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Parasites and Diseases of Reddish Egrets (*Egretta rufescens*) from Texas and Florida[1]

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Abstract. Twenty-one species of parasites, including one mite, one tick, one hippoboscid, three biting lice, two cestodes, five trematodes, seven nematodes, and one acanthocephalan, were recovered from 36 reddish egrets (*Egretta rufescens*) from Texas and Florida during 1976, 1977, and 1978. One bacterial infection (*Salmonella typhimurium*) and one avian poxvirus infection also were found. Organochlorine concentrations were examined in tissues of two birds. While only trace amounts (<1 ppm) of dieldrin, DDE, and PCB were found, the uropygial gland of one of the egrets contained 1, 2, and 8 ppm of these compounds, respectively.

The reddish egret, *Egretta rufescens* (Gmelin), is an uncommon coastal resident of the states bordering the Gulf of Mexico, Mexico, the West Indies, and northern South America (Hancock & Elliott, 1978). Population declines in Florida in years past were due primarily to plume-hunting by humans (Scott, 1887). An abrupt decline in breeding numbers in Texas seen during the 1960's also may have been related to human activities (Paul, 1977). In recent years, reddish egrets have increased in all areas where they breed in the U.S.A., and currently number about 2,000 breeding pairs; 75% of these occur in Texas (Paul, 1977). The purpose of this investigation was to delineate some of the parasites and potentially pathogenic disease agents that might affect these rare birds.

MATERIALS AND METHODS

In the course of a study of the populations and ecology of reddish egrets in Texas and Florida, one of us (RTP) was able to obtain three birds for necropsy and a selection of blood, fecal, and regurgitated food samples from 33 other individuals. Twenty-seven of the egrets were from Redfish Bay, Texas (Nueces and San Patricio Counties), but seven were from neighboring Aransas Bay (Aransas County). Samples were obtained from two egrets from Florida, both taken at Tern Key in Florida Bay (Monroe County). Altogether, we examined:

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TABLE I

Numbers of parasites recovered at necropsy from three reddish egrets from Texas and Florida

Parasite	Host		
	TX-1	TX-2	FL-1
Acarina			
Ardeacarus ardeae (Canestrini, 1878) (1)[a]	53	0	0
Mallophaga			
Ciconiphilus decimfasciatus (Boisduval & Lacordaire, 1835) (1)	0	298	877
Ardeicola florida nigra Tuff, 1967 (1)	41	23	4
Comatomenopon dichromanassae Tuff, 1967 (1)	11	0	0
Cestoda			
Parvitaenia heardi Schmidt & Courtney, 1972 (2)	0	13	98
Unidentified (2)[b]	0	11	4
Trematoda			
Mesoophorodiplostomum pricei (Krull, 1934) (2)	0	10	21
Bolbophorus confusus (Krause, 1914) (2)	0	0	5
Apharyngostrigea multiovata (Perez Vigueras, 1944) (2)	0	10	3
Ascocotyle gemina Font, Heard & Overstreet, 1984 (2)	0	100	0
Ribeiroia ondatrae (Price, 1931) (3)	0	1	0
Nematoda			
Contracaecum multipapillatum (Drasche, 1882) (3, 4, 5)	2	0	44
Contracaecum spiculigerum (Rudolphi, 1809) (3, 4, 5)	0	10	22
Contracaecum sp. (immature) (3, 4, 5)	0	0	52
Desmidocercella numidica (Seurat, 1920) (6)	13	62	0
Tetrameres sp. (4)[c]	7	1	22
Strongyloides sp. (2)	12	0	0
Capillaria sp. (2)[c]	0	0	3
Synhimantus invaginatus (Linstow, 1901) (4)	0	0	19
Acanthocephala			
Arhythmorhynchus pumiliorostris Van Cleave, 1916 (2)	0	0	2

[a] Numbers in parentheses indicate site in host: (1) feathers; (2) small intestine; (3) esophagus; (4) proventriculus; (5) gizzard; (6) air sacs.

[b] Poor specimens for purposes of identification.

[c] Limited specimens (all female) made specific identification impossible.

(1) blood smears from seven nestlings and one fledgling from Texas, and one fledgling from Florida; (2) fecal samples from nine nestlings, one fledgling and one adult from Texas, and one fledgling from Florida; (3) nematodes from regurgitated food samples of 15 egrets from Texas and one from Florida (all nestlings); and (4) ecto- and endoparasites, organochlorine concentrations, and bacteria at necropsy from two egrets (one adult, one fledgling) from Texas, and one (fledgling) from Florida. Ectoparasites also were collected from three other egrets from Texas. Techniques for necropsy and for the recovery and identification of parasites followed the procedures described by Forrester et al. (1974). Voucher specimens of the parasites have been deposited in the U.S.

National Parasite Collection (Beltsville, Maryland), Nos. 78074–78095. Portions of the livers and large intestines of three egrets examined at necropsy were cultured for bacteria as described by White et al. (1981). Organochlorine concentrations (DDD, DDE, DDT, PCB, dieldrin) were measured in the uropygial gland, liver, fat, muscle, and brain of the two egrets from Texas after the manner of Thompson et al. (1974).

Results and Discussion

Table I summarizes the species and numbers of parasites collected from each of the three egrets at necropsy. The adult and juvenile egrets from Texas (TX-1 and TX-2, respectively) were victims of trauma, but the juvenile egret from Florida (FL-1) succumbed to a severe avian poxvirus infection. Twenty-one species of parasites were recovered, including one mite, one tick, one hippoboscid, three biting lice, two cestodes, five trematodes, seven nematodes, and one acanthocephalan. The species of parasite and intensities of infection were considered insignificant from the standpoint of disease for all three egrets; however, TX-1 had a cyst-like protrusion on the serosal surface of the proventriculus, which contained two gravid female specimens of *Tetrameres* sp., and TX-2 exhibited ulcerations at the junction of the esophagus and proventriculus, probably owing to the presence of 10 specimens of *Contracaecum spiculigerum*. Although the proventriculus of FL-1 contained larger numbers of *Contracaecum* spp. and *Tetrameres* sp., in addition to *Synhimantus invaginatus*, no lesions were observed.

The bacterium *Salmonella typhimurium* was cultured only from the large intestine of egret TX-2; cultures of the livers and large intestines of egrets TX-1 and FL-1 showed no growth of pathogenic bacteria. Organochlorine concentrations were measured only in tissues of the two egrets from Texas, and were considered insignificant. Less than 1 ppm dieldrin, DDE, and PCB occurred in liver, fat, muscle, and brain; however, the uropygial gland was examined in one of the birds (TX-1) and contained 1, 2, and 8 ppm of the three compounds, respectively. These values for the uropygial gland are not considered unusual since the lipoidal nature of this gland renders it a repository organ for chlorinated hydrocarbon pesticides and pollutants (Johnston, 1976).

Nematodes from 16 regurgitated food samples were identified as *Contracaecum multipapillatum*, in addition to unidentified specimens of immature *Contracaecum*. Most nematodes were found mixed freely with the food items, but some were embedded or attached to several species of fish and one species of shrimp. Apparently, the nematodes were actively burrowing into the prey items ingested, a phenomenon that is not uncommon and actually may aid in the digestive process of the egret (see Huizinga, 1971). The most commonly observed species of fish in the regurgitated food samples were members of the killifish family (*Cyprinodon* and *Fundulus*), although mullet (*Mugil* spp.) were found on occasion. Deardorff & Overstreet (1980) reported two species of mullet as intermediate hosts for *C. multipapillatum*.

No blood parasites or coccidia were found in any of the blood smears or fecal samples examined, respectively. Aside from the ectoparasites listed in

Table I, the only others found were seven specimens of the body louse *Ciconiphilus decimfasciatus* (Boisduval & Lacordaire, 1835), one specimen of the hippoboscid *Lynchia albipennis* (Say, 1823), and two specimens of a larval soft tick *Ornithodoros capensis* (Neumann, 1901) from three separate live young egrets from Texas. The latter ectoparasite has been reported previously from colonies of reddish egrets and is of considerable interest since it has been associated with large-scale nesting failure in a variety of ground-nesting colonial birds (Duffy, 1983; Feare, 1976; King et al., 1977). The distribution and abundance of *O. capensis* in colonies of reddish egrets in Texas and Florida is presently unknown. However, *O. capensis* has never been found on a nestling bird in Florida where nesting occurs in mangrove trees, as opposed to its common occurrence on the nestlings from Texas where nesting takes place on the ground.

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International Meiofauna Conference

The Sixth International Meiofauna Conference (SIMCO) will be held at the University of South Florida, Tampa, 13–19 July 1986. A special session on fresh-water meiofauna is to be included. For additional information, contact: Dr. Susan S. Bell, Department of Biology, University of South Florida, Tampa, Florida 33620, U.S.A.; Telephone: (813) 974-2677.