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Baseline Inventory of Avian Communities on the Mississippi Coast

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## **Overview**

During summer 2005, in cooperation with the Mississippi Museum of Natural Science, I completed a study of the nesting biology of Least Terns and Black Skimmers along the Mississippi coast. The stated objectives of this study were to:

- 1) Monitor the reproduction of Least Terns and Black Skimmers in coastal Harrison County (and possibly Gulf Islands National Seashore).
- 2) Initiate an annual banding effort for Least Terns and Black Skimmers along the Mississippi coast.
- 3) Conduct weekly surveys to determine the location and species composition of Least Tern and Black Skimmer colonies in coastal Harrison County.
- 4) Ancillary to objectives 1-3, this study will provide baseline inventory data for other beach nesting birds that can be used for conservation planning purposes.

Fieldwork began on 1 May 2005 and concluded in mid-August 2005. Due to limited access to a boat and weather problems, we were unable to survey Sand and Horn islands as intensively as we had hoped, although we still completed colony surveys for both islands and monitored small numbers of nests at both sites. The 2005 season also saw lots of tropical storm activity. Tropical Storm Arlene passed to the east on 11 June and did not affect colonial nesting birds in Mississippi. But just a month later the coast was impacted by Tropical Storm Cindy on 5 July and Hurricane Dennis on 10 July. Cindy caused the worst damage with a powerful storm surge that over-washed all of the beaches and low-lying areas. In this report, I summarize the key findings, present tables of nesting activity for each species, and suggest areas for future research with these species in Mississippi.

## **Coastal Harrison County**

### *Least Terns*

We monitored a total of 10 Least Tern colonies during the 2005 nesting season (Table 1). Minimum counts of the number of adult birds in each colony were obtained, along with the maximum number of nests and young counted (Table 2). When reading Table 2, keep two points in mind. First, the counts of adults were probably biased low because two adults are needed for each nest, yet the number of adults counted was almost always less than double the count of nests. Second, these numbers are maxima per colony and do not reflect inter-seasonal movements that undoubtedly occurred, meaning that some birds may have been counted in >1 colony.

Least Terns were clustered in fewer colonies in 2005 than in 2004 ( $n = 15$ ). In general, Least Terns were widespread along the mainland beaches in early May, but by late May the number of active colonies had dropped to seven. Following the severe beach overwash from Tropical Storm Cindy on 5 July, Least Terns effectively disappeared from mainland colonies and the only evidence of subsequent nesting activity was at the east end of Horn Island. Seasonal patterns of the number of adults present in the six largest colonies were highly variable.

### *Black Skimmers*

We monitored a total of 7 Black Skimmer colonies during the 2005 nesting season (Table 3). Of these colonies, six had nesting activity and at least four colonies produced young. However, survival of many young is in doubt given the severe beach overwash

that occurred in the wake of Tropical Storm Cindy and Hurricane Dennis in early July at a time when many of the nests were still active or contained small young.

### **Barrier Islands**

During the 2005 nesting season, we made a limited number of visits to the eastern barrier islands, primarily to survey colonies and monitor nests. Below I summarize nesting activity for Least Terns and Black Skimmers by island for the 2005 nesting season.

Petit Bois Island – We did not survey this island in 2005. In 2004 we found no colonial nesting birds here, and we suspect this was the case again this year.

Sand Island – As in 2004, this island once again contained a large colony of nesting birds, predominantly Sandwich and Royal Terns (Table 4). We visited this island briefly several times in May-June to monitor nests of the two focal species, and to get counts of adults and nests for all colonial nesting species using the island.

Round Island – This island did not have any nesting activity by either Least Terns or Black Skimmers in 2005.

Horn Island – This island had 3 active colonies during the 2005 nesting season. As in 2004, there was a small Least Tern colony on the spit at the east end of the island. This colony was destroyed by Tropical Storm Cindy on 5 July; a few birds were renesting in mid-July but were ultimately unsuccessful and the colony was abandoned by late July. A second Least Tern colony was located on the spit at the far western end of the island, but was abandoned by late June (it was presumably over-washed by Cindy) and did not produce any young. We attempted to monitor productivity at both colonies, but were only able to obtain sparse nest check data for a small sample of nests. We also located a small Black Skimmer colony on the beach directly south of the National Park Service headquarters in the middle of the island. This colony was also over-washed by Cindy in early July and was unsuccessful.

East Ship Island – We did not survey this island in 2005.

West Ship Island – We did not survey this island in 2005.

Cat Island – We did not survey this island in 2005.

### **Nest monitoring**

A major focus of this year's work was to increase the sample of nests of both species that we monitored. This year, we monitored a total of 507 Least Tern nests and 237 Black Skimmer nests (Table 5). Overall hatching success for nests of known fate was 37% for Least Tern nests and 39% for Black Skimmer nests. We were fortunate and were able to determine the fate for the majority of nests of both species (92% for Least Terns and 74% for Black Skimmers); most nests of unknown fate were the result of not being able to relocate the nest in the denser colonies.

Least Terns did well at both the Broad Avenue and Methodist Assembly colonies and experienced fair nesting success at the two sanctuaries. Those nesting on the barrier islands had terrible nesting success, mainly as a result of overwash from storms in June and July. Black Skimmers showed a similar pattern, except that they did well on Sand Island, probably because they nested on higher ground in the center of the island and were less affected by storm overwash. Mainland colonies generally experienced fair nesting success.

## **Banding**

During the 2005 nesting season we color banded chicks of both species at several sites along the Mississippi coast (Table 6). All of the birds were banded with a unique combination of 2 colored bands on the right leg and a colored band and a numbered metal band on the left leg. Subsequent to banding efforts, we resighted some of these birds along the Harrison County coast, and a few were recovered dead after the storms in early July.

## **Future needs**

Our 2005 surveys of two species of management concern along the Mississippi Coast (Least Tern and Black Skimmer) provide additional baseline data on their distribution and nesting success, but we still lack detailed information on other aspects of their biology. Priorities for future research should include: 1) a detailed study of adult, juvenile, and chick survival for both species, but especially Least Terns for a comparison to inland nesting populations, 2) an experiment to test the response of each species to disturbance and specific beach management practices, and 3) studies of site fidelity in both species, both within and between years.

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Table 1. Locations of Least Tern colonies in coastal Harrison Co., Mississippi, during the 2005 nesting season.

Colony name	Location
Henderson Point	30° 18.000'N 89° 17.100'W
Pass Christian Sanctuary	30° 18.896'N 89° 14.559'W
Broad Avenue	30° 21.000'N 89° 06.625'W
Hewes Avenue	30° 22.000'N 89° 03.575'W
West Sanctuary	30° 22.500'N 89° 01.200'W
East Sanctuary	30° 23.100'N 89° 00.500'W
President's Casino	30° 23.100'N 88° 57.950'W
Methodist Assembly	30° 23.000'N 88° 55.240'W

Table 2. Counts of adult Least Terns and the maximum number of nests and young by colony for coastal Mississippi during the 2005 nesting season. Colony names are descriptive and are based on the nearest mainland landmark along Highway 90 if not an island.

Colony	No. adults	No. nests	No. young
Henderson Point	18	0	0
Broad Avenue	645	597	177
Hewes Avenue	36	0	0
West Sanctuary	391	312	60
East Sanctuary	356	234	60
President's Casino	77	28	0
Methodist Assembly	835	678	91
Sand Island	293	103	0
East Horn Island	323	26	0
West Horn Island	62	8	0
TOTAL	3,036	1,986	388

Table 3. Counts of adult Black Skimmers and the maximum number of nests and young by colony for coastal Mississippi during the 2005 nesting season. Colony names are descriptive and are based on the nearest mainland landmark along Highway 90 if not an island.

Colony	No. adults	No. nests	No. young
Pass Christian Sanctuary	668	0	0
Broad Avenue	77	13	15
West Sanctuary	700	104	5
President's Casino	996	216	88
Methodist Assembly	10	2	0
Sand Island	667	156	82
Middle Horn Island	213	37	0
TOTAL	3,331	528	190

Table 4. Colonial nesting birds at Sand Island, Jackson Co., Mississippi during the 2005 nesting season.

Species	No. adults	No. nests	No. young
Gull-billed Tern <sup>1</sup>	60	19	10
Royal Tern	5,000+	2,927	600+
Sandwich Tern	30,000+	18,246	4,000+
Least Tern	513	103	0
Sooty Tern <sup>2</sup>	1	0	0
Black Skimmer	667	156	82

<sup>1</sup>This species is an early nester and it is likely that we missed some nests and young.

<sup>2</sup>A single adult was seen on 5 May and 30 June, but no evidence of nesting was found.

Table 5. Number of nests and hatching success for Least Tern and Black Skimmer nests along the Mississippi coast, 2005.

Colony	Least Tern		Black Skimmer	
	No.	Success (%)	No.	Success (%)
Broad Avenue	114	55	20	30
West Sanctuary	89	36	42	40
East Sanctuary	144	25	0	NA
President's Casino	29	0	61	48
Methodist Assembly	85	53	2	0
Sand Island	32	0	88	59
East Horn Island	1	NA	0	NA
Middle Horn Island	0	NA	24	0
West Horn Island	13	0	0	NA
TOTAL	507	37%	237	39%

Table 6. Number of Least Tern and Black Skimmer chicks banded along the Mississippi coast, 2005.

Colony	Least Tern	Black Skimmer
Broad Avenue	28	0
East Sanctuary	30	0
President's Casino	0	43
Sand Island	0	29
TOTAL	58	72