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FOOD OF NESTLING LITTLE BLUE HERONS ON THE WEST COAST OF FLORIDA

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The food habits of the Little Blue Heron (*Florida caerulea*) are becoming well known (Meanley 1955, Domby and McFarlane 1978, Telfair 1981), but few studies have been conducted in Florida (Baynard 1912, Jenni 1969). Furthermore, no data are available from coastal sites. This paper reports on the prey of Little Blue Herons nesting in the Tampa Bay region.

METHODS

The food samples reported in this paper are based on 120 regurgitated boluses collected from Little Blue Heron nestlings on the Alafia Banks (Bird and Sunken Islands), Hillsborough Bay, Hillsborough County, Florida, during 1976-1979. Samples were segregated to species if possible, then weighed on an Ohaus dial-o-gram balance (model 310). Results are reported as the percent of prey material in the bolus. The scientific names of prey species referred to in the text are given in Table 1. Sources for prey identification and nomenclature were Pennak (1953), Stevenson (1976), Hoese and Moore (1977), and Lee et al. (1980).

RESULTS

Of the 50 identified taxa, 24 species (48.0%) were invertebrates, 24 species (48.0%) were fish, and 2 species (4.0%) were frogs (Table 1). Crustaceans represented the greatest number of individual invertebrates. The fish included 17 native species (70.8%) and 7 non-native species (29.2%).

TABLE 1. Food items recovered from 120 boluses regurgitated by Little Blue Heron nestlings at Hillsborough Bay, Florida.

Species	No. Individuals	Total % Wt.	% Boluses
Invertebrates			
Polychaete sp.	29	0.2	1.7
Arachnida sp.	6	T[1]	4.2
Isopod *(Ligia exotica)*	271	4.7	15.0
Prawn *(Palaemonetes paludosus)*	376	6.0	21.7
Crayfish (*Procambarus alleni*)	178	19.7	29.2
Wood crab (*Sesarma cinereum*)	106	7.8	15.0
Mangrove crab *(Aratus pisonii)*	28	0.5	1.7
Blue crab *(Callinectes sapidus)*	1	2.0	2.5
Stone crab *(Menippe mercenaria)*	23	5.6	6.7
Crab sp.	3	0.4	2.5
Dragonfly nymph (*Anax* sp.)	1	0.4	0.8
Dragonfly nymph *(Miathyria* sp.*)*	43	1.4	9.2
Mole cricket *(Gryllotalpa* sp.*)*	10	0.4	3.3
Field cricket *(Gryllus* sp.*)*	11	0.4	5.0
Grasshopper sp.	31	0.2	1.7
Water scorpion *(Nepa* sp.*)*	5	0.4	2.5
Water bug *(Belostoma* sp.*)*	6	T	5.0
Giant water bug *(Lethocerus* sp.*)*	12	0.9	2.5
Dytiscinae larvae	29	0.4	6.7
Coleoptera sp.	1	T	0.8
Lepidoptera larvae	9	0.5	4.2
Soldier fly larvae (*Odontomyia* sp.)	4	T	1.7
Diptera sp.	1	T	0.8
Hymenoptera sp.	1	T	0.8
Unidentified insects	2	T	1.7
Fish			
Threadfin shad *(Dorosoma petenense)*	4	1.2	1.7
Bay anchovy *(Anchoa mitchilli)*	43	1.7	2.5
Black tetra *(Gymnocorymbus ternetzi)*[2]	19	3.0	0.8
Atlantic needlefish *(Strongylura marina)*	1	T	0.8
Seminole killifish *(Fundulus seminolis)*	5	0.6	0.8
Golden topminnow *(F. chrysotus)*	10	0.7	1.7
Mosquitofish *(Gambusia affinis)*	51	2.0	8.3
Least killifish *(Heterandria formosa)*	4	0.1	0.8
Sailfin molly *(Poecillia latipinna)*	33	3.0	5.0
Black molly *(P. latipinna)*[2]	52	2.6	5.0
Red swordtail *(Xiphophorus helleri)*[2]	9	0.6	0.8
Black swordtail *(Xiphophorus* sp.*)*[2]	16	2.5	2.5

(Table 1 Continued)

Species	No. Individuals	Total % Wt.	% Boluses
Southern platyfish *(X. maculatus)*[2]	30	1.6	1.7
Pearl gourami *(Trichogaster leeri)*[2]	3	0.7	0.8
Swamp darter *(Etheostoma fusiforme)*	60	2.9	5.8
Spotfin mojarra *(Eucinostomus argenteus)*	12	1.3	1.7
Pinfish *(Lagodon rhomboides)*	2	1.3	1.7
Blackchin tilapia *(Tilapia melanotheron)*[2]	51	2.5	3.3
Code goby *(Gobiosoma robustum)*	17	1.0	4.2
Clown goby *(Microgobius gulosus)*	2	0.3	0.8
Bay whiff *(Citharichthys spilopterus)*	1	T	0.8
Hogchoker *(Trinectes maculatus)*	11	2.2	3.3
Unidentified flounder	1	0.1	0.8
Toadfish *(Opsanus* sp.*)*	2	0.9	1.7
Unidentified fish	31	2.4	11.6
Amphibians			
Pig frog *(Rana grylio)*	19	9.3	7.5
Leopard frog *(R. utricularia)*	2	2.8	1.7
Unidentified *Rana* sp.	27	2.4	10.0
Unidentified tadpoles	4	0.6	2.5

[1]T = Represented by less than 0.1 percent of the total weight.
[2]Non-native fish.

When the taxa are considered by weight consumed, invertebrates represented 51.1%, fish 34.7%, and amphibians 15.2% of the total diet. Crayfish made up 39.3% of the invertebrate contribution to the diet or 19.7% of the total weight. Crustaceans constituted 84.2% of the invertebrates or 42.2% of the total weight of the food items. Insects made up only 15.6% of the invertebrate contribution or 7.8% of the total weight.

The food boluses contained an average of 12.2 prey items (range 1-83). In addition, each bolus averaged 3.2 species (range 1-8). Of the 120 boluses, 31 (25.8%) contained only vertebrates, 45 (37.5%) contained only invertebrates, while 44 (36.7%) contained both invertebrates and vertebrates.

Discussion

The prey items found in Little Blue Heron food boluses from the Tampa Bay region were relatively small in size and represent a varied diet, though possibly one specializing on crayfish. That the blue crab was represented by soft-shelled claws suggests that this species was taken most successfully during the soft-body stage.

The Little Blue Heron forages in a relatively inactive manner, primarily using the wade-and-walk hunting method (Willard 1977, Kushlan 1978). The prey species identified in Table 1 are mostly substrate-crawling invertebrates (e.g., isopods, crayfish, prawns, crabs, insects) or slow swimming fish (e.g., sailfin molly, mosquitofish, gobies). I frequently have seen Little Blue Herons seek out rocks and emergent vegetation on shorelines then peck and capture prey, the peering-closely-and-peck foraging method of Willard (1977). This foraging strategy was especially successful in capturing isopods and wood crabs from docks and shorelines.

The source of the non-native fish is uncertain. Several species (e.g., red swordtail, southern platyfish, black molly, blackchin tilapia) have escaped from fish farms and have become established as breeders in the central-west coast region of Florida (Lee et al. 1980). However, the highly prized black tetra and pearl gourami reportedly are not known to have escaped from cultivation and probably were obtained at the fish farm ponds on the mainland around Hillsborough Bay. Feeding at fish farms also may have contributed to illegal killing of adult Little Blue Herons and resulted in nestling mortality (Rodgers 1980).

My data differ slightly from other reported studies of the prey of Little Blue Herons (Table 2). Little Blue Herons from the Alafia Banks mostly fed on invertebrates and fish, with crayfish and freshwater fish making up the greatest biomass within each group. Studies by Jenni (1969) and Domby and McFarlane (1978) found that Little Blue Herons breeding at inland freshwater sites ate amphibians. However, Telfair (1981) reported the heron preyed mostly on crayfish in freshwater streams in Texas.

Even though breeding on the Alafia Banks in a marine-estuarine situation, most Little Blue Herons flew inland to feed, predominantly in freshwater habitats. Thirty-three species of prey (64.7%) were primarily freshwater or terrestrial forms, whereas only 11 species (21.6%) were primarily marine species.

TABLE 2. Comparison of prey appearing in Little Blue Heron food samples.

	Invertebrates	Fish	Amphibians	Reptiles
Baynard (1912)	98.0[1]	0	1.7	0.3
Jenni (1969)	35.1[1]	49.7	14.8	0.5
	44.1[2]	26.5	23.5	5.9
	12.3[3]	32.7	54.1	0.9
Domby and McFarlane (1978)	24.8[1]	48.7	26.5	0
	16.6[2]	41.7	41.7	0
	5.8[4]	49.3	44.9	0
Telfair (1981)	82.1[1]	13.1	4.7	0.1
This study	71.6[1]	25.3	3.1	0
	48.0[2]	48.0	4.0	0
	51.1[4]	34.7	15.2	0

[1]Percent total number of individual prey items.
[2]Percent total number of identified species.
[3]Percent total volume.
[4]Percent total weight.

I commonly observed Little Blue Herons foraging along the shorelines in the Tampa Bay region. However, the prey species typical of this habitat were under-represented in the diet of Little Blue Herons breeding at a marine-estuarine site. Possibly the highly visible, slow moving prey that these herons are more apt to capture with their slower methods of foraging are mostly found in freshwater or terrestial habitats. Also, marine sites (with tidal, current, and wave effects) of the Tampa Bay region may be usable only for part of the day (hence, lower representation in food boluses), whereas, the freshwater sites are available for the entire day.

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