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HELMINTHS RECOVERED FROM THE WHITE-NECKED RAVEN *(Corvus cryptoleucus* COUCH) IN EASTERN NEW MEXICO

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Abstract: Two nematodes, *Acuaria anthuris* (Rudolphi, 1819), *Diplotriaena tricuspis* (Fedtschenko, 1874); two cestodes, *Anomotaenia constricta* (Molin, 1858), *Hymenolepis corvi* (Mayhew, 1925); and one acanthocephalan, *Mediorhynchus grandis* (Van Cleave, 1916) were recovered from the white-necked raven *(Corvus cryptoleucus* Couch). All represent new host and distribution records. A relationship appears to exist between corvid host percentages and extent of zoogeographical distributions.

INTRODUCTION

The white-necked raven *(Corvus cryptoleucus* Couch) has been the subject of few parasitologic studies. To date, all such studies have been examinations for ectoparasites.[13] A literature review indicates that this is the first attempt to analyze the helminth fauna of this host. Consequently, the present study was initiated to (1) examine the composition of the helminth parasites of the white-necked raven from eastern New Mexico, and (2) to review all host citations, and distributions, which harbor the same helminth parasites as do the white-necked ravens. The latter is used to assess parasite affinity, for corvids, and zoogeographical distributions of the helminths.

METHODS AND MATERIALS

Fifty-eight white-necked ravens were collected near Portales and Elida, Roosevelt County, New Mexico. Birds were collected by shooting from mid-July through December. They were packaged, frozen and later examined for helminths. Nematodes were cleared in glacial acetic acid for 10-15 min and stored in a mixture of 5% glycerine and 70% ethanol. Acanthocephalans were stained in Harris' haematoxylin, destained in acid alcohol, cleared in 10% KOH and mounted in euparal. Cestodes were stained in a Harris' haematoxylin-30% ethanol mix, rinsed in 30-50% ethanol, dehydrated in absolute ethanol, cleared in xylene, and mounted in Canada balsam. Representative specimens of hosts and helminths have been retained in the Natural History Museum collections of Eastern New Mexico University.

RESULTS AND DISCUSSION

Two nematodes, *Acuaria anthuris* (Rudolphi, 1819), *Diplotriaena tricuspis* (Fedtschenko, 1874); two cestodes, *Anomotaenia constricta* (Molin, 1858), *Hymenolepis corvi* (Mayhew, 1925); and one acanthocephalan, *Mediorhynchus grandis* (Van Cleave, 1916) were recovered from the white-necked raven. Of the 58 birds examined in this study, 27 (47%) were infected with helminths. Of those, 21 (78%) were males and 6 (22%) were females. The helminths were recovered from the muscle beneath the gizzard lining *(A. anthuris),* the abdominal cavity outside the gastrointestinal tract *(D. tricuspis),* or from within the gastrointestinal tract *(A. constricta, H. corvi,* and *M. grandis).* As indicated in Table 1, *M. grandis* and *H. corvi* were only recovered from a single female host. Their low prevalence is accentuated by the fact that all specimens, of both species, were taken from the same female. The remaining

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TABLE 1. Helminths recovered from the white-necked raven in eastern New Mexico.

Helminth	# of male hosts	# of female hosts	% male hosts	% female hosts
Acanthocephala				
M. grandis	0	1	0	4
Cestoda				
A. constricta	7	0	21	0
H. corvi	0	1	0	4
Nematoda				
A. anthuris	12	5	35	21
D. tricuspis	11	0	32	0

host females (5) were parasitized only by *A. anthuris*, representing 21% of the females examined.

While only 25% (6 of 24) of the females were parasitized, a higher percentage of parasitism was observed among male white-necked ravens (21 of 34 or 62%) (Table 1). Aside from *A. anthuris*, which appears to occur somewhat more frequently among males, evidence from Table 1 would indicate that potential host sex preference exists for *A. constricta* and *D. tricuspis*. Although affinities of these two helminths, toward the male host, are low (21% and 32%, respectively) neither helminth was recovered from the 24 females examined. Examination of a larger host sample size would, however, be necessary to confirm this hypothesis.

All helminths recovered in this study represent new host and distribution records. A literature review disclosed two interesting facts: (1) all recorded hosts are birds (except the greater North American short-tailed shrew, host for *M. grandis*[4]); and (2) a significant percentage of recorded hosts for certain of the helminth species, belong to the family Corvidae.[8,12,16,17] The latter fact is best exemplified by *A. anthuris*, in which 17 of 21 recorded host citations (81%) were from corvids.[1,8,14,18] Other helminths, and recorded corvid host percentages include: *D. tricuspis*, 79%;[2,3,5,8,11] *H. corvi*, 50%;[6,7,8,10,19] *A. constricta*, 45%;[8,10,18] and *M. grandis*, 18%.[4,5,6,8,9,15]

From the previous citations, and others maintained by the senior author, a direct correlation appears to exist between corvid host percentage values and extent of geographical distribution for each of the helminths. For example, near ubiquity exists for *A. anthuris*[16] and *D. tricuspis*[17] while *A. constricta* and *H. corvi* appear holarctic and nearctic, respectively. Of the five species of helminths, *M. grandis* appears least frequently among the Corvidae (18%) and likewise has only been recovered from its corvid hosts in North America.[12] Moreover, it is the only helminth to be recovered from a non-avian host.[4] The corvid host percentage value for *H. corvi* may be somewhat misleading since only four host citations are available.

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