in Mexico. Voucher specimens are deposited in USNM Helm. Coll. No. 77184.

Thanks are expressed to Dr. Peggy Turk, Education Director, CEDO, for providing the osprey carcass.

Proc. Helminthol. Soc. Wash.
52(1), 1985, pp. 140–142

***Research Note***

# Parasites of Limpkins, *Aramus guarauna*, in Florida

JOSEPH A. CONTI,[1] DONALD J. FORRESTER,[1] AND STEPHEN A. NESBITT[2]

[1] College of Veterinary Medicine, University of Florida, Gainesville, Florida 32610 and
[2] Florida Game and Fresh Water Fish Commission, Wildlife Research Laboratory, Gainesville, Florida 32601

The limpkin, *Aramus guarauna* (L.), is a medium-sized long-legged wading bird of the order Gruiformes (cranes, rails, gallinules, coots, etc.) and is the sole member of the family Aramidae. It is limited to freshwater habitats primarily in Florida and southeastern Georgia in the U.S.A. (American Ornithologists' Union, 1957, Checklist of North American Birds. 5th ed., Baltimore). Limpkins feed primarily on apple snails (*Pomacea paludosa* (Say)), a behavior shared by the snail kite, *Rostrhamus sociabilis* Vieillot, although unlike snail kites they will take also other foods such as lizards, frogs, insects, crustaceans, mussels, and other snails (Snyder and Snyder, 1969, Living Bird 8:177–223). Whereas the food habits of limpkins have been well studied, very little is known about their parasites. The present report concerns the parasites of limpkins from central Florida.

Fifteen limpkins were examined. Most (13 adults and one hatchling) were collected from October 1975 to February 1976 at Rodman Pool in the Oklawaha River, Marion County, Florida. One additional adult was collected in February 1980 approximately 32 km south of this locality at Alexander Springs (Lake County).

Nine adult birds and one hatchling were necropsied after having been frozen for up to 3 mo. Blood samples were obtained from only four other adult birds during banding and release oper-

**Table 1. Location, prevalence, and intensity of helminths of nine limpkins, *Aramus guarauna*, from the Oklawaha River, Florida.**

| Parasite | Prevalence (%) | Intensity* | | |
|---|---|---|---|---|
| | | Mean | Median | Range |
| Trematoda | | | | |
| Cyclocoelidae (1)†‡§ | 100 | 429 | 34 | 2–3,554 |
| *Lyperorchis lyperorchis* Travassos, 1921 (4)‖ | 56 | 4 | 1 | 1–12 |
| Echinostomatidae (3)‖§ | 33 | 2 | 1 | 1–3 |
| *Prionosoma serratum* (Diesing, 1850) Dietz, 1909 (3)‖ | 11 | 2 | 2 | 2 |
| Nematoda | | | | |
| *Amidostomum acutum* (Lundahl, 1848) Seurat, 1918 (2)‡ | 56 | 6 | 5 | 2–10 |
| *Strongyloides* sp. (3)‡ | 33 | 59 | 75 | 25–78 |

* Intensity = no. parasites/infected host; values ≥0.5 rounded to next highest number.
† Numbers in parentheses indicate site in host: (1) lungs, air sacs; (2) gizzard; (3) small intestine; (4) cloaca.
‡ New host record.
§ Immature forms.
‖ New locality record.

ations. Biting lice were collected from three of the ten birds examined at necropsy and from one additional limpkin that was captured, banded, and released.

Procedures for collecting and studying parasites followed those given by Forrester et al. (1974, Proc. Helminthol. Soc. Wash. 41:55–59). Voucher specimens of each parasite have been deposited in the U.S. National Parasite Collection (Beltsville, Maryland, Nos. 78046–78053).

Four trematodes, two nematodes, and two biting lice were recovered. No blood parasites were detected on blood films.

The biting lice, *Laemobothrion cubense* Kellogg and Ferris, 1915 and *Rallicola funebris* (Nitzsch, 1866), were found on two and three of 11 birds, respectively. Only one of the limpkins harbored specimens of both species. Both of these lice have been reported previously from limpkins (Emerson, 1972, Checklist of the Mallophaga of North America (North of Mexico), Part IV. Bird Host List, Dugway, Utah).

Table 1 lists the sites, prevalences, and intensities of infection for the helminths collected from nine limpkins originating from the Oklawaha River. A tenth bird from Alexander Springs was free of helminths and was not included in Table 1 since it was collected from a different locality.

All limpkins were infected with specimens of at least one species of helminth (range 1–4, $\bar{x}$ = 3, med. = 2). The total number of helminths per infected limpkin ranged from 10 to 3,586 ($\bar{x}$ = 454, med. = 58); however, these values are skewed upward because of a large number (3,554) of immature cyclocoelids in the hatchling. Intensity values did not exceed 83 specimens of this trematode in any of the adult limpkins, of which all were infected. In fact, none of the other limpkins had a total parasite count >165. Because only immature specimens were recovered, this suggests that the limpkin may be an abnormal host for this helminth.

Only two specimens of *Prionosoma serratum* were found in the intestine of one limpkin. Three other birds possessed immature forms of an echinostome that may have been *P. serratum.* This species was recovered from limpkins in Venezuela, Brazil, and Cuba (Nasir and Diaz, 1972, Riv. Parassitol. 33:245–276). A closely related species of trematode, *P. pricei* Perez Vigueras, 1944, was shown experimentally to infect snail kites in Cuba via apple snail intermediate hosts (Nasir and Diaz, 1972, op. cit.). Apple snails may serve as intermediate hosts for both *P. pricei* and *P. serratum* in their respective definitive hosts, but this remains to be determined.

*Amidostomum acutum* was more prevalent than *Strongyloides* sp., but intensities of infection were much lower. Both are pathogenic in various avian hosts (Levine, 1980, Nematode Parasites of Domestic Animals and of Man, 2nd ed., Minneapolis), but the effects of these infections on limpkins are unknown. Because the life cycles of *A. acutum* and *Strongyloides* sp. are direct, limpkins probably acquire infections through ingestion of infective stages or also by skin penetration of infective stages in the case of *Strongyloides* sp.

Helminths have been reported from other gruiform relatives of the limpkin in Florida, i.e., American coots (*Fulica americana* (Gmelin), common moorhens (*Gallinula chloropus* (L.)), purple gallinules (*Porphyrula martinica* (L.)), and wintering and resident sandhill cranes (*Grus canadensis* (L.)) (Kinsella, 1973, Proc. Helminthol. Soc. Wash. 40:240–242; Kinsella et al., 1973, Am. Midl. Nat. 89:467–473; Forrester et al., 1974, op. cit.; Forrester et al., 1975, J. Parasitol. 61:547–548). Limpkins appear to have few helminths in common with their relatives, sharing only the nematode genera *Amidostomum* and *Strongyloides.* The immature cyclocoelid trematodes may represent the species that occur in coots and gallinules (*Cyclocoelum mutabile* (Zeder, 1800) or *C. oculeum* Kossack, 1911) or perhaps the species in snail kites, *Bothrigaster variolaris* (Fuhrmann, 1904) (Kinsella, 1973, op. cit.; Kinsella et al., 1973, op. cit.; Travassos et al., 1969, op. cit.; Sykes and Forrester, 1983, Fla. Field Nat. 11:111–116). Apple snails may be involved as intermediate hosts of the cyclocoelids of limpkins and snail kites. Although our sample size was small, it appears that limpkins have fewer species of helminths (seven or eight) than other gruiforms in Florida such as the American coot (17 species), common moorhen (17), purple gallinule (18), Florida sandhill crane (13), and Greater sandhill crane (14) (Kinsella, 1973, op. cit.; Kinsella et al., 1973, op. cit.; Forrester et al., 1974, op. cit.; Forrester et al., 1975, op. cit.). This may result from the limpkin's more restricted diet.

The authors thank Dana Bryan for collecting the limpkin from Lake County, and T. L. Howard and P. P. Humphrey for assisting with the necropsies. Special thanks are due K. C. Emerson

for identification of the lice. Supported in part by grant number 1270-G from the Florida Game and Fresh Water Fish Commission. A contribution of Federal Aid to Wildlife Restoration, Florida Pittman-Robertson Project W-41. Florida Agricultural Experiment Stations Journal Series No. 5633.

Proc. Helminthol. Soc. Wash.
52(1), 1985, pp. 142–143

***Research Note***

# *Toxascaris leonina* (Nematoda: Ascarididae) from the Pronghorn Antelope, *Antilocapra americana*, in Wyoming

R. C. BERGSTROM,[1] N. KINGSTON,[1] AND J. R. TALBOTT[2]

[1] Division of Microbiology and Veterinary Medicine, University of Wyoming, Laramie, Wyoming 82071 and

[2] Wyoming Game and Fish Commission, Warden, Kaycee, Wyoming

Although the genera *Toxocara* Stiles, 1905 and *Toxascaris* Leiper, 1907 are common in canines and felines, only occasionally are they found in ruminants or other artiodactylids. John R. Talbott, Game Warden, Wyoming Game and Fish Commission, Lusk, Wyoming, killed a doe pronghorn antelope, *Antilocapra americana* (Ord), in Niobrara County, Wyoming, November 3, 1981 because the animal was weak and probably would have died within a short time. While completing a postmortem examination of the doe, the warden noted a poor body condition, deterioration of bone marrow, and emaciation. Nematode worms were present in the posterior portion of the small intestine. He collected nearly a dozen live nematodes, put them in ethanol, and submitted them to Dr. E. Tom Thorne, Wildlife Research Veterinarian with the Wyoming Game and Fish Dept., Research Laboratory, University of Wyoming, Laramie. Dr. Thorne relayed the worms to two of us (R.C.B. and N.K.). The nematodes appeared to be of normal color and morphology. Female worms ranged from 4.5–6.0 cm in length and were 0.8–1.2 mm in width at midbody. Lengths of male worms ranged from 3.4 to 3.7 cm and measured 0.7–0.9 mm at greatest width. Cervical alae were typical of nemas of the *Toxascaris–Toxocara* genera in the family Ascarididae Baird, 1853. Nematodes of this group can be separated by the fact that *Toxascaris* spp. (Ascaridinae) have a simple esophagus without a ventriculus, but *Toxocara* spp. (Toxocarinae) have a ventriculus. Lengths of the female and male worms were near the middle of the range of *Toxascaris* as given by Levine, 1980 (Nematode Parasites of Domestic Animals and of Man. Burgess Publishing Co., Minneapolis, Minnesota). However, the widths of both the female and male worms were less than those given by Levine and other authors. Most female worms had no eggs in the uteri so there may be some question whether the females ever would have produced viable ova. Dr. J. Ralph Lichtenfels, Animal Parasitology Institute, Agricultural Research Service, USDA, Beltsville, Maryland, confirmed our identification of the ascarids as *Toxascaris leonina* (Linstow, 1902) Leiper, 1907. Lichtenfels noted that no previous record exists of *Toxascaris* sp. in pronghorn antelope or in any other ruminant in the United States.

Recent literature indicates that *Ascaris suum* Goeze, 1782 and *Toxocara canis* (Werner, 1782) Stiles, 1905 will infect domestic cattle (calves) causing extensive pulmonary lesions (Greenway and McGraw, 1970, Can. J. Comp. Med. 34(3): 227–237) and that *Toxocara cati* (Schrank, 1788) Brumpt, 1927 = *T. mystax* (Zeder, 1800) has been found in an equine host in northern Iran (Mirzayans, 1973, Vet. Rec. 92:262, letter). Grinberg (1961, Med. Parazitol. Moskva 30.626: English trans. #568, U.S. Namru 3) found an abscess containing about 100 adult *Toxascaris leonina* in a male human in the U.S.S.R. Since *Toxocara vitulorum* (Goeze, 1782) Warren, 1971 (syn. *Neoascaris vitulorum*) occurs in the small intes-