BioOne COMPLETE

NEW HOST RECORD AND NOTES ON MALLOPHAGA FROM THE WHITE-NECKED RAVEN (Corvus cryptoleucus COUCH)

Authors: PFAFFENBERGER, G.S., BUTLER, W.F., and HUDSON, D.S.

Source: Journal of Wildlife Diseases, 16(4) : 545-547

Published By: Wildlife Disease Association

URL: https://doi.org/10.7589/0090-3558-16.4.545

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://complete.bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

NEW HOST RECORD AND NOTES ON MALLOPHAGA FROM THE WHITE-NECKED RAVEN *(Corvus cryptoleucus* COUCH)

G.S. PFAFFENBERGER, W.F. BUTLER and D.S. HUDSON, Natural History Museum, Eastern New Mexico University, Portales, New Mexico 88130, USA.

Abstract: Fifty-eight white-necked ravens *(Corvus cryptoleucus)* were examined for ectoparasites. *Brueelia afzali* and *Philopterus ocellatus osborni* were the most abundant mallophagans while *Colpocephalum fregili* and *Myrsidea interruptus* were the least common. The white-necked raven is listed as a new host for *P. ocellatus osborni.* Host sexual selection is indicated by statistical treatment of data obtained from ecologically distinct host populations.

INTRODUCTION

The geographic distribution of the white-necked raven *(Corvus cryptoleucus)* is somewhat restricted when compared to other congeneric members.[1] Resident populations in east-central New Mexico undergo population fluctuations through seasonal movements and/or migrations. Host populations reach their greatest densities during early fall and are least dense during mid-winter. Although lice have been reported from the white-necked raven,[2,3,5,7] inconsistency exists between recorded host locale[2] and the distribution of the host.[1] Moreover, species of lice, previously recorded from this host, were not recovered[2] and species, formerly recovered only from the common crow *(Corvus brachyrhynchos)*[4] were collected in abundance. Information on quantitative aspects of the ectoparasite burden of white-necked ravens is not available. Therefore, this study was initiated to: (1) survey ectoparasite diversity, (2) compare the results with previously recorded information, (3) indicate possible host sex selection by parasites and (4) access and compare the densities of lice from consistently large and small ecologically distinct populations.

MATERIALS AND METHODS

A total of 58 birds was collected from two different populations. Thirty-two white-necked ravens were taken from a large (500 plus birds), agriculturally-based population whose density remained essentially unchanged throughout spring, summer and early fall months. The remaining 26 birds were taken from small (less than 15 birds), static, desert-based populations near Elida and Kenna, New Mexico. Birds were collected by shooting from mid-July through late December, and were immediately packaged individually in clear plastic bags. Birds were frozen from several hours to several days and were subsequently examined for parasites. The birds were placed on large white, enamel trays and a hard-bristled toothbrush was used to dislodge the lice. The feathers were brushed several times against their natural position. Sex of host was determined by post-morten examination of the gonads. Lice were soaked in 10% KOH for 12 to 36 h. They were later transferred to distilled water for 10 min, absolute ethanol for 10 min, and then to beechwood creosote for another 10 min. Lice were then placed individually on slides in Euparol mounting medium.

RESULTS

Over 500 lice were examined and of these 95% were collected from the heavily infested ravens obtained from the large, agriculturally-based population (Table 1). Four genera and species were

Downloaded From: https://complete.bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

TABLE 1. Ectoparasites collected from white-necked ravens of a large agricultural (A) and small desert (D) based populations.

Ectoparasite	% occurrence of parasite	No. of parasites/host male	No. of parasites/host female	Chi-square value	df	% chance deviation
Brueelia afzali						
*A	54	75	106	5.3	1	2
+D	27	0	7	3.5	1	7
Colpocephalum fregili						
A	9	7	22	7.76	1	0.6
D	-	-	-	-	-	-
Myrsidea interruptus						
A	1	3	2	0.2	1	99
D	-	-	-	-	-	-
Philopterus ocellatus osborni						
A	36	97	22	47.2	1	0
D	73	14	5	4.26	1	4

* based on 334 lice from one male and female
+ based on 26 lice from 14 males and 12 females

represented in the collections. Three had been recorded previously *(Brueelia afzali,*[2] *Colpocephalum fregili,*[7] *Myrsidea interruptus*[5]) as parasites of the white-necked raven. The remaining species *(Philopterus ocellatus osborni)* has been reported only from the common crow *(C. brachyrhynchos).*[4] No *C. fregili* nor *M. interruptus* were recovered from ravens of the small desert-based populations but were present, although in minimal numbers, on ravens from the large populations (Table 1).

Brueelia cryptoleucus was recorded previously as an ectoparasite of the white-necked raven,[2] but was not recovered in this study. A literature search reveals inconsistencies in the validity of previous host records. Ansari[2] recorded the white-necked raven *(C. cryptoleucus)* as host for both species of *Brueelia (B. afzali, B. cryptoleucus),* and he also indicated that the hosts were collected in Texas and Illinois. The exact site in each state was not given. A comparison of the known geographical distribution of the white-necked raven[1] with that reported by Ansari[2] for host locality records, indicates a possible error in the identification of the host, thus casting doubt upon the validity of his host records.

When chi-square values and chance deviation percentages (Table 1) are examined and compared it is apparent that something other than chance alone must account for the distribution of the ectoparasites between male and female hosts. It is known that sex hormones influence, in a significant way, the density of ectoparasites upon their hosts.[8] Therefore, it is probable that host sex hormones also dictate the distribution and density of the various ectoparasites cited in this study. Host sex selection is most evident with *B. afzali* and *P. ocellatus osborni,* which appear to prefer females and males, respectively.

The unusually large numbers of ectoparasites from agriculturally-based populations may be explained on the basis of their communal behavior when roosting or feeding. Members of the large populations frequently are crowded

Downloaded From: https://complete.bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

together on the small branches of tamarix *(Tamarix* sp.). Crowded roosts definitely enhance infestation with lice. On the other hand, the ravens from small desert populations (Table) forage in clusters of 3 to 5 birds and roost at the tops of telephone poles. During roosting the latter birds seldom are crowded, appearing to be equidistantly separated by several centimeters. This type of roosting behavior would tend to reduce infestation.

Acknowledgements

The authors would like to express their utmost appreciation to Dr. K.C. Emerson (Smithsonian Institution) for the identification of the specimens. The senior author wishes to thank the New Mexico Department of Game and Fish for issuing permit number 1498 for the collection of the ravens and finally gratitude is extended to the Llano Estacado Center for Advanced Professional Research for institutional grant funds awarded to the senior author.

LITERATURE CITED

1. AMERICAN ORNITHOLOGISTS' UNION. 1957. *The A.O.U. Checklist of North American Birds.* 5th Ed. Lord Baltimore Press Inc., Baltimore, Md.
2. ANSARI, A.R.M. 1957. A revision of the *Bruelia* (Mallophaga) species infesting the Corvidae. Part II. Bull. Brit. Mus. (Nat. Hist.) Ent. 5(4): 145-182.
3. DENNY, H. 1842. Monographia Anoplurorum Britanniae. London. pp. 198-217, pl. XX.
4. EDWARDS, R.L. 1952. Notes on some of Osborn's Mallophaga types and the description of a new genus *Rotundiceps* (Philopteridae). Psyche. 59: 26-30.
5. KLOCKENHOFF, H. 1974. Zur taxonomie der Myrsideen *(Myrsidea* Waterston: Mallophaga) amerikanischer rabenvogel. Ent. Mitt. Zool. Mus. Hamburg. 4: 551-546.
6. OSBORN, H. 1896. Insects affecting domestic animals: an account of the species of importance in North America, with mention of related forms occuring on other animals. U.S.D.A. Bull. No. 5. New Series. p. 245, pl. II.
7. PRICE, R.D. and J.R. BEER. 1965. A review of the *Colpocephalum* of the Corvidae with the description of a new species. Proc. Ent. Soc. Wash. 67: 7-14.
8. ROTHSCHILD, M. 1965. Fleas. Sci. Am. Dec. p. 44-53.

Received for publication 14 January 1980

Downloaded From: https://complete.bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use