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January 1987

## Roof Nesting by Royal Terns in Vero Beach, Florida

Florida Field Naturalist

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### Recommended Citation

Florida Field Naturalist (1987) "Roof Nesting by Royal Terns in Vero Beach, Florida," *Florida Field Naturalist*. Vol. 15 : Iss. 3 , Article 5.

Available at: <https://digitalcommons.usf.edu/ffn/vol15/iss3/5>

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such as an antenna wire protruding from the tarsus or tail, that it was carrying a radio transmitter. The fact that the falcon was an immature and appeared during the fall migration season also adds to the probability that it was a wild individual. Beebe (1974, Occas. Pap. British Columbia Provincial Mus. 17: 1-163) noted that some Prairie Falcons, "especially first-year birds, appear to be wanderers and to roam widely."

I thank Henry M. Stevenson, Fred E. Lohrer, and David R. Smith for helpful comments on this observation.

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Florida Field Naturalist 15: 79-80, 1987.

**Roof nesting by Royal Terns in Vero Beach, Florida.**—In recent years, suitable nesting habitat for many species of Florida's Charadriiformes have been seriously reduced, both in quantity and in quality, due to human encroachment in the form of beach development and recreation (Nisbet 1973, Fisk 1975, Altman and Gano 1984). The consequence for many species of shorebirds and terns has been significant population declines in some areas and extirpation in others (Nisbet 1973, Fisk 1975, 1978a; Kale, pers. comm.). This trend has been somewhat neutralized where man-made alterations have created new nesting habitats (e.g. dredged spoil sites, parking lots, streets, building roof-tops) that certain opportunistic species have adapted to using (Downing 1973, Fisk 1975, 1978a). Roof nesting has been reported for at least 22 avian species world-wide (Fisk 1978b) including Least Tern (*Sterna antillarum*), Roseate Tern (*S. dougallii*), Black Skimmer (*Rynchops nigra*), Wilson's Plover (*Charadrius wilsonia*), and Killdeer (*C. vociferus*) in Florida (Fisk 1975, Greene and Kale 1976, Fisk 1978a,b).

We monitored a colony of 15 pairs of roof-nesting Least Terns on the Paine Webber building in Vero Beach from April through July 1986. The one story building is immediately adjacent to a canal leading to the Indian River Lagoon. The flat roof is composed of tar covered by riverstone and limerock gravel (range 0.5-1.5 cm diameter). The roof has edges 25 cm high and several air vents that young least terns utilized for shade. During our observations of the Least Tern colony in June, we occasionally saw one or two Royal Terns (*Sterna maximus*) foraging nearby. On 3 and 4 July, Toland watched 4 adult Royal Terns foraging along the 200 m canal and over the Indian River, accompanied by as many as 30 Least Terns. During 3 h of observations the Royal Terns landed on the roof 8 times and participated in ritualized courtship "fish flights."

On 14 July we climbed to the roof and discovered two Royal Tern nest scrapes with one egg each, approximately 7 m apart (Fig. 1). About two dozen Least Tern nests were evenly distributed in the immediate vicinity of the Royal Tern nests. On the morning of 17 July a single adult Royal Tern landed on the roof amidst at least 20 Least Terns, including food-begging immatures and attending adults. During the next eight days Toland made ground-based observations of Royal Tern activity in and around the Least Tern colony. However, intermittent monitoring from 27 to 30 July could produce no additional sightings of the Royal Terns. On 31 July we again climbed to the tern colony, but no Royal Terns were seen. Both Royal Tern nests and eggs were present, but hairline cracks exuding yolk were detected in each egg. No Royal Terns were observed in the area after our last visit. Successful nesting Least Terns remained in the immediate vicinity well into August.

As far as we can ascertain, this is the first record of Royal Terns nesting on a roof, as well as the first report of this species nesting in Indian River County or southeast Florida (Kale, pers. comm.). Royal Terns, while abundant along Florida's coasts outside of the nesting season, presently are known to nest only at Bird Island in Nassau Sound, Merritt



Figure 1. Royal Tern nest on roof in Vero Beach, Florida (photograph by B. Toland).

Island National Wildlife Refuge, Cross Florida Barge Canal near Yankeetown, Charlotte Harbor, and a few scattered locations along the Gulf Coast (Barbour et al. 1976, Barbour and Schreiber 1978, Kale 1979, Clapp et al. 1983).

The advantages of roof-nesting, including reduction of human disturbance, mammalian predators, and vegetation growth that renders many spoil islands and beaches unsuitable, may lead to increased utilization of this niche by Royal Terns and other species, especially in association with Least Terns. A successful nest site tradition shift could result in an expansion of Royal Tern breeding distribution in Florida.

We thank H. W. Kale, II, S. A. Nesbitt, J. A. Rodgers Jr., J. Gore, and an anonymous referee for making editorial suggestions that improved this paper. We gratefully acknowledge R. Stanbridge for typing the manuscript.

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Florida Field Naturalist 15: 80-82, 1987.

**Ring-billed Gulls roost on ocean.**—On 3-4 December 1986, we observed the formation and dispersal of a large roosting aggregation of Ring-billed Gulls (*Larus delawarensis*) offshore from Hillsboro Beach, Broward County, Florida. Peak arrival time was about 1730 h, when loose groups of hundreds of birds, mostly immatures, flew across the beach from the northwest and settled in rafts of 500-3000 birds from 0.4 to 0.8 km offshore. We estimated a total of about 25,000 gulls. To confirm overnight roosting we began observation at 0600 h the next morning; an offshore cloud deck delayed apparent sunrise. The birds were then visible as streaks on the ocean, and lift-off began about 0625 h, lasting about a half hour. Most of the birds went south, parallel to the beach, rather than immediately returning overland.

This offshore roosting may be an adaptation to the intensive human use of the shore in this region. The intracoastal waterway is a man-made lagoon with no islands, bars, or unoccupied points of land. The ocean beach is almost straight, with few points and no offshore bars, and is densely settled. Although wintering Sanderlings (*Caladris alba*), Ruddy Turnstones (*Arenaria interpres*), and Gray Plovers (*Pluvialis squatarola*) manage to roost on the upper beach, the numerous larger gulls may find the beach unsuitable because people walk along it late into the evening.—**Roland C. Clement**, 71 Weed Ave., Norwalk, Connecticut 06850, and **Mrs. Todd (Vonnie) Murphy**, 4285 Cottonwood Lane, Deephaven, Minnesota 55331.

Florida Field Naturalist 15: 82, 1987.