GENERAL NOTES

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Diet of nestling Brown Pelicans in Florida.—Fish species that form the diet of Brown Pelicans (*Pelecanus occidentalis*) have been characterized as "not important for human consumption" (Shorger 1962, p. 280, *in* Handbook of North American birds, Vol. 1 (R. S. Palmer, ed.) New Haven, Yale Univ. Press). Examination of 3428 fish from Florida pelicans revealed only 27 food fish (Pearson 1919 *in* Shorger 1962) and contents of 32 pelican stomachs from Florida's Gulf coast contained 95.8% menhaden (*Brevoortia* sp.), 3.1% silversides (*Menidia bermellina*), 0.8% dolphin (*Coryphaena hippurus*), and 0.3% prawns (*Penaeus* sp.) (Shorger 1962). In Louisiana, Bailey and Wright (1931, Wilson Bull. 43: 114-142) found the diet of nesting pelicans to consist of menhaden and a few mullet (*Mugil* sp.). Nestling pelicans in Florida were fed menhaden and "grass minnows" (Longstreet 1924, Wilson Bull. 36: 65-68). Twenty nestlings in Texas examined by Pearson (1921, Auk 38: 513-523) had been fed menhaden and mullet. In South Carolina the diet of nestling pelicans was 95% menhaden and 5% mullet and other species (Baldwin 1946, Auk 63: 103-104). The statement by Shorger (1962) that menhaden form 90-95% of the diet of the Eastern Brown Pelican (*P. o. carolinensis*) agrees with these previous findings. However, a recent assessment of the nestling pelican diet in Florida suggests a different conclusion.

Three hundred and four regurgitated food boluses were collected at 13 colonies from Florida's east and west coasts during 1970-1972 (Sites number 3, 6, 8, 9, 11, 12, 15, 16, 21, 27, 31 and 33 from Fig. 1 *in* Nesbitt et al. 1977, Bird-Banding 48: 138-144). Component species were identified, but weights were determined only for the contents of the 113 boluses collected during 1972 (Table 1). During the 3 seasons of study, menhaden accounted for only 21% of the diet by frequency and in 1972 14% by weight. Other major components of the diet included mullet, Atlantic threadfin, sea trout, spot, pinfish, sardines and bay anchovy (see Table 1 for scientific names). The percentage of each species in the diet remained relatively consistent for each of the 3 seasons. Diets of east and west coast nestlings were similar except that west coast birds were fed a wider variety of prey. Possibly previous investigators lumped several species of herring together as menhaden; but even when all herring (Table 1) were lumped the total contribution to the nestling diet was only 29% by frequency and 19% by weight.

Historically the season of nest initiation for Brown Pelicans in Florida has vacillated (Schreiber 1980, Auk 97: 491-508). For example, the pelicans nesting at Pelican Island, Indian River County, reportedly shifted from a fall to a spring nesting cycle (Behle pp. 276-278 *in* R. S. Palmer 1962) sometime between 1900 and 1935. An abundance of food is important to the initiation of nesting in other colonial nesting species (Kushlan, et al. 1975, U.S. Dept. Int., Geological Survey, Open-File Report 75-434), and is a factor in Brown Pelican nesting as well (Schreiber 1980). We were unable to find evidence of a past decline in Florida's menhaden population or indication of a change in seasonal availability to account for changes in the diet or a shift in nesting season. Nevertheless, there may have been a shift in food supply correlated with a change in nesting season that the sketchy historical data available to us did not illuminate.

TABLE 1. Prey species and their relative importance in the diet of nestling Florida Brown Pelicans.

	304 Regurgitates		113 Regurgitates		
Species	Frequency	Percentage	Weight (g)	Percentage	Average weight (g) per regurgitate (N)
Elopidae—tarpons	4	0.9	1,135	4.0	283.8(4)
Elops saurus—ladyfish	4	0.9	1,135	4.0	238.8(4)
Clupeidae—herrings	129	28.9	5,232	18.6	209.3(25)
Brevortia sp.—menhaden	94	21.1	3,844	13.6	226.1(17)
Harengula pensacolae—scaled sardine	12	2.7	65	0.2	65.0(1)
Sardinella anchovia—Spanish sardine	18	4.0	1,314	4.7	262.8(5)
Unidentified herring	5	1.1	9	0.1	4.5(2)
Engraulidae—anchovies	27	6.1	352	1.2	44.0(8)
Anchoa mitchilli—bay anchovy	27	6.1	352	1.2	44.0(8)
Batrachoididae—toadfishes	3	0.7	—	—	— —
Opsanus sp.—toadfish	3	0.7	—	—	— —
Exocoetidae—flyingfishes and halfbeaks	1	0.2	95	0.3	95.0(1)
Hyporhamphus unifascastus—halfbeak	1	0.2	95	0.3	95.0(1)
Cyprinodontidae—killfishes	8	1.8	71	0.3	11.8(6)
Cyprinodon variegatus—sheephead minnow	4	0.9	51	0.2	17.0(3)
Fundulus sp.—killifish	4	0.9	20	0.1	6.7(3)
Poeciliidae—livebearers	5	1.1	51+	0.2+	25.5(2)
Gambusia affinis—mosquitofish	1	0.2	—	—	— —
Poecillia latipinna—sailfin molly	4	0.9	51	0.2	25.5(2)
Atherinidae—silversides	2	0.4	294	1.0	147.0(2)
Membras martinica—rough silverside	2	0.4	294	1.0	147.0(2)
Serranidae—sea basses	2	0.4	—	—	— —
Diplectrum formosum—sandperch	2	0.4	—	—	— —
Carangidae—jacks and pompanos	5	0.8	238	0.8	79.3(3)
Caranx sp.—jacks	1	0.2	136	0.5	136.0(1)
Chloroscombrus chrysurus—Atlantic bumper	3	0.4	60	0.2	60.0(1)

Table 1 (continued)

Species	304 Regurgitates		113 Regurgitates		
	Frequency	Percentage	Weight (g)	Percentage	Average weight (g) per regurgitate (N)
Oligoplites saurus—leatherjacket	1	0.2	42	0.1	42.0 (1)
Gerridae—mojarras	1	0.2	—	—	— —
Eucinostomas sp.—mojarras	1	0.2	—	—	— —
Pomadasyidae—grunts	9	2.0	131	0.4	60.5 (2)
Haemulon sp—grunt	2	0.4	—	—	— —
Orthopristis chrysoptera—pigfish	7	1.6	121	0.4	60.5 (2)
Sparidae—porgies	43	9.7	2,373	8.4	139.6 (17)
Lagodon rhomboides—pinfish	43	9.7	2,373	8.4	139.6 (17)
Sciaenidae—drums	95	21.3	5,470	19.4	156.3 (35)
Bairdiella chrysura—silver perch	3	0.7	119	0.4	119.0 (1)
Cynoscion sp.—sea-trout	43	9.7	1,591	5.6	159.1 (10)
Larimus fasciatus—banded drum	5	1.1	225	0.8	56.3 (4)
Leiostomus xanthurus—spot	28	6.3	3,124	11.1	223.1 (14)
Menticirrhus sp.—kingfish	1	0.2	—	—	— —
Micropogon undulatus—Atlantic croaker	14	3.1	321	1.1	80.3 (4)
Stellifer lanceolatus—star drum	1	0.2	90	0.3	90.0 (1)
Mugilidae—mullets	52	11.7	4,801	17.0	282.4 (17)
Mugil sp.—mullet	52	11.7	4,801	17.0	282.4 (17)
Polynemidae—threadfins	57	12.8	7,821	27.7	244.4 (32)
Polydactylus octonemus—Atlantic threadfin	57	12.8	7,821	27.7	244.4 (32)
Scombridae—mackerels and tunas	1	0.2	85	0.3	85.0 (1)
Scomberomorus maculatus—Spanish mackerel	1	0.2	85	0.3	85.0 (1)
Stromateidae—butterfishes	1	0.2	57	0.2	57.0 (1)
Peprilus alepidotus—harvestfish	1	0.2	57	0.2	57.0 (1)
Totals	445		28,206		

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