

RECENT BREEDING STATUS OF ROYAL AND SANDWICH TERNS IN NORTHWEST FLORIDA

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The Royal Tern (*Sterna maxima*) is a locally uncommon to common breeding species in Florida and the Sandwich Tern (*S. sandvicensis*) is rare (Robertson and Woolfenden 1992, Stevenson and Anderson 1994, Egensteiner et al. 1996, Rodgers et al. 1996). Each species was first recorded breeding in northwest Florida in the 1800s, when G. W. Maslin collected five Sandwich Tern eggs (National Museum Natural History [NMNH] 2946) and two Royal Tern eggs (Stevenson and Anderson 1994; J. P. Angle, *in litt.*, NMNH) on St. George Island, Franklin County. Neither species was subsequently reported to breed in northwest Florida until Royal Terns (1951) and Sandwich Terns (1970) nested on a dredged-material island in St. Joseph Bay near Port St. Joe, Gulf County (Hallman 1952, Stevenson 1972).

Only 1-5 pairs of Royal Terns nested at the St. Joseph Bay site prior to 1970 (Hallman 1968, Stevenson and Anderson 1994), but larger colonies occurred there during at least four years from 1970-1977 (Stevenson 1972; J. C. Hallman, Tall Timbers Research Station [TTRS] archives). In 1976 and 1978, Clapp et al. (1983) estimated from aerial surveys that 200 adult Royal Terns were present at this site. As many as 50 pairs of Sandwich Terns also nested on the island in St. Joseph Bay from 1971-1973, the latter two years apparently without Royal Terns (R. C. Hallman, TTRS archives; Downing 1973). In 1971, pre-flight young were still present on 26 August (photograph by L. Williams, TTRS P87). This dredged-material island disappeared in the late 1970s (Stevenson and Anderson 1994). In 1978 or 1979, C. Bird (pers. comm.) observed incubating Royal Terns in a mixed-species seabird colony on Flag Island. This small sandbar, located in the Gulf of Mexico 1.6 km offshore of St. Vincent Island, Franklin County, was destroyed by Hurricane Andrew in 1992.

In this note we document more recent breeding of Royal and Sandwich terns in northwest Florida. We provide additional information on a Royal Tern colony at Lanark Reef, near Lanark Village, Franklin County that was noted briefly by Stevenson and Anderson (1994) and Egensteiner et al. (1996). We also document breeding of both species at two new sites in Franklin County: the St. George Island Causeway (hereafter, the Causeway) and Bird Island, a new dredged-material island at the mouth of the Apalachicola River (see site description in McNair and Gore 1999).

Lanark Reef is a narrow natural estuarine reef located 1.2 km offshore from Lanark Village. We observed Royal Terns nesting at the western end of Lanark Reef in each year from 1991-1995, except for 1992 (Table 1). The birds likely nested there in 1992 also, but we did not visit the site that year. No Royal Terns nested on Lanark Reef in 1989-1990; thus we believe the birds first colonized the site in 1991.

The Royal Terns nested each year at the same sparsely vegetated spot on an islet just west of the largest exposed segment of Lanark Reef. The nesting site was about 1 m above mean high tide and <20 m from a small channel that cut through the reef. The Royal Terns formed a compact monospecific breeding colony, although in several years they shared the islet with nesting Laughing Gulls (*Larus atricilla*). Least Terns (*S. antiillarum*) and Black Skimmers (*Rynchops niger*) have also nested at this site, but not in years when Royal Terns nested successfully.

Table 1. Number of nests or breeding pairs of Royal Terns at three colony sites in Franklin County, Florida, 1991-1998¹.

Year	Lanark Reef ²	St. George Island Causeway	Bird Island, Apalachicola ³
1991	40	0	0
1992	—	0	0
1993	139	0	0
1994	75	0	0
1995	80	0	0
1996	0	154	0
1997	0	305	0
1998	0	362	14 ⁴

¹Colony size was determined from complete censuses of nests, except at Lanark Reef where in 1991, 1994, and 1995 the number of nests or breeding pairs was estimated. Dates of visitation were in late May and early June except at Lanark Reef in 1991 (date unknown) and 1994 (13 July).

²1991 value represents minimum estimate reported by Stevenson & Anderson (1994). No count was made at Lanark Reef in 1992.

³Prior to deposition of dredged material in 1995, a small, low sandbar existed at the site of Bird Island.

⁴A creche of 62 vagile young was observed on 19 August.

On 4-5 June 1995, the storm surge from Hurricane Allison inundated the islet and destroyed all Royal Tern nests. The following spring we observed 40 Royal Terns at Lanark Reef, but they did not breed. Even though the former colony site was sparsely vegetated in 1996 and appeared suitable for Royal Terns, only a small colony of Black Skimmers nested there that year.

In the same year that nesting terminated at Lanark Reef, Royal Terns began nesting at the Causeway, 35 km to the southwest. From 1996-1998, we observed Royal Terns nesting on the Causeway (Table 1), along with a large colony of Laughing Gulls. In 1997, we found three Royal Tern nests with single eggs on 9 May and on 5 June we counted 305 nests in three subcolonies. The colony was still active in early August, when we observed adults feeding chicks and fledged juveniles.

The colony site at the Causeway in 1996-1997 was located on slightly sloping ground about 10 m from the highway that traverses the Causeway. This colony site was on pebbly compacted fill with semi-barren low grassy vegetation, unlike the site at Lanark Reef which was on sand with low vegetation nearby. This semi-barren area was larger than the nesting area at Lanark Reef and may have facilitated the increase in colony size at the Causeway (Table 1). In 1998, the colony site was alongside the paved road within 50 m of the previous site, but on barren level ground that had been disked to remove vegetation and facilitate colonization by terns; the number of nests increased slightly in 1998 (Table 1). Also in 1998, we counted 14 nests of Royal Terns on nearby Bird Island on 1 June. However, we counted 62 vagile young (most partly feathered) in a creche on 19 August, indicating additional Royal Terns colonized Bird Island after early June.

Sandwich Terns nested within the Royal Tern colony at the Causeway in 1997-1998. In 1997, we counted 18 Sandwich Tern nests: five nests within one subcolony of Royal Terns and 13 in the center of another subcolony. On 17 June, 15 Sandwich Tern nests contained eggs and three nests contained single chicks estimated to be 2-3 days old.

Three eggs measured (in mm) 50.8×34.9 , 52.4×37.5 , and 51.5×37.4 ; one other egg that had an unusual reddish-brown background color was photographed by T. Lewis (TTRS P697). The colony was still active in late July, when we observed adult Sandwich Terns feeding chicks. In 1998, seven pairs of Sandwich Terns nested on the Causeway within the Royal Tern colony and seven other pairs nested with the small group of Royal Terns on Bird Island.

All 18 Sandwich Tern nests at the Causeway in 1997 contained one egg, which is consistent with clutch size data from two other localities in Florida (Little Bird Island, Duval County, $n = 5$, Loftin and Sutton 1975 *contra* Rodgers et al. 1996 whose evaluation was based on a misinterpretation of Loftin and Sutton 1975; and a Tampa Bay colony, $n = 10$, Rodgers et al. 1996), and other clutch size data (means of 1-1.2) from the southeastern United States (Blus et al. 1979, Clapp et al. 1983, Shealer 1999). The egg sets of three reported in Florida by Stevenson and Anderson (1994) were probably augmented by collectors and should be disregarded (see McNair 1987).

The colony sites in Franklin County have been the only recent nesting locations for Royal and Sandwich terns along the northeast Gulf coast between Tampa Bay, Florida, and Gaillard Island in Mobile Bay, Alabama (Cooley 1987, Egensteiner et al. 1996, Rodgers et al. 1996), other than small colonies on several dredged-material islands in Citrus County, Florida (Egensteiner 1996; see Barbour et al. 1976, Clapp et al. 1983). Royal Terns last nested on these Citrus County sites in 1987 (Egensteiner 1996) and Sandwich Terns have apparently not nested there since 1991 (Rodgers et al. 1996).

In summary, Royal Terns nested at three colony sites in Franklin County in the 1990s. A small colony of Royal Terns nested on Lanark Reef from 1991-1995, but Hurricane Allison eliminated the breeding colony in early June of 1995. The following year Royal Terns began nesting on the St. George Island Causeway and the colony increased in size from 1996-1998. In 1998, Royal Terns also nested at a new dredged-material island (Bird Island) at the mouth of the Apalachicola River. Small colonies of Sandwich Terns also nested within the Royal Tern colonies at the St. George Island Causeway in 1997-1998 and Bird Island in 1998. These colony sites are among only a few documented for Royal and Sandwich terns from northwest Florida and they currently support the only nesting colonies for both species in the region.

ACKNOWLEDGMENTS.—We thank G. O. Bailey, T. Calleson, H. L. Edmiston, and W. Miley of the Apalachicola National Estuarine Research Reserve for sharing census data and assisting with observation and management of the tern colonies. C. Bird provided information about the former colony at Flag Island. We thank T. Lewis for helping census Sandwich Terns and for his photograph of an atypical egg. J. Whiddon, archivist at Tall Timbers Research Station, provided access to unpublished data of J. C. Hallman. J. P. Angle provided additional information on the 19th century nest records of Royal and Sandwich terns at St. George Island. Finally, we thank D. T. Cobb, B. A. Millsap, R. L. West, and D. A. Wood for reviewing a draft of this manuscript.

LITERATURE CITED

- BARBOUR, D. B., S. A. NESBITT, AND D. T. GILBERT. 1976. A second recent Royal Tern nesting colony on the Gulf coast of Florida. *Florida Field Naturalist* 4:9-10.
- BLUS, L. J., R. M. PROUTY, AND B. S. NEELY, JR. 1979. Relation of environmental factors to breeding status of Royal and Sandwich terns in South Carolina, USA. *Biological Conservation* 43:301-320.
- CLAPP, R. B., D. MORGAN-JACOBS, AND R. C. BANKS. 1983. Marine birds of the Southeastern United States and Gulf of Mexico. Part III: Charadriiformes. United States Fish and Wildlife Service FWS/OBS-83/30, Washington, D.C.

- COOLEY, C. D. 1987. Status of colonial seabird resources in coastal Alabama. Pages 56-66 in Symposium on the natural resources of the Mobile Bay estuary (T. A. Lowery, Ed.). Alabama Sea Grant Extension Service Publication MASGP-98-007.
- DOWNING, R. L. 1973. Preliminary nesting survey of Least Terns and Black Skimmers in the east. *American Birds* 27:946-949.
- EGENSTEINER, E. D., H. T. SMITH, AND J. A. RODGERS, JR. 1996. Royal Tern. Pages 532-540 in *Rare and Endangered Biota of Florida, Volume 5: Birds* (J. A. Rodgers, Jr., H. W. Kale II, and H. T. Smith, Eds.). University Press of Florida, Gainesville.
- HALLMAN, R. C. 1952. Royal Tern nesting near Port St. Joe. *Florida Naturalist* 25:38-39.
- HALLMAN, R. C. 1968. Sanctuary reports - St. Joe Island sanctuary. *Florida Naturalist* 41:86.
- LOFTIN, R. W., AND S. SUTTON. 1975. Sandwich Tern breeds on the Atlantic coast of Florida. *Florida Field Naturalist* 3:18.
- MCNAIR, D. B. 1987. Egg data slips—are they useful for information on egg-laying dates and clutch sizes? *Condor* 89:369-376.
- MCNAIR, D. B., AND J. A. GORE. In press. Recent breeding of Caspian Terns in northwest Florida. *Florida Field Naturalist*.
- ROBERTSON, W. B., JR., AND G. E. WOOLFENDEN. 1992. Florida bird species—an annotated list. Florida Ornithological Society Special Publication Number 6, Gainesville.
- RODGERS, J. A., JR., H. T. SMITH, AND R. T. PAUL. 1996. Sandwich Tern. Pages 541-550 in *Rare and Endangered Biota of Florida, Volume 5: Birds* (J. A. Rodgers, Jr., H. W. Kale II, and H. T. Smith, Eds.). University Press of Florida, Gainesville.
- SHEALER, D. 1999. Sandwich Tern (*Sterna sandvicensis*). In *The birds of North America*, No. 405 (A. Poole and F. Gill, Eds.). Academy of Natural Sciences, Philadelphia, and American Ornithologists' Union, Washington, D.C.
- STEVENSON, H. M. 1972. Recent breeding of the Sandwich Tern (*Thalasseus sandvicensis*) in Florida. *Florida Naturalist* 45:94-95.
- STEVENSON, H. M., AND B. H. ANDERSON. 1994. *The birdlife of Florida*. University Press of Florida, Gainesville.