

normal oocyst discharge pattern for each isosporan species. These results suggest that coyotes could be listed as definitive hosts for *I. canis* and *I. rivolta*.

At time of necropsy 40 days postinfection, totals of 785, 1,134, and 3,996 hydatid tape-worms were recovered from the three infected coyotes. This demonstrates that coyotes can

possibly serve as important hosts in sylvatic echinococcosis in this region, such as that described in California by Liu et al. (1970, loc. cit.) and Romano et al. (1974, loc. cit.).

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Health Service Grant AI-10588.

Parasites of Florida Sandhill Cranes, *Grus canadensis pratensis*

The Florida sandhill crane, a nonmigratory form, is currently listed as a threatened subspecies of fewer than 3,000 birds (Office of Endangered Species and International Activities, 1973, U. S. Dept. Int. Res. Publ. 114, 289 p.). The parasites of greater sandhill cranes (*Grus c. tabida*), which overwinter in Florida, have been studied (Forrester et al., 1974, Proc. Helm. Soc. Wash. **41**: 55-59), but only one published report exists on parasites of the Florida sandhill crane. Timmermann (1971, Senckenb. Biol. **52**: 41-47) described a species of Mallophaga, *Saemundssonina sagulata*, from material collected from a Florida sandhill crane in 1882.

The present report is based on the coccidia, hemosporida, helminths, and mallophagans collected from Florida sandhill cranes from five localities in Florida: (1) Alachua County (35 birds), (2) Highlands County (8 birds), (3) Glades County (5 birds), (4) Desoto County (1 bird), and (5) Sarasota County (1 bird). All birds, except one juvenile about 3 months old, were yearlings or older individuals and were examined from March 1970 through August 1973. Although this report is based on 50 birds, only 15 were examined at necropsy. Fourteen of the birds were obtained as a result of mortality due to trapping operations being conducted by the Florida Game and Fresh Water Fish Commission; one bird (the juvenile) died of natural causes. The other 35 birds were examined as captives in a banding study and hence only ectoparasites, blood films, and/or fecal samples could be obtained.

Techniques for recovery, killing, fixing, and studying helminths followed those described by Kinsella and Forrester (1972, Proc. Helm. Soc.

Wash. **39**: 173-176) and methods for obtaining and studying coccidia, hemosporida, and mallophagans followed those of Forrester et al. (loc. cit.).

Twenty-two species of parasites were recovered including three coccidia, two hemosporida, six trematodes, six nematodes, one cestode, and four mallophagans. All except one are new host records.

Oocysts of two species of *Eimeria* were found commonly in feces from 25 cranes from three localities (Glades, Highlands, and Alachua counties). Oocysts of *Adelina* sp. were found in feces of three cranes and probably represent spurious infections. These coccidia will be discussed in detail elsewhere. Of 28 blood films examined, four contained infections of *Haemoproteus antigonis* de Mello, 1935, and five contained infections of a new species of *Leucocytozoon* which was recently described as *L. grusi* by Bennett et al. (1974, J. Parasit. **60**: 359-363) from material obtained in this study.

Table I gives the species of helminths encountered, the site of infection for each species, the number of hosts infected with each helminth, and mean numbers (and ranges) of worms per infection. The number of helminth species per host varied from 1 to 4 (mean, 2) with no cranes free of helminths. The total number of helminths per bird ranged from 1 to 266 (mean, 51). These findings are similar to those reported for greater sandhill cranes (Forrester et al., loc. cit.).

Trematodes were not common and *Orchipeum jolliei* Schell, 1967, a very common species in greater sandhill cranes (Forrester et al., loc. cit.), was represented only by a single specimen in one bird. *Tanaisia fedtschenkoii*

TABLE I. *Helminths from 15 Florida sandhill cranes.*

Helminth	No. birds infected	No. worms/infection	
		Mean	(Range)
Trematoda			
<i>Strigea gruis</i> (3,4)*†	3	141	(51-258)
<i>Stomylotrema vicarium</i> (4,6,7)	3	28	(8-43)
<i>Brachylaima fuscatum</i> (4)†	3	13	(1-27)
<i>Tanaisia fedtschenkoi</i> (10)	1	9	-
Echinostomidae (5,6)†	1	4	-
<i>Orchipeum jollie</i> (9)†	1	1	-
Nematoda			
<i>Strongyloides</i> sp. (3,4,5,6,7)†	12	18	(1-86)
<i>Syngamus trachea</i> (8)†	2	2	(1-2)
<i>Synhimantus</i> sp. (2)†	2	2	(1-2)
<i>Dispharynx nasuta</i> (1)†	1	1	-
<i>Capillaria</i> sp. (4)†	1	1	-
Physalopterid larva (4)	1	1	-
Cestoda			
Unidentified scolex (3)	1	3	-

* Numbers in parentheses indicate location in host: (1) proventriculus, (2) under gizzard lining, (3) duodenum, (4) lower small intestine, (5) large intestine, (6) ceca, (7) cloaca, (8) trachea, (9) lungs, (10) kidney.

† Reported from greater sandhill cranes in Florida (Forrester et al., loc. cit.).

Skrjabin, 1924, was found in one crane from Highlands County. This species, a cosmopolitan parasite found in a variety of hosts, was reported from 10 of 140 white ibises (*Eudocimus albus*) from Florida (Bush, 1973, unpublished M.S. thesis, University of Florida, Gainesville, 115 p.). *Stomylotrema vicarium* Braun, 1901, was found in three birds from three localities. In two adult cranes the specimens were immature, but in one bird (a juvenile) they were gravid. Gravid specimens of *S. vicarium* have been found rarely in wild turkeys, *Meleagris gallopavo* (Hon, 1973, unpublished M.S. thesis, University of Florida, Gainesville, 116 p.), and very commonly in white ibises (Bush, loc. cit.) in Florida. Both the crane and turkey may be accidental hosts of this parasite. Four specimens of an echinostome (morphologically and metrically similar to *Echinostoma*) were recovered from one bird. Unfortunately, the loss of the collar spines prevented positive identification.

The most common nematode was *Strongyloides* sp. which was found in 12 of the 15 cranes examined. This species, along with *Synhimantus* sp. and *Capillaria* sp., is apparently the same undescribed species reported from greater sandhill cranes and discussed by Forrester et al. (loc. cit.). *Tetrameres gruis*

Shumakovich, 1946, a characteristic nematode of greater sandhill cranes, was absent from the Florida sandhill cranes examined.

Four species of Mallophaga were found: *Ethiopterum brevicephalum* (McGregor, 1917), *Gruimenopon canadense* Edwards, 1949, *Heleonomus assimilis* (Pioget, 1880), and *Saemundssonina sagulata* Timmermann, 1971. All four species have been reported previously from greater sandhill cranes (Forrester, et al., loc. cit.), but only *S. sagulata* has been found on Florida sandhill cranes previously (Timmermann, loc. cit.).

Representative material has been deposited in the National Parasite Collection, Beltsville, Maryland (USNM Nos. 72637, 73687-73695).

The technical assistance of J. M. Kinsella, P. P. Humphrey, T. E. Peoples, D. H. Austin, and S. A. Nesbitt is gratefully acknowledged.

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