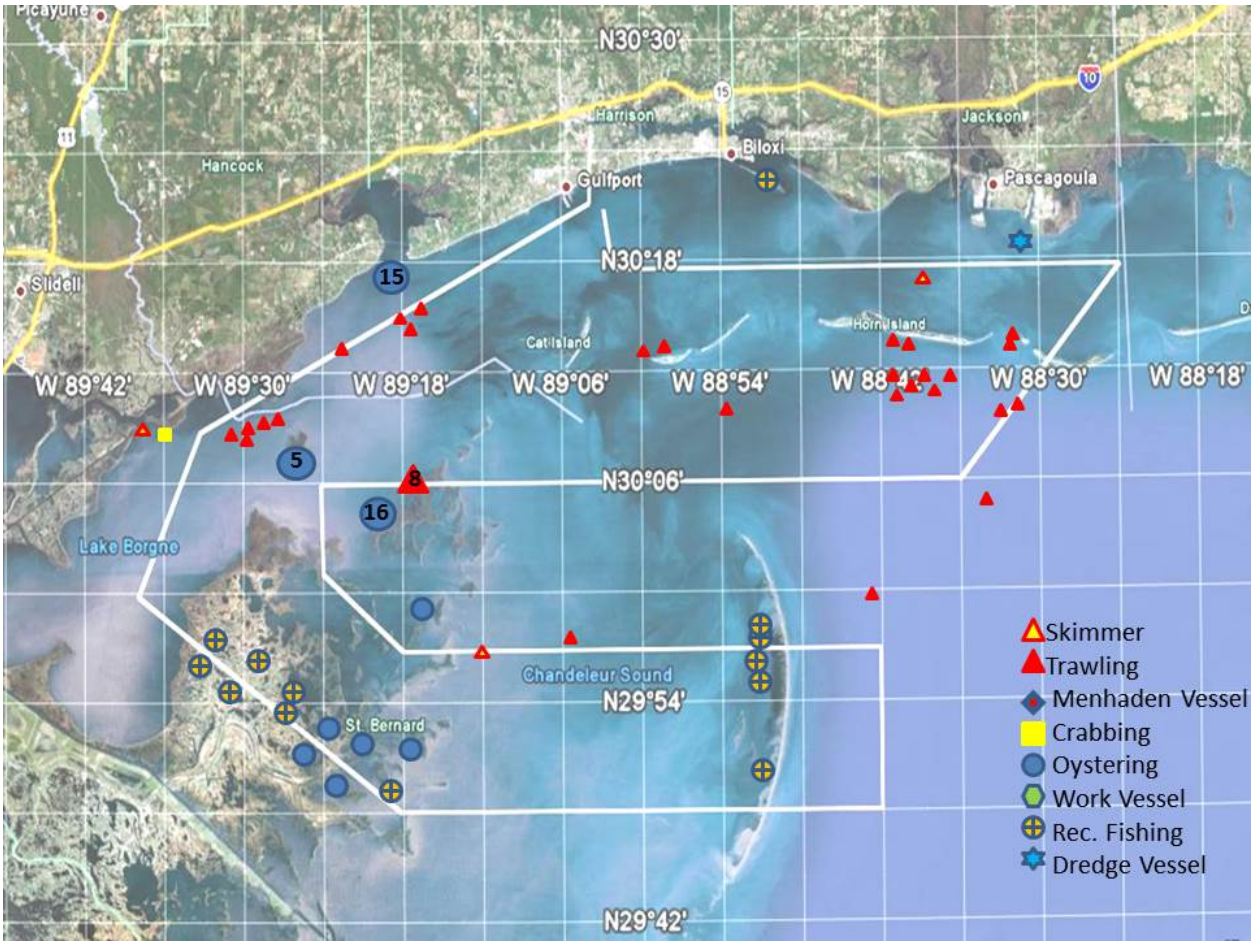
During our flight we observed thirty three (33) trawl vessels, forty two (42) oyster vessels and one (1) dredge operation all of which is indicated on the attached map. Also on the map is the approximate flight path.

We departed Gulfport Airport at 1018L and turned west along the mainland shoreline to Bayou Caddie and then south to Half Moon Island. We then flew southwest over Lake Borgne to the W89°42' line and then turned southeast to the N29°48' line beginning our east/west transects with 9 mile spacing working our way back to the north. After finishing our westward track on the N30°06' until intersecting W88°36' we turned northeast toward N30°18'/W88°24' and then turned west on the N30°18' line until south of Gulfport and landed.

WEATHER (https://www.weather.gov/)

INSHORE: NORTHEAST WINDS 5 TO 10 KNOTS BECOMING SOUTH LATE IN THE AFTERNOON. WAVES 1 FOOT OR LESS. DOMINANT PERIOD 4 SECONDS.

OFFSHORE: NORTHEAST WINDS 5 TO 10 KNOTS. SEAS 2 TO 4 FEET. DOMINANT PERIOD 5 SECONDS.



Description / (Number of vessels)

Recreational

LA Marsh (7)
Chandeleur (5)
Katrina Key (1)

Oyster Vessel

LA Marsh Gear Down – Dredge (15)
LA Marsh Gear Up – Dredge (7)

Dredge Vessel

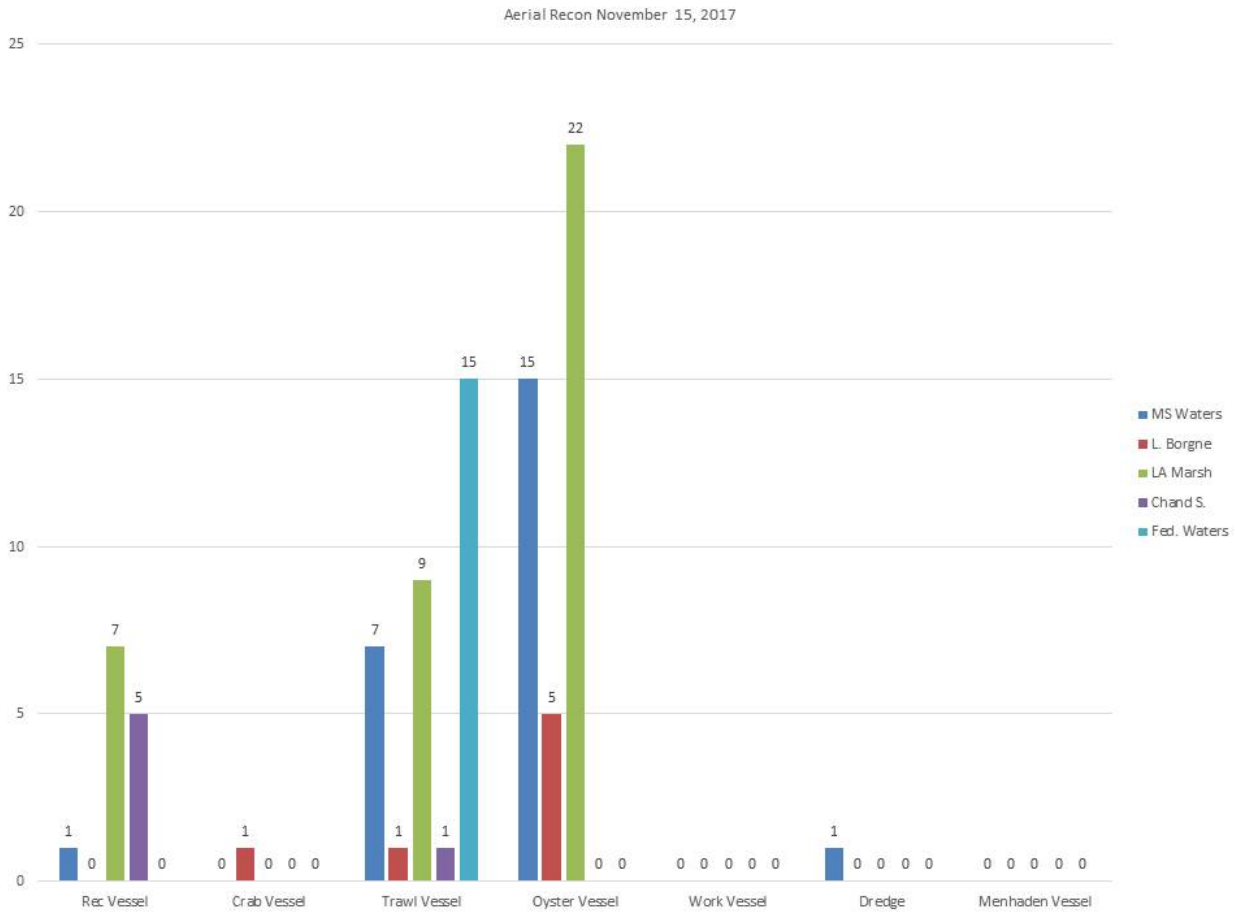
2 Miles South of Bayou Casotte Non-Active (1)

Crab Vessel

1 Mile East of Pass Christian Harbor (1)

Trawl Vessel

4 Miles South of St. Louis Bay Gear Up Heading East 50'-60' (3)
2 Miles Southeast of Bayou Caddy Gear Up Heading East 50'-60' (1)
2-3 Miles Northwest of Half Moon Isl. Gear Down 60'-70' (5)
Mouth of Rigolets Gear up Heading South –Skimmer-40'-50' (1)
4 Miles Southwest of Isle Le Petre Anchored 50'-60' (8)
Chandeleur Sound Gear Up Heading North 50'-60' (1)
6 Miles East of Chandeleur Anchored 80'-90' (1)
9 Miles South of Sand Isl. Anchored 80'-90' (1)
5-7 Miles South of Horn Island Gear Down 80'-90' (8)
1 Mile South of Horn Island Anchored 60'-70' (2)
3 Miles North of Horn Island Anchored –Skimmer- 50'-60' (1)
½ Mile North of West Ship Isl. Anchored 60'-70' (2)


Aerial Recon November 15, 2017
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Rec Vessel
Crab Vessel
Trawl Vessel
Oyster Vessel
Work Vessel
Dredge
Menhaden Vessel
MS Waters
L. Borgne
LA Marsh
Chand S.
Fed. Waters