

found again when the broods were collected. The daily survival rates of juveniles may be calculated with a method described by Mayfield (Wilson Bull. 73:255-261, 1961), but since the exact dates of death of the young are not known it is possible to calculate only the range of values for this statistic.

The daily survival rate of the sample presented in table 1 lies between 99.33 and 99.40 per cent. The survival of 49 nests observed during the same season and calculated in the same manner was 99.35 per cent per day. Nine of these nestings were terminated before fledging. Anderson and Anderson (Condor 62:351-369, 1960) followed the outcome of 55 Cactus Wren nests which had an overall survival rate of 99.03 per cent per day. Thus, it appears that in the Cactus Wren the survival rates of juveniles are comparable to those of nestlings and that the period of life closely following fledging does not represent a time of maximum mortality.

Hann (Wilson Bull. 49:145-237, 1937) noted that of 70 fledgling Ovenbirds (*Seiurus aurocapillus*), 39 left the forest in which they were raised at an estimated age of 30 to 35 days after leaving the nest. This would indicate an overall daily survival rate of between 98.07 and 98.34 per cent. From Hann's data on the survival of these birds as eggs and nestlings one can calculate survival rates of 97.53 and 95.40 per cent per day, respectively. Again, juvenile survival rates are higher than those during the nest period.

It should be emphasized that these rates are averages for periods of three or four weeks, and it is likely that losses of young are much higher immediately following fledging. Two of the five Cactus Wren fledglings lost were known to have died within six days after leaving the nest. As the young gain experience and mature physically, their survival rates must increase until they approach adult levels. For comparison, if adults were to suffer 50 per cent mortality per year, their daily survival rate would average 99.81 per cent.

Snow (Ibis 100:1-30, 1958) followed the fates of 140 fledgling English Blackbirds (*Turdus merula*). He found that 113 were alive five days after leaving the nest and that 92 survived the period between five days and 15 to 20 days. The survival rate calculated for the first five days out of the nest (95.82 per cent per day) is much lower than during the next 10 to 15 days (98.36 per cent per day).

The analyses presented here do not resolve changes in survival rates at the time young leave the nest and become free-living juveniles. It is demonstrated, however, that overall survival rates of Cactus Wrens and Ovenbirds are higher during the period after fledging than during the nest period, although data for English Blackbirds suggest that survival rates may decrease briefly immediately following fledging.

Accepted for publication 10 October 1967.

MIXED WOOD DUCK—TREE DUCK CLUTCH IN TEXAS

ERIC G. BOLEN

Department of Range and Wildlife Management
Texas Technological College
Lubbock, Texas 79409

and

BRIAN W. CAIN

Department of Biology
Texas A & I University
Kingsville, Texas 78363

A second instance of Wood Duck (*Aix sponsa*) nesting in south Texas substantiates an earlier observation (Bolen and Cottam, Southwestern Naturalist 12:198-199, 1967) of range expansion for this species in Texas. In the present case, the nest was discovered 16 June 1967, in Live Oak County when nesting boxes erected for Black-bellied Tree Ducks (*Dendrocygna autumnalis*) were inspected.

The clutch, complete when the nest was found, contained a mixture of six Wood Duck and nine Black-bellied Tree Duck eggs. All the eggs were cushioned with profuse Wood Duck down. The Wood Duck hen was caught and banded (USF&WS No. 515-00301) on 19 June 1967. The hen continued incubation until the clutch hatched on about 3 July 1967. It was not possible to determine which species began the clutch.

Several points of interest arise from this observation. First, the comparatively low number of eggs making up the Wood Duck clutch suggests that the addition of the Tree Duck eggs effected a reduction in the Wood Duck's clutch size. Wood Ducks normally lay 12 eggs (McLaughlin and Grice, Trans. N.A. Wildl. Conf. 17:242-250, 1952), although intraspecific egg parasitism has perhaps led to overestimation

of the clutch size considered normal for a single hen (Fuller and Bolen, Wilson Bull. 75:94-95, 1963). Weller (Ecol. Monogr. 29:333-365, 1959) has amply demonstrated the reduction in clutch size that occurs when a second species adds its eggs to the nest of another. This reduction can only occur when the host is still laying, suggesting that the Wood Duck and Tree Duck hens indeed laid simultaneously.

Secondly, four Wood Duck and eight Black-bellied Tree Duck eggs hatched with all 12 ducklings successfully leaving the nesting box. The balance contained a dead, early embryo (Wood Duck) or no visible evidence of development (1 Wood Duck, 1 Black-bellied Tree Duck). In any event, the incubation period of these birds seems approximately the same (or, at least enough alike to allow successful incubation of the Tree Duck eggs by a hen of another species). The incubation period for Wood Ducks is commonly reported as 28-30 days with this, or greater, variation dependent on the frequency and duration of periods the female spends off the nest (Breckenridge, J. Wildl. Mgmt. 20:16-21, 1956). Twenty-eight days also seems to characterize the incubation period for the Black-bellied Tree Duck, but the point has not been adequately confirmed with nest-recording apparatus (Bolen, unpublished Ph.D. thesis).

Thirdly, Black-bellied Tree Ducks pluck no down for nest lining. Johnsgard (Ibis 103:71-85, 1961) postulated that, because both male and female tree ducks share incubation, the incubation period is essentially uninterrupted, thus negating any requirement of down for egg insulation. If so, the eight Black-bellied Tree Duck eggs that hatched did so under a regime of interrupted incubation but with the benefit of abundant Wood Duck down. The nest under our observation was visited on two occasions (07:00 21 June and 14:00 1 July) when the Wood Duck hen was absent. All eggs had been well covered with

down on both our visits. Breckenridge (*op. cit.*), however, doubts the importance of down as insulation for Wood Duck eggs during periods when the hen is absent.

Fourth, Wood Ducks' ducklings leave the nest in response to auditory cues learned during the brooding period immediately after hatching (Gottlieb, *J. Comp. Phys. Psych.* 56:86-91, 1963). Similar behavior undoubtedly prompts the departure of young Tree Ducks, but this, too, remains conjectural. Nonetheless, the entire brood of both species left the nesting box, suggesting that the cues for departure may not be species-specific in cavity-nesting waterfowl. The

survival value for all cavity-nesting ducklings which hatch in a host-parasite situation seems obvious. Weller (*op. cit.*) should be consulted for a full listing of interspecific egg parasitism among waterfowl, including cavity-nesting species.

We are indebted to Clarence Cottam for his review of this manuscript, and to the United States Fish and Wildlife Service and to the Caesar Kleberg Wildlife Foundation for their financial support of the senior and junior authors, respectively, during the summer of 1967.

Accepted for publication 7 December 1967.

THE HIGH FREQUENCY OF OCCURRENCE OF THE VESTIGIAL CLAW IN *COLINUS VIRGINIANUS VIRGINIANUS*

WILLIAM G. GEORGE and GARY M. BROWN

Department of Zoology
Southern Illinois University
Carbondale, Illinois 62901

Few statements in the literature furnish exact data, based on large samples, of the frequency of occurrence of the vestigial claw on the pollex of avian species. Recently, while attempting to determine the presence or absence of specialized feathers associated with vestigial structures, we examined 181 specimens of the eastern race of the Bobwhite (*Colinus v. virginianus*). The sample consisted of male and female adults and subadults; all were collected in nature in southern Illinois excepting a single pen-raised individual.

We found the claw in both wings of 166 specimens; in the remaining 14, one wing displayed the claw, the other not, but in every such instance there

existed a clear indication of the former presence of the claw, its loss probably having been caused by shot damage or handling.

Claw shape varied from curved to straight; claw length (cord measurement) ranged from 2.4 mm to 5.5 mm, averaging 3.0 mm in a group of 25 specimens examined at random. Our figures differ from those obtained from stocked birds in California by Fisher (*Amer. Midl. Nat.* 23:239, 1940). Examining 15 birds, in all of which the claw was present, he obtained measurements ranging from 5.0 mm to 6.0 mm.

In several cases claw length, and to some extent claw shape, differed between the wings of the same specimen. In the pen-raised bird, for example, one claw measured 2.5 mm, the other 5.5 mm.

Evidence of the presence or absence of coverts that conceal the primitive claw will be given in a later paper, along with information on the frequency of claw occurrence in other Bobwhite races and in additional species.

We acknowledge the cooperation of Willard D. Klimstra, who provided most of the specimens.

Present address of Brown is: School of Dentistry, University of Tennessee, Knoxville, Tennessee 37916.

Accepted for publication 21 December 1967.

FIRST SPECIMEN RECORDS OF THE DUNLIN AND THE SNOWY PLOVER IN IDAHO

GLENN R. DOWNING and EDSON FICHTER

The Museum and Department of Biology
Idaho State University
Pocatello, Idaho 83201

From about 10:00 to 11:00, on 30 April 1966, an ornithology class from Idaho State University observed a flock of five Dunlins (*Erolia alpina*) on the northwest shore of American Falls Reservoir four miles east of Aberdeen, Bingham County, Idaho. The birds were foraging both in and out of the shallow water of a small inlet immediately adjacent to a nesting colony of California Gulls (*Larus californicus*). Four of the Dunlins were apparently still in breeding plumage, with the distinctive patch across the belly solidly black; the belly of the fifth individual was spotted with sooty.

We found what were probably the same five birds later in the day, at which time efforts to secure a specimen were unsuccessful. On the following morning we collected a female Dunlin (one of three of

that species seen) and one male and one female Snowy Plover (*Charadrius alexandrinus*) at the same inlet. These specimens (Idaho State University Museum 6565, 6566, and 6567, respectively), to the best of our knowledge, are the first specimen records of the occurrence of these two species in Idaho. In view of what is already known about their distribution (A.O.U. 1957: 168, 199-200), their presence in the Snake River drainage is not surprising, especially in the case of the Snowy Plover, which has been included on the hypothetical list for Idaho.

The water of the reservoir had begun to recede from its high level for the year, exposing a narrow, seeping mudflat at the head and along one side of the inlet. Ten species of shorebirds (about one-third of the species known to occur in Idaho) were seen on or near the mudflat during four visits from 30 April to 3 May; no Dunlins were seen on the last visit.

A year later (21 April 1967) Kenneth W. Pitcher and Fichter saw a Dunlin about 12 airline miles northeast of the Aberdeen locality; it was in the company of 15 to 20 shorebirds, representing six species, which were feeding and loafing in a shoal of a backwater of the Snake River.

Accepted for publication 14 November 1967.