

## EXTERNAL PARASITES OF THE BLACK-BELLIED TREE DUCK AND OTHER DENDROCYGNIDS\*

BURRUSS MCDANIEL, DONALD TUFF, AND ERIC BOLEN

THE waterfowl tribe Dendrocygnini represents a unique and largely unstudied segment of the world's avifauna. Some ecological aspects of the Black-bellied Tree Duck (*Dendrocygna autumnalis*) have recently been summarized for South Texas (McDaniel et al., 1962; Bolen, 1962, 1964; Bolen et al., 1964). Information regarding the external parasites of the Black-bellied Tree Duck has become available during the course of these studies. An additional survey of external parasites has been consolidated from the literature for all tree duck species.

### HOST NOMENCLATURE

Because of what appears to be a host-specific relationship between the external parasites of the Black-bellied Tree Duck, some clarification regarding the bird's scientific nomenclature and geographic distribution is needed. Prior to 1947 the Black-bellied Tree Duck was regarded as consisting of two races, the distinctively gray-breasted *Dendrocygna autumnalis discolor* of South America and *D. a. autumnalis* of Central and North America. The host-specificity of external parasites was largely based on this terminology. However, Friedmann (1947) proposed that *D. a. autumnalis* was divisible into two races based on the coloration of belly and abdominal plumage. His designations, *D. a. fulgens* for Texas and northeastern Mexico and *D. a. lucida* for birds in the remainder of Mexico and Central America, have been recognized by the current AOU Check-list (1957) and are used in this paper for our descriptions of host birds. The reader should be aware, however, that many authorities dispute these races and continue to use the older nomenclature (cf. Delacour, 1954:47 and Conover, 1948:314 for further discussion). *D. a. discolor* remains recognized by all workers as the South American race.

Accordingly, parasite terminology may or may not agree with that of the host species. To avoid further confusion, Figure 1 is inserted with both the former and present nomenclature of the Black-bellied Tree Duck; Figure 2 shows *D. a. fulgens* taken at the collecting area, Lake Corpus Christi, Live Oak County, Texas. In the text, nomenclature follows that of the papers cited but, where need be, current terminology has been enclosed in brackets.

Following are species of the anatid tribe Dendrocygnini listed in phylo-

---

\* Contribution No. 94, Rob and Bessie Welder Wildlife Foundation, Sinton, Texas.

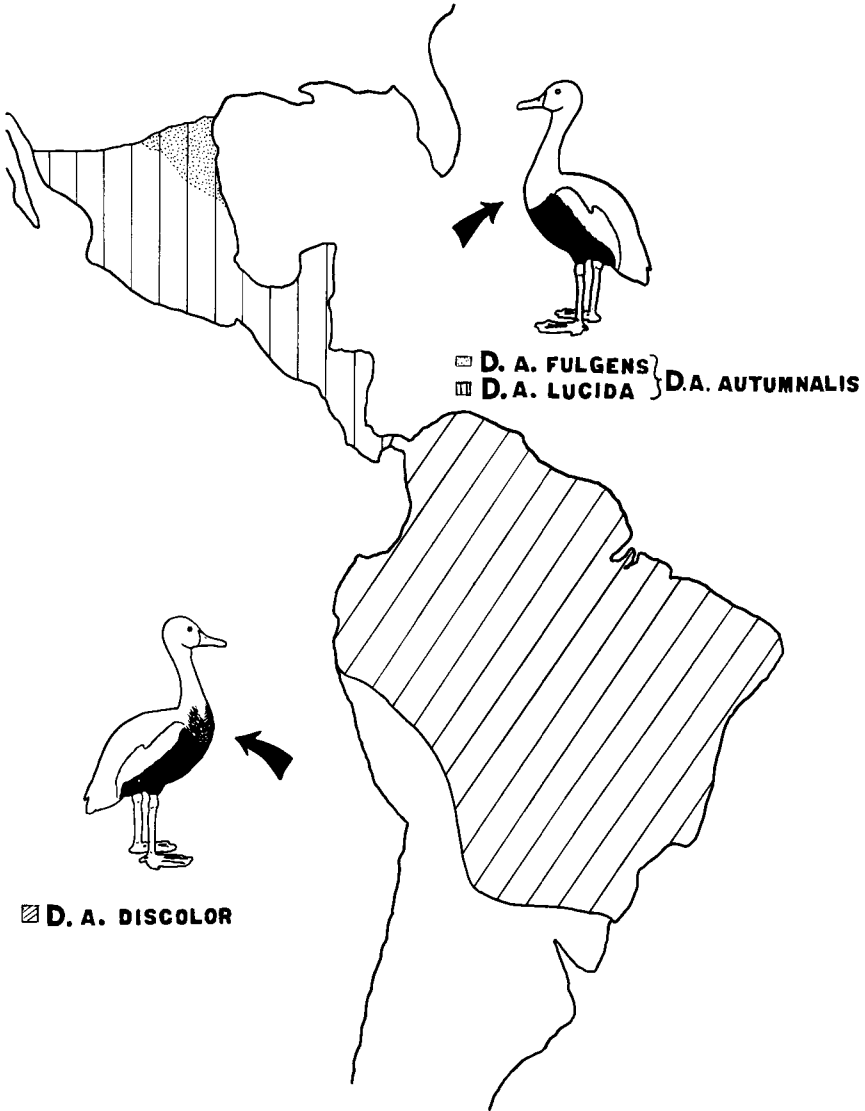


FIG. 1. Range map of Black-bellied Tree Duck and subspecies. Nomenclatural equivalents of Delacour (1954) and Friedmann (1947) as indicated.

genetic order, the most primitive at the top, the more advanced below, according to Delacour and Mayr (1945:11). Common names are taken primarily from Scott (1961:34).

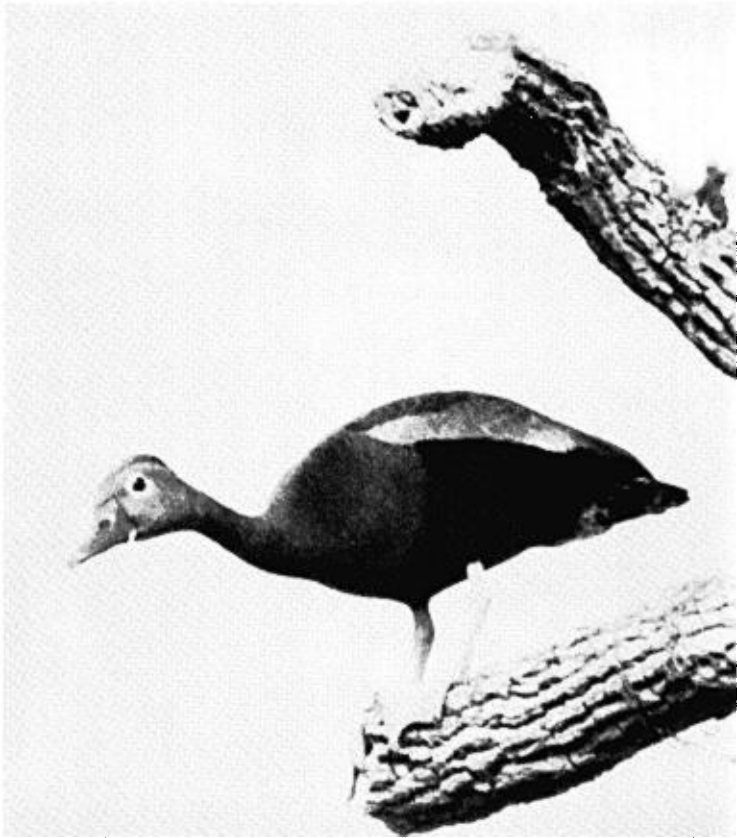


FIG. 2. Northern race of Black-bellied Tree Duck at Lake Corpus Christi, Texas study area.

Black-billed, or Cuban Tree Duck<sup>1</sup>

Spotted Tree Duck

Black-bellied, or Red-billed Tree Duck

Indian, Javan, or Lesser Tree Duck

Fulvous Tree Duck

Wandering Tree Duck

Plumed, or Eyton's Tree Duck

White-faced Tree Duck

*Dendrocygna arborea*

*Dendrocygna guttata*

*Dendrocygna autumnalis*

*Dendrocygna javanica*

*Dendrocygna bicolor*

*Dendrocygna arcuata*

*Dendrocygna eytoni*

*Dendrocygna viduata*

<sup>1</sup> Several authorities, mainly European, consider the tribe as "whistling ducks" whereas American authors utilize "tree ducks" for the group. The latter terminology is used here although it should be acknowledged that the implication of being tree-dwellers is not applicable to all species. Where several common names are given, the first listed will be used in this paper.

PARASITES OF THE ORDER MALLOPHAGA (CLASS INSECTA)

*Acidoproctus hopkinsi* Carriker, from *Dendrocygna autumnalis discolor* collected by M. A. Carriker at Simiti, Bolivar, Colombia, 31 March 1947.

*A. h. mexicanus* Carriker, from *D. a. autumnalis* (*D. a. lucida*) collected by C. Shaw at Tamuin, San Luis Potosi, Mexico, 19 September 1946; from *D. a. fulgens*, collected by J. Wiseman at Cameron County, Texas, December 1958.

*Anatoecus dentatus autumnalis* Carriker, from *D. a. autumnalis* collected by C. Shaw at Tamuin, San Luis Potosi, Mexico, 19 September 1946.

*Trinoton aculeatum* Piaget, from *D. a. fulgens* collected by Bolen and McDaniel at Lake Corpus Christi, Live Oak County, Texas, 16 September 1963.

*Acidoproctus hopkinsi* has been separated by Carriker (1949, 1954) on the basis of host specificity into two subspecies: *A. h. mexicanus* collected in Cameron County, Texas from the host *D. a. fulgens* (*D. a. autumnalis*); and *A. h. hopkinsi* collected in Simiti, Bolivar, Colombia from the host *D. a. discolor*. During the study of external parasites from Black-bellied Tree Ducks no specimens of *A. hopkinsi* were found even though this was a form especially searched for on all hosts examined. Therefore, the possibility of the subspecies *A. h. mexicanus* being elevated to specific rank cannot be definitely established. However, in a study of Carriker's figures of the genitalia (Carriker, 1949, 1954, 1960) there is considerable variation in these structures. Malcomson (1960) listed the following members of the genus *Acidoproctus* from *Dendrocygna*: *A. hopkinsi* from *D. autumnalis*; *A. maximus* from *D. arborea*; *A. rostratus* from *D. viduata*. *Anaticola chaetodens* was recorded from *D. bicolor*.

*Anatoecus dentatus* is commonly reported from members of the order Anseriformes. Emerson (1964a) states in his checklist that he follows the classification of *Anatoecus* given in the recent work by Keler (1960) and adds that a comprehensive study of the genus is still needed. Subspecies are established by the apparent host specificity. The subspecies from the Black-bellied Tree Duck (*D. a. autumnalis*) proposed by Carriker (1956) has only been taken from *D. a. fulgens*. This subspecies was found mainly infesting the head region of hosts collected in South Texas.

The genus *Trinoton* has been recorded from members of the family Anatidae. Emerson (1964b) found *Trinoton aculeatum* on two North American hosts, *Dendrocygna autumnalis* and *D. bicolor*. Clay (1963) examined numerous specimens of *Trinoton* from several species of *Dendrocygna*. She concluded that the populations of *Trinoton* on *D. bicolor*, *D. arborea*, and *D. autumnalis discolor* appear to be conspecific with *Trinoton aculeatum* from the type host *D. viduata*. *T. aculeatum* collected from *D. a. fulgens* establishes a new host record for this subspecies. During the present study only two Black-bellied Tree Ducks were found infested with these lice, with each bird having from one to three specimens on the body.

## PARASITES OF THE ORDER ACARINA (CLASS ARACHNIDA)

*Freyana dendrocygni* Dubinin, from *Dendrocygna autumnalis fulgens* collected by E. Bolen and B. McDaniel at Lake Corpus Christi, Live Oak County, Texas, 5 August 1963 (male and female adult birds); 16 September 1963 (two adult males and a single juvenile male); 9 May 1964 (single female adult).

*Brephosceles* sp.,<sup>2</sup> from *D. a. fulgens* collected by E. Bolen and B. McDaniel at Lake Corpus Christi, Live Oak County, Texas, 5 August 1963 (male and female adult birds).

*Leptosphyra* sp.,<sup>2</sup> from *D. a. fulgens* collected by E. Bolen and B. McDaniel at Lake Corpus Christi, Live Oak County, Texas, 5 August 1963 (male and female adult birds); 16 September 1963 (two adult males and a single male juvenile); 9 May 1964 (single female bird).

*Avenzoaria* sp.,<sup>3</sup> from *D. a. fulgens* collected by E. Bolen and B. McDaniel at Lake Corpus Christi, Live Oak County, Texas, 5 August 1963 (male and female adult birds); 16 September 1963 (two adult males and a single male juvenile); 9 May 1964 (single female bird).

*Eutrombicula alfreddugesi* Oudemans from *D. a. fulgens* collected by E. Bolen and B. McDaniel at Lake Corpus Christi, Live Oak County, Texas, 5 August 1963 (male and female adults).

*Freyana dendrocygni* has been recorded from a wide range of *Dendrocygna* hosts (Radford, 1953, 1958; Dubinin, 1951, 1953): *D. javanica*, *D. arcuata*, *D. eytoni*, *D. bicolor*, and *D. viduata*. Two other species of *Freyana*, *F. largifolia*, and *F. furculasetae* are also recorded from *Dendrocygna*; *F. largifolia* from *D. bicolor*, and *F. furculasetae* from *D. guttata*. *F. dendrocygni* is predominantly a wing mite, but in heavily infested birds they may be found on the body. All metamorphic stages of the mite were found on the Black-bellied Tree Ducks collected in South Texas.

The discovery of members of the mite genera *Brephosceles*, *Leptosphyra*, and *Avenzoaria* on Black-bellied Tree Ducks establishes a new host record. The genus *Brephosceles* has been taken from other Anseriformes (Radford, 1958): *Anas platyrhynchos* (*Brephosceles anatina*), *Netta rufina*<sup>4</sup> (*B. agthinae*), and *Mergus merganser* (*B. forficiger*). *Leptosphyra velata* (Megnin) is described as taken from a member of the family Anatidae. The genus *Leptosphyra* is more frequently associated with the charadriiform hosts but is also recorded from other avian orders. The genus *Avenzoaria* Radford is somewhat restricted to Charadriidae and Scolopacidae hosts (Radford, 1958). Members of *Avenzoaria* on Black-bellied Tree Ducks now extend the host record to include the order Anseriformes. It is not uncommon to find Black-bellied Tree Ducks associating with Charadriidae and Scolopacidae species in South Texas. However, females and immature stages of this

<sup>2</sup> These two mites were found to represent new species. Their descriptions are to be published in a forthcoming paper by the senior author in which other related members are treated.

<sup>3</sup> Only females and nymphs were found on this host. Without the male specific identification is not possible.

<sup>4</sup> The genus *Netta* contains the only species involving a cross with a tree duck, *Dendrocygna viduata* × *Netta peposaca* (Delacour, 1927).

mite were observed in large numbers on the Black-bellied Tree Ducks examined during this study. It is unfortunate that no males were secured making specific identification of this species possible.

The finding of *Eutrombicula alfreddugesi* is not surprising; it is the most common chigger found in the nesting region of Black-bellied Tree Ducks in South Texas. *E. alfreddugesi* has been recorded as a parasite of many vertebrate hosts, including birds (Radford, 1958).

ACKNOWLEDGMENTS

We are indebted to the U.S. Fish and Wildlife Service and the Texas Parks and Wildlife Commission for the permits required to collect tree duck specimens. The study was supported, jointly or in part, by the Rob and Bessie Welder Wildlife Foundation, the Frank M. Chapman Memorial Fund of the American Museum of Natural History, and Research Grant Nos. 449-B and 449-22, Texas College of Arts and Industries. We would like to express our thanks to Drs. C. Cottam and E. R. Bogusch, who read the manuscript and gave of their time in order that this paper could be completed.

LITERATURE CITED

AMERICAN ORNITHOLOGISTS' UNION

1957 Check-list of North American birds. 5th ed., Lord Baltimore Press, Baltimore, Maryland.

BOLEN, E. G.

1962 Nesting of Black-bellied Tree Ducks in South Texas. *Audubon Field Notes*, 16:482-485.

1964 Weights and linear measurements of Black-bellied Tree Ducks. *Texas J. Sci.*, 16:257-260.

BOLEN, E. G., B. McDANIEL, AND C. COTTAM

1964 Natural history of the Black-bellied Tree Duck (*Dendrocygna autumnalis*) in southern Texas. *Southwestern Naturalist*, 9:78-88.

CARRIKER, M. A., JR.

1949 Some bird lice of the genera *Acidoproctus* and *Quadraceps* (Neotropical Mallophaga Miscellany No. 3). *Proc. U.S. Natl. Mus.*, 100:378-386.

1954 Report on a collection of Mallophaga, largely Mexican (Part I). *Florida Entomol.*, 37:191-207.

1956 Report on a collection of Mallophaga, largely Mexican (Part II). *Florida Entomol.*, 39:119-132.

1960 A note on the identity of *Acidoproctus hopkinsi mexicanus* Carriker, 1954 (Mallophaga:Phloptoridae). *J. Kansas Entomol. Soc.*, 33:47-48.

CLAY, T.

1963 New species of *Trinoton* Nitzsch (Mallophaga, Insecta). *Memoirs Queensland Mus.*, 14:87-93.

CONOVER, H. B.

1948 Catalog of birds of the Americas. *Field Mus. Nat. Hist. Zool. Ser.*, Part 1, No. 2.

DELACOUR, J.

1927 Notes sur quelques hybrides. *L'oiseau*, 8:276-284.

1954 The waterfowl of the world. Vol. 1, Country Life Ltd., London.

DELACOUR, J., AND E. MAYR

- 1945 The family Anatidae. *Wilson Bull.*, 57:3-55

DUBININ, V. B.

- 1951 Feather mites (Analgesoidea). Part I. Introduction to their study. Fauna USSR, Moscow, Ser. 6, No. 5.  
1953 Feather mites (Analgesoidea). Part II. Families Epidermoptidae and Freyaniidae. Fauna USSR, Moscow, Ser. 6, No. 6.

EMERSON, K. C.

- 1964a Checklist of the Mallophaga of North America (north of Mexico). Part I. Suborder Ischnocera. Dugway Proving Grounds, Dugway, Utah.  
1964b Checklist of the Mallophaga of North America (north of Mexico). Part II. Suborder Amblycera. Dugway Proving Grounds, Dugway, Utah.

FRIEDMANN, H.

- 1947 Geographic variations of the Black-bellied, Fulvous, and White-faced Tree ducks. *Condor*, 49:189-195.

KELER, F.

- 1960 Ueber die dualistische Differenzierung der Gattung *Anatoecus* Cummings (Mallophaga). *Zeitschr. Parasitenk.*, 20:207-316.

MALCOMSON, R. O.

- 1960 Mallophaga from birds of North America. *Wilson Bull.*, 72:182-197.

MCDANIEL, B., C. COTTAM, AND E. BOLEN

- 1962 A contribution to the study of the Black-bellied Tree Duck (*Dendrocygna autumnalis*) in South Texas. *Texas J. Sci.*, 14:431.

RADFORD, C. D.

- 1953 The mites (Acarina:Analgesidae) living in or on the feathers of birds. *Parasitology*, 42:199-230.  
1958 The host-parasite relationships of the feather mites. *Rev. Brasil. Ent.*, 8:107-170.

SCOTT, P.

- 1961 A coloured key to the wildfowl of the world. Charles Scribner's Sons, New York.

DEPARTMENT OF BIOLOGY, TEXAS COLLEGE OF ARTS AND INDUSTRIES, KINGSVILLE, TEXAS (MCDANIEL AND BOLEN) AND DEPARTMENT OF BIOLOGY, SOUTHWEST TEXAS STATE COLLEGE, SAN MARCOS, TEXAS (TUFF), 1 NOVEMBER 1965