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## Diet of Black Skimmers and Royal Terns in Northeastern Florida

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Fla. Field Nat. 10(1): 19, 1982.

**Adult and immature Bald Eagles talon-clasping while in flight.**—On 10 March 1978 at Osteen Bridge, 4 mi E of Sanford on Hwy 415, Seminole County, Florida, I observed an adult Bald Eagle (*Haliaeetus leucocephalus*) soaring at considerable height. Soon after, at much lower altitude, an immature Bald Eagle flew into the area no more than 200 m from where I stood on the bridge and began soaring in the direction of the adult. I noted that the immature was entirely dark brown. The adult then rapidly descended to meet this bird. When the birds were very close together, they turned on their sides and extended their feet towards one another and briefly clasped talons. The engagement was almost immediately broken off only for the eagles to soar around again and then meet each other when the talon-clasping was repeated briefly a second time. The birds disengaged with the immature quickly returning in the direction from whence it had come, while the adult resumed its soaring.

Talon-clasping in eagles is either associated with behavioral dominance when the event is brief or with courtship when the event is prolonged and accompanied by the 2 birds falling through the air in a series of somersaults (Brown and Amadon 1968, Eagles, hawks and falcons of the World, New York, McGraw-Hill Book Co.). Because the immature was all brown and the event was so brief, it is unlikely that the talon-clasping I observed was associated with courtship. In a study of wintering Bald Eagles in north-central Missouri, Griffin (1981, Wilson Bull. 93: 259-264) noted that intraspecific talon-clasping encounters between immatures and adults were relatively uncommon (11% of 27 encounters) whereas immature-immature encounters predominated (85%).—BERNARD KING, *Gull Cry*, 9 Park Road, Newlyn, Penzance, Cornwall, England.

Fla. Field Nat. 10(1): 19-20, 1982.

**Diet of Black Skimmers and Royal Terns in northeastern Florida.**—Regurgitated prey can provide information on the food habits of some birds without the necessity of sacrificing them. During banding operations on Little Bird Island, Nassau Sound, Duval County, Florida, 270 Black Skimmer (*Rynchops niger*) chicks were confined in a wire corral for banding on 31 July 1977 from 0700-0900. The chicks ranged in age from about 7 days to about 20 days. After the banded chicks were released, the area was searched and all regurgitated items were collected and identified to the lowest possible taxon.

A total of 67 items of 6 species was collected, of which 73.1% represented a single species. In order of abundance they were: striped mullet (*Mugil cephalus*) 49; mummichog (*Fundulus heteroclitus*) 9; Atlantic menhaden (*Brevoortia tyrannus*) 5; a flounder (*Paralichthys* sp.) 2; ladyfish (*Elops saurus*) 1; and sharksucker (*Echeneis naucrates*) 1.

Of the regurgitated fish, some were intact enough to weigh and measure. Twelve mullet averaged 89.3 mm in length (SD 10.7, 69-110) and 8.37 g in weight (SD 2.8, 3.48-14.16); adults are 30-45 cm long or more (Ursian 1977, A guide to the fishes of the temperate Atlantic coast, New York, E. P. Dutton). Seven mummichog averaged 76.6 mm in length (SD 9.8, 64-95) and 7.29 g in weight (SD 3.6, 3.81-14.45); adults are about 9 cm long (Ursin 1977).

At this same island on 29 July 1978, I secured a food sample from 262 Royal Tern (*Sterna maxima*) chicks and one Laughing Gull (*Larus atricilla*) chick in the same manner. The exact contribution, if any, of the Laughing Gull to the sample is unknown. A total of 47 items of 13 species was recovered. In order of abundance they were: Atlantic menhaden 13; Atlantic croaker (*Micropogonias undulatus*) 12; banded drum (*Larimus fasciatus*) 8; white or brown shrimp (*Penaeus setiferus* or *P. aztecus*) 2; Atlantic thread herring (*Opisthonema oglinum*) 2; spotted seatrout (*Cynoscion nebulosus*) 2; spot (*Leiostomus xanthurus*) 2; a squid (*Illex illecebrosus* ?) 1; Spanish sardine (*Sardinella aurita*) 1; striped anchovy (*Anchoa hepsetus*) 1; bay anchovy (*A. mitchilli*) 1; silver perch (*Bairdiella chrysoura*) 1; and southern kingfish (*Menticirrhus americanus*) 1. All prey items were in a partially digested condition which precluded weighing and measuring.

A comparison of these two samples reveals that the Black Skimmer has a more restricted diet, because the skimmer sample of 67 items includes only 6 species, while the Royal Tern sample of only 47 items includes 13 species.

A sample taken from 1699 Royal Terns and about 20 Sandwich Terns (*Sterna sandvicensis*) at this colony in the same manner on 25 July 1976 (Loftin 1977, Fla. Field Nat. 5: 47), consisted of 92.2% Atlantic croaker. However, the 1978 Royal Tern sample, taken at the same time of the year, showed only 25.5% Atlantic croaker. Furthermore, Atlantic menhaden, which constituted 27.7% of the 1978 sample, was only 2% of the 1976 sample. This indicates that Royal Terns are opportunistic feeders, preying on whatever is abundant at the time. Skimmers also may feed opportunistically. However, their restricted habitat use as compared to terns (Erwin 1977, Ecology 58: 389-397) may restrict the number of prey species they encounter and capture.

A comparison of the skimmer sample with the two Royal Tern samples from this colony shows very little overlap. Only one species, the Atlantic menhaden, occurs in all three samples. This indicates that the two species do not compete with each other for food. It is surprising that neither of the Royal Tern samples includes any mullet.

Comparison of the measurements of the mullet in the skimmer sample with the croaker intact enough to weigh and measure in the 1976 tern sample shows no overlap in size. This indicates that the two birds take different size prey, but it is important to remember that all three of the samples contained many items in a partially digested condition which did not allow accurate size determination.

Erwin (1977), in a comprehensive study of foraging by three species of seabirds in Virginia, found that the mean prey size range, weight range, and prey species number were greater for the Royal Tern than for the Black Skimmer. He collected 20 prey species from Royal Terns and only 6 from skimmers. This compares with 17 species for Royal Terns (1976 and 1978 samples) and 6 species for skimmers at Nassau Sound, Florida.—ROBERT W. LOFTIN, *University of North Florida, Box 17074, Jacksonville, Florida 32216.*