

## GENERAL NOTES

**Black Skimmer abundance on the Louisiana-Mississippi-Alabama coast.**— This note reports on a coast-wide inventory of Black Skimmer (*Rynchops niger*) nesting colonies from Sabine Pass (Texas-Louisiana border) to the eastern shore of Mobile Bay, Alabama, conducted during the 1976 breeding season.

We searched all brackish and saline marshes, mainland beaches, and barrier islands of the study area at 4-week intervals in May, June, and July 1976, using both rotary- and fixed-wing aircraft, and found 37 Black Skimmer colonies (Fig. 1). Nesting aggregations less than 1 km apart were lumped as single colonies.

I obtained estimates of breeding adults on each colony using both aerial photography and active nest counts. I photographed nesting aggregations through the open side window of aircraft approximately 100 m above the colony using a hand held 35-mm camera with a 55-mm lens and fine grain black and white film. Photography was timed to coincide with a seasonal peak in incubation, which I observed to occur in late June and early July. Because most adult feeding was observed in the early morning and late afternoon, I photographed colonies at midday to include most breeding adults.

Individual birds within the nesting area were conspicuous against the light-colored sand or shell substrate and were separable from adults in adjacent loafing areas on subsequently developed prints. (Loafing adults were more densely spaced than nesters and usually stood below the beach berm.) Only adults in nesting areas were included in aerial photographic counts of breeding adults. To avoid duplicating counts, I pinpricked each individual bird as it was counted on a photograph.

On the same day as aerial photography, we conducted a ground count of all "active" (i.e., containing eggs or young) nest scrapes. Empty scrapes were not counted because we could not be sure these represented currently active nest attempts. Three observers positioned about 5 m apart walked through a nesting area simultaneously following the same compass bearing. Each person counted all active scrapes on one side between himself and the next person (or between himself and the colony edge if his was the first or last transect). Our progress through the colony was marked by our footprints left in damp sand, so areas were not omitted or covered more than once.

By equating an active nest with the current breeding effort of one pair of birds, I doubled nest counts to convert to breeding bird counts and compared these bird counts with those obtained from aerial photographs of the same colonies on the same date. I selected the larger of the 2 bird counts as more representative of breeding adults active on a colony (Table 1). Our nest counts omitted incipient nesting attempts, i.e., empty scrapes and patches of beach defended by potential breeders. The photographic bird count, an instantaneous record of adults present, probably included most current and potential breeders but was affected by weather, feeding conditions, and the timing of photography relative to peak breeding at a given colony. Thus, both nest and bird counts were probably underestimates of current breeding abundance.

However, I found a strong correlation between bird counts and total nest counts ( $r = .89$ , 2.2 birds per nest) at skimmer colonies during incubation. Therefore, despite the problem of underestimation, either the bird or nest count did at least provide a representative index of abundance during the annual peak in incubation. I preferred the aerial photographic bird count because it was less disturbing to birds than ground censuses.

TABLE 1  
BLACK SKIMMER NESTING ABUNDANCE ON THE LOUISIANA-MISSISSIPPI-ALABAMA COAST,  
1976

Region	Habitat	Breeding adults	Colonies	Mean colony size (adults)
Sabine Lake to				
Atchafalaya Bay	Barrier beach	713	1	713
	Spoil islands	2151	3	717
	Shell berms	1050	2	525
Isles Dernieres to				
Barataria Bay	Barrier beach	12626	4	3156
Southwest Pass of				
Miss. River	Spoil areas	2831	3	944
Chandeleur Sound				
salt marsh	Shell berms	4743	13	365
Chandeleur				
island chain	Barrier beach	4646	6	774
Cat. I., Miss. to				
Dauphin I., Ala.	Barrier beach	1170	4	292
	Spoil area	50	1	50
Total		29980	37	

I counted 29,980 breeding adult skimmers in 37 colonies within the study area between 26 June and 15 July 1976. There were 19,205 adults on barrier beaches, 4982 on spoil islands, and 5793 on shell berms in the salt marshes. I observed greatest regional abundance on the barrier beaches from the Isles Dernieres to Barataria Bay, although large groups also nested on the southern Chandeleur island chain, and on spoils at the Mississippi River mouth.

Historic accounts of skimmer abundance on the north Gulf Coast are scarce. The intensity of search and census efforts was never adequately described, and place names mentioned in old reports are now difficult to locate on the highly dynamic Louisiana coastline; however, some comparisons can be drawn between historic and current abundance in certain regions and at a few specific colony sites.

I could find no mention of skimmer nesting from Sabine Lake to Atchafalaya Bay before 1940. Small colonies (fewer than 300 adults) were reported at Calcasieu Lake during the late 1940's (Sabine National Wildlife Refuge Narrative Reports, 1940-1974) and again in the 1970's (Sprunt unpublished aerial survey data, National Audubon Society, Tavernier, Florida, 1974). Increased siltation at the mouth of the Atchafalaya River since the 1920's (Hebert, Louisiana Water Resour. Res. Inst. Bull. GT-1, 1-88, 1967) may have improved feeding and nesting habitat in Atchafalaya Bay, for in 1976, 2090 skimmers nested on unvegetated spoil islands in this area, with another 1000 nesting on the nearby Shell Keys.

Kopman (Bird Lore 9:233-240, 305-306, 1907) counted 1500 and 11,000 breeding

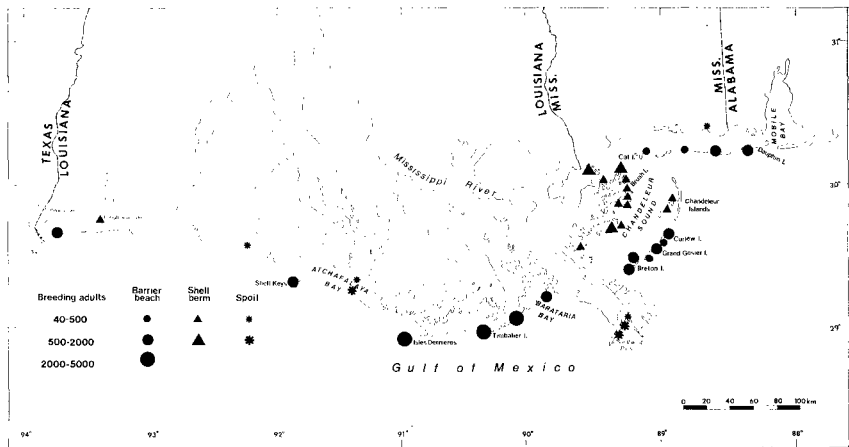


FIG. 1. Distribution and relative sizes of Black Skimmer colonies in coastal Louisiana, Mississippi, and Alabama, 1976.

skimmers on the Isles Dernieres and Timbalier Islands, respectively, in 1907. I counted 1032 active nests and 3084 adult birds on the Isles Dernieres, and 4863 adults on East Timbalier Island on 26 June 1976. This might indicate a regional decrease but might also represent a population shift to 2 large (and previously unreported) colonies that I noted near Barataria Bay. However, no definite conclusion is possible because Kopman did not specify whether he searched the Barataria Bay areas—the Barataria colonies may have been active in 1907 also.

Early records of colonial bird nesting at the mouth of the Mississippi River (Kopman 1907; Oberholser, Louisiana Dept. Conserv. Bull. 28:1-834, 1938) fail to mention Black Skimmers; therefore, present abundance on spoil adjacent to Southwest Pass probably developed as spoil deposition in that area created nesting habitat.

Shell berms at the seaward edge of the Chandeleur island salt marsh have been used traditionally by Black Skimmers. Kopman (Bird Lore 10:229-231, 1908) found 450, 400, and 500 adults nesting on Martin Island, Mitchell Key, and Brush Island, respectively; I counted 119, 457, and 166 adults on these 3 islands in 1976. Buchanan (Audubon Field Notes 3:242, 1949) reported 400 adult skimmers on Isle au Pitre in 1949; there were 1283 on 1 July 1976. On North Island, Valentine (pers. comm., U.S. Fish and Wildlife Service, Lafayette, Louisiana, 1975) estimated 1000 adults in 1968; I counted 335 adults in 1976. Although historic data are available on extant colonies, I cannot suggest regional trends because population shifts have probably occurred among such proximate groups (Fig. 1). Also, earlier observers (in boats) may have missed some marsh colonies, which would have been very conspicuous from aircraft.

Barrier beaches of the Chandeleur island chain have historically provided nesting habitat for skimmers. According to Bent (Bird Lore 12:280-282, 1910), 600 adults nested on Grand Gosier Island in 1910; I counted 2088 on 1 July 1976. Oberholser (1938) reported several hundred nests on Stake, Curlew, and Breton islands in 1933; there were 2558 adults nesting in these areas in 1976. The Breton Island colony had 100 nests in 1966, 750 nests in 1967, 100 nests in 1972 (Delta-Breton National Wild-

life Refuge Narrative Reports, 1949-1974), 421 nests in 1974 (Valentine, unpublished) and 1938 nesting adults during our 1 July 1976 inventory. These data indicate a general increase for the barrier chain. However, Battledore Island, a large colony site 20 km west of Breton Island that included 3200 adults in 1908 (Kopman 1908), subsided and became a submerged reef by the 1950's; emigration from Battledore could have contributed to the increases on Curlew, Breton, and Grand Gosier islands.

Imhof (pers. comm.) reported about 600 breeding adult skimmers on Dauphin Island in June 1956, 550 in May 1958, and 300 in May 1971; there were about 500 on this island in June 1956. Despite increased recreational vehicle traffic on Dauphin Island beach (Traylor, M.S. thesis, Univ. Alabama, Tuscaloosa, 1971), and the subsequent combination of several nesting groups into a single colony, the nesting population as a whole has apparently remained stable.

Colony distribution and size on the north Gulf Coast suggest habitat preferences of breeding skimmers. All colonies located during the 1976 survey were immediately surrounded by shallow estuaries. This would be expected if most skimming was conducted in shallow water (Zusi, Publ. Nuttall Ornithol. Club No. 3, 1962) and if the feeding range of nesters was limited to the waters immediately surrounding the colony (Tomkins, Wilson Bull. 68:236-239, 1951).

I found the largest colonies on expansive barrier beaches backed by extensive areas of shallow water, or on spoil islands in coastal shoals. Large regional populations, but small individual colonies, were also found on shell berms at the edge of the vast Louisiana salt marsh. In contrast, nesting was not observed in areas of limited estuarine development (between Calcasieu Lake and Shell Keys), or in estuaries where a hard unvegetated substrate was unavailable (salt marsh on the periphery of Barataria Bay lacking unvegetated berms).

These data indicate that skimmer nesting habitat requirements, shallow water feeding areas near a hard, extensive, and unvegetated substrate above the tidal reach, were best met by barrier beaches backed by extensive estuaries. However, increasing human recreational demands may effectively reduce undisturbed beach nesting areas, a process already observed on New York and New Jersey beaches (R. M. Erwin, pers. comm.). Fortunately, Gulf Coast spoil areas receive limited recreational use but are acceptable to breeding skimmers and can provide a useful alternative when human activities significantly affect reproduction on barrier beaches. Periodic dredging and spoil deposition, ideally scheduled during winter and early spring when birds are not nesting, would maintain skimmer nesting habitat by keeping the spoil unvegetated and above the tidal reach. (See Buckley and Buckley, Guidelines for the Protection and Management of Colonially Nesting Waterbirds, National Park Service, 1976:41-42; also Parnell and Soots, Proc. Conference on Management of Dredge Islands in North Carolina Estuaries, Univ. of North Carolina Sea Grant Program Publ., UNC-SC-75-01, 1974:35-46.)

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