

NOCTURNAL MIGRANTS KILLED AT A CENTRAL FLORIDA TV TOWER; AUTUMNS 1969-1971

WALTER KINGSLEY TAYLOR AND BRUCE H. ANDERSON

ANNUAL bird kills occur at tall structures and airport ceilometers throughout the country. Studies of these nocturnal disasters, often limited to species listings, provide valuable information on relative abundance of each sex and age group of a species, species composition and timing of the migratory flocks, migratory routes, taxonomy, fat composition, and molts and plumages (Tordoff and Mengel, 1956; Brewer and Ellis, 1958; Kemper et al., 1966). Much of this information is lacking for many migrants passing through central Florida since large banding operations and previous tower studies do not exist. Therefore, data are presented on many of these topics in the following study of bird kills at the newly-erected (completed July 1969) antenna and transmitter facility of station WDBO TV.

THE TOWER AND SURROUNDING AREA

The WDBO facility is 0.5 mile east of Lake Pickett near Bithlo, Orange Co., Florida. Heights of the tower are 1,549 feet above mean sea level, 1,484 feet above ground, and 1,465 feet above average terrain. The tower and antenna are said to be the tallest structure in Florida. Eighteen guy wires arranged in triradiate fashion and attached at six levels support the tower; six point to the east, six to the southeast, and six to the northwest. The highest set of wires is attached at the 1,300-foot level. Twenty red lights are on the tower; fifteen that flash and five that shine continuously. Large disasters occurred during times when the transmitter was in operation and when it was shut down for the night.

Near the western side of the tower is a small lake drained by a 20-foot wide canal; both contained water during the kills. About one acre of land virtually devoid of vegetation surrounded the tower during the 1969 disasters. In the autumn of 1970, another TV station (WFTV) erected a transmitter building near that of WDBO and began using the tower and antenna. More recently, a building for FM transmission has been completed and considerable improvements of the grounds, with expansion of the acre plot around the tower, have occurred.

With few exceptions, we looked for birds killed early in the morning; during the large disasters, collections began at night and continued into the morning. The area was carefully searched and all specimens found were recorded or collected. Passerines were aged by plumages and by skull ossification; nonpasserines were aged by plumages. Sex was determined by plumages and by dissection. Over 200 specimens representative of most species were preserved as skins or skeletal materials. Local weather data cited were recorded at the National Weather Station at Herndon Airport in Orlando, located about 14 miles southwest of the tower. In addition, the daily weather maps that appear in the appropriate issues of *Weatherwise* were consulted.

THE MAJOR KILLS

Kills of 100 or more birds occurred the nights of 10-11, 13-14, 29-30

September 1969; 4-5, 17-18 October 1969; 28-29, 29-30 September 1970; 17-18 October 1970; 24-25 September 1971; and 7-8, 10-11, 11-12, 17-18, 19-20 October 1971. On these dates 6,735 (87 percent) of 7,782 individuals killed in August, September, October, November, and December were found dead below the tower or its guy wires. The largest kill was on 28-29 September 1970; 1,592 individuals of 37 species were found. The next day, 859 birds of 31 species were collected. These disasters are believed to be the worst TV tower kills at Orlando (see Robertson, 1971).

WEATHER CONDITIONS

Most of the large kills correlate with arrival of cold fronts and their associated inclement weather conditions. Nevertheless a few birds fell on clear nights. The disasters of 111 individuals on 17-18 October 1971 and of 198 individuals on 19-20 October 1971 were not associated with any large weather system. A similar situation occurred on 19-20 October 1971 at the WCTV tower near Tallahassee (Robertson, 1972). Local weather conditions are believed to have caused these disasters.

The first large kill was the night of 10-11 September 1969; 356 individuals of 24 species were collected. Several live birds were in nearby grassy and wooded areas late the next evening. Many had broken bills, broken wings, blood clots on the skull, and other damaged body parts. A dense fog and overcast were present from 03:10 to 04:55 and clouds were as low as 200 to 400 feet. No rain fell and the winds blew from northeast at 4.6 to 8.0 miles per hour.

The movement and effects of the extensive cold front that caused the largest kill on 28-29 September 1970 were recently studied by Bagg (1971). At least one of us was at the tower throughout that night. Birds began hitting the tower at 23:00 and continued to fall until dawn. It rained hard from 23:40 to 01:50, but most individuals started falling at 02:15. A continuous chorus of chips and calls was heard from the birds flying overhead. Individuals flew in rapid, erratic flights; many hit the two buildings, parked cars, the ground, and the lower part of the tower. Throughout the disaster birds flew erratically around the upper sections of the tower. At day break, living birds were crouched in exposed areas; many had damaged body parts and others were exhausted. Most of the birds were near the base of the tower and in areas toward the north, the east, and the southeast. Few birds, as usual, were below the northwestern guy wires.

NUMBERS OF BIRDS KILLED

Sixteen families and 82 species were represented in the 7,782 individuals collected (Table 1). Numbers of individuals and species found in the autumns

TABLE 1
SEASONAL VARIATION OF MIGRANTS KILLED AT THE WDBO TV TOWER
AUTUMNS, 1969-1971

Species	August		September		October		November		December		Total
	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-30	1-15	16-31	
Pied-billed Grebe				1	3						4
Green Heron			13								13
Cattle Egret			1								1
Yellow-crowned Night Heron				1							1
American Bittern				1	1						2
Clapper Rail			1								1
Virginia Rail				1	5	3		1			10
Sora			4	18	5	1					28
Purple Gallinule				2	1						3
Common Gallinule			1	9		1					11
American Coot								1			1
Yellow-billed Cuckoo				23	10	2	1				36
Black-billed Cuckoo					1						1
Yellow-shafted Flicker					1						1
Yellow-bellied Sapsucker						7					7
Eastern Kingbird					1						1
Eastern Wood Pewee				1							1
House Wren				9	56	47		1			113
Long-billed Marsh Wren			4	26	100	48					179
Short-billed Marsh Wren					29	20					49
Mockingbird					1						1
Catbird				21	97	34	1	1			154
Brown Thrasher					1						1
Wood Thrush					1	2					3
Hermit Thrush								1			1
Swainson's Thrush				4	11	2					17
Gray-checked Thrush					5	4					9
Veery			7	12	2						21
Ruby-crowned Kinglet				2	6	24	7	3	2		44
White-eyed Vireo			8	52	16	7					83
Yellow-throated Vireo				4	3	1					8
Solitary Vireo								1			1
Red-eyed Vireo	2	1	18	39	31	28					119
Philadelphia Vireo					2						2
Black-and-White Warbler		1	15	61	22	28	1				128
Prothonotary Warbler			1	1							2
Swainson's Warbler			6	28	7	6		1			48
Worm-eating Warbler			10	21	5	2					38
Golden-winged Warbler				1							1
Tennessee Warbler				1	12	1	1				15
Orange-crowned Warbler							1		1	1	3

TABLE 1—*Continued*

Species	August		September		October		November		December		Total
	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-30	1-15	16-31	
Parula Warbler			29	159	72	98	1				359
Yellow Warbler			2	5	3						10
Magnolia Warbler				1	5	6					12
Cape May Warbler			1	78	15	11					105
Black-throated Blue Warbler			20	370	149	312	3	2			856
Myrtle Warbler						5	35	6	11	1	58
Black-throated Green Warbler					2	5					7
Cerulean Warbler		1		3							4
Blackburnian Warbler				5	6	3					14
Yellow-throated Warbler			10	9	12	8					39
Chestnut-sided Warbler				1	3						4
Bay-breasted Warbler					7	7					14
Blackpoll Warbler				4		5					9
Pine Warbler					14	15					29
Prairie Warbler	1	2	22	44	23	10					102
Palm Warbler			2	52	240	219	2	1	1		517
Ovenbird			1	110	364	106	131	2			714
Northern Waterthrush	2	1	26	142	13	5					189
Louisiana Waterthrush	1		2								3
Kentucky Warbler			1		1						2
Yellowthroat	1	1	337	1054	887	424	3	3			2710
Yellow-breasted Chat			1	1	2	1					5
Hooded Warbler			1		1						2
American Redstart	7		46	278	126	119		3			579
Bobolink			10	141	3	1					155
Orchard Oriole		1									1
Baltimore Oriole			2	4							6
Scarlet Tanager						1					1
Summer Tanager				1							1
Rose-breasted Grosbeak					1	2					3
Indigo Bunting				1	2	9					12
Painted Bunting				2	1		1				4
American Goldfinch									1		1
Rufous-sided Towhee						1	1				2
Savannah Sparrow					2	21	6				29
Grasshopper Sparrow					3	4	1	1	1		10
Sharp-tailed Sparrow					1						1
Bachman's Sparrow			1			1					2
Chipping Sparrow								1	1		2
White-crowned Sparrow							1				1
Swamp Sparrow						30	11	3	2		46
Total Species	6	8	31	46	55	48	19	15	9	1	82
Total Individuals	14	9	712	3058	2135	1723	79	30	21	1	7782

of 1969, 1970, and 1971, respectively, were 2,758 (55), 2,793 (53), and 2,231 (67). Yellowthroats, Black-throated Blue Warblers, Ovenbirds, American Redstarts, and Palm Warblers make up 69 percent of the total. Thirty-one (38 percent) of the 82 species were warblers, and of the 7,782 individuals, 85 percent were parulids.

Two banded birds were recovered: a five-year-old Ovenbird that was banded near Ft. Meade, Maryland (Taylor and Anderson, 1971) and a Yellowthroat that was banded near Chatham, Ontario. The Yellowthroat was at least four and one-half years old. One desiccated Florida yellow bat (*Lasiurus intermedius*) was found on 8 October 1971.

SPECIES ACCOUNT

An annotated account of most of the species collected is given below. The number in parentheses after the species name is the total collected in the three autumn periods. Individuals identified to the subspecific level were collected in 1969 and determined by Dr. Richard C. Banks and associates of the National Museum.

Green Heron (*Butorides virescens*)—.(13) All were killed on 11 September. Both immatures and adults were represented; 11 were females. This kill is one of the largest recorded at TV towers on a single autumn night.

Clapper Rail (*Rallus longirostris crepitans*)—.(1) Finding this salt-marsh rail was a surprise. This 11 September specimen, an adult female apparently represents the seventh record of *R. l. crepitans* for Florida and is the southernmost and centralmost autumn record. Previous records are two birds taken by Howell on Amelia Island, 11 January and 6 September 1906 (Sprunt, 1954: 143) and four banding recoveries taken near Amelia Island (Stewart, 1954).

Virginia Rail (*Rallus limicola*)—.(10) All except one were adults.

Sora (*Porzana carolina*)—.(28) Of 27 aged, 14 were immatures. Twenty-five were aged and sexed: 9 adult males, 6 immature males, 4 adult females, and 6 immature females.

Purple Gallinule (*Porphyryla martinica*)—.(3) One immature female and one adult female were collected on 29 September; an immature male was found on 11 October.

Common Gallinule (*Gallinula chloropus*)—.(11) All except two were adults. Both immatures and adults were found together in single kills.

Yellow-billed Cuckoo (*Coccyzus americanus*)—.(36) Both sexes were together in single kills. Of 28 sexed, 20 were males. Most were found directly below the guy wires.

Yellow-bellied Sapsucker (*Sphyrapicus varius*)—.(7) All were found in October. All four age and sex classes were in the sample of 18 October.

House Wren (*Troglodytes aedon*)—.(113) Of 97 sexed and aged, 27 were adult males, 19 were immature males, 24 were adult females, and 27 were immature females. Of 106 aged, 53 were adults. All age and sex classes were together in single kills. The first immature female was collected on 29 September; the first immature male was found on 8 October. Four specimens collected in September and October were *T. a. aedon*.

Long-billed Marsh Wren (*Telmatodytes palustris*)—.(179) Of 153 aged and sexed, 43 were adult males, 12 were immature males, 62 were adult females, and 36 were immature

females. Of 165 aged, 112 were adults. Adult males were more common in the first half of October; immature males and females were more common in late September and in the first half of October. All age and sex groups were together in single kills. Three specimens were *T. p. palustris* (14 September) and *T. p. dissaepatus* (13, 18 October).

Short-billed Marsh Wren (*Cistothorus platensis*)—.(49) All hit in October. Adults (24) slightly outnumbered immatures in 45 aged. Forty were aged and sexed: 11 adult males, 4 immature males, 10 adult females, and 15 immature females. All age and sex groups were together in single kills.

Catbird (*Dumetella carolinensis*)—.(154) Of 130 aged and sexed, 44 were adult males, 16 were immature males, 52 were adult females, and 18 were immature females. Adults (100) outnumbered immatures in 141 aged.

Wood Thrush (*Hylocichla mustelina*)—.(3) All were immatures found in 1971; one female on 11 October, and one male and one female on 20 October.

Swainson's Thrush (*Hylocichla ustulata*)—.(17) Of 14 aged, 11 were immatures. One 4 October specimen was *H. u. almae*.

Gray-cheeked Thrush (*Hylocichla minima*)—.(9) Eight were aged and sexed: 4 adult males, 2 immature males, 1 adult female, and 1 immature female. One immature male was *H. m. minima*.

Veery (*Hylocichla fuscescens*)—.(21) Most were found in September while Swainson's and Gray-cheeked Thrushes peaked in October. Of 18 aged, 11 were adults. Fifteen were aged and sexed: 6 adult males, 3 immature males, 4 adult females, and 2 immature females. Immatures and adults were together in single kills. Two 11 September specimens were *H. f. fuscescens*.

Ruby-crowned Kinglet (*Regulus calendula*)—.(44) Over half of the 44 specimens were found in October. Females (31) outnumbered males in 40 specimens sexed. All had completely ossified skulls, but Leberman (1970) has shown that this species is one of few birds that we know that completes the pneumatization process rapidly. This may account for our lacking individuals with unossified skulls.

White-eyed Vireo (*Vireo griseus*)—.(83) Of 58 aged and sexed, 20 were adult males, 5 were immature males, 21 were adult females, and 12 were immature females. Adult White-eyed Vireos outnumbered immatures, the opposite of the situation in the Red-eyed Vireo. The first immature male was not found until 1 October. One bird on 14 September was *V. g. noveboracensis* and a specimen of 18 October was *V. g. griseus*.

Yellow-throated Vireo (*Vireo flavifrons*)—.(8) All were adults (2 males, 6 females).

Red-eyed Vireo (*Vireo olivaceus*)—.(119) Of 76 specimens aged and sexed, 6 were adult males, 37 were immature males, 7 were adult females, and 26 were immature females. Not included in the above were 15 unsexed specimens; 13 immatures, 2 adults. The predominance of immatures probably indicates that most of the adults precede immatures in their migration; the majority of the adults were found in the first part of September. This situation has been noted for this species at other locations (cf. Tordoff and Mengel, 1956; Goodpasture, 1963).

Black-and-White Warbler (*Mniotilta varia*)—.(128) Females outnumbered males. Of 108 aged and sexed, 31 were adult males, 16 were immature males, 29 were adult females, and 32 were immature females. Not included in the above were five unaged females. All sex and age classes were together in single kills.

Swainson's Warbler (*Limnothlypis swainsonii*)—.(48) Weights: 5 adult males, mean 16.7 (14.0–18.0); 4 immature males, mean 18.2 (16.7–19.3); 8 adult females, mean 17.6 (15.6–19.1); 2 immature females, 15.7, 21.3.

The kills of 29 and 30 September 1970 are apparently the largest reported for this

species at a TV tower. Twenty-seven were aged and sexed: 6 adult males, 5 immature males, 13 adult females, and 3 immature females. Both immatures and adults were together in single kills.

Worm-eating Warbler (*Helminthos vermivorus*)—.(38) Twenty-five were aged and sexed: 13 adult males, 2 immature males, 7 adult females, and 3 immature females. Both adults and immatures were together in single kills.

Tennessee Warbler (*Vermivora peregrina*)—.(15) Fourteen were aged and sexed: 4 adult males, 4 immature males, 2 adult females, and 4 immature females. All age and sex classes were in the 12 specimens found on 8 October.

Orange-crowned Warbler (*Vermivora celata*)—.(3) Two adult males (24 October and 17 November) and an unsexed immature (2 December) were found. The October bird was *V. c. celata*.

Parula Warbler (*Parula americana*)—.(359) Of 325 aged, 211 were adults. Totals for 287 specimens aged and sexed follow: 106 adult males, 54 immature males, 75 adult females, and 52 immature females. All age and sex classes were together in single kills.

Yellow Warbler (*Dendroica petechia*)—.(10) Eight were adults: 4 males, 4 females. One immature male and one immature female were found on 29 September. Immatures and adults were together in single kills. Two specimens on 14 September were *D. p. aestiva* and one specimen on 5 October was *D. p. amnicola*.

Magnolia Warbler (*Dendroica magnolia*)—.(12) Both adults and immatures were together in single kills. Eleven were aged and sexed: 1 adult male, 2 immature males, 3 adult females, and 5 immature females.

Cape May Warbler (*Dendroica tigrina*)—.(105) All age and sex classes were together in single kills. Of 90 aged and sexed, 31 were adult males, 16 were immature males, 24 were adult females, and 19 were immature females.

Black-throated Blue Warbler (*Dendroica caerulescens*)—.(856) This was the second most abundant species killed. Of 769 aged and sexed, 222 were adult males, 179 were immature males, 195 were adult females, and 173 were immature females. All age and sex groups were together in single kills. Four specimens taken on 30 September and 29 October were *D. c. caerulescens*. *Dendroica c. cairnsi* is represented in the samples but not as frequently as the nominate race.

Myrtle Warbler (*Dendroica coronata*)—.(58) Adults (42) outnumbered immatures in 53 specimens aged. Thirty-seven were aged and sexed: 11 adult males, 20 adult females, and 6 immature females. Both age groups were together in single kills.

Black-throated Green Warbler (*Dendroica virens*)—.(7) Three were immature females, three were immature males, and one was an adult male. Both age groups were together in single kills.

Cerulean Warbler (*Dendroica cerulea*)—.(4) All were taken in 1970; one immature male on 30 August, one immature male on 29 September, and one immature female and one adult female on 30 September.

Blackburnian Warbler (*Dendroica fusca*)—.(14) Thirteen were aged and sexed: 1 adult male, 7 immature males, 2 adult females, and 3 immature females. Both age groups were together in single kills.

Yellow-throated Warbler (*Dendroica dominica*)—.(39) Twenty-seven of 30 aged were adults; males slightly outnumbered females.

Chestnut-sided Warbler (*Dendroica pensylvanica*)—.(4) All were immatures; 2 males, 2 females.

Bay-breasted Warbler (*Dendroica castanea*)—.(14) All age and sex classes were together in single kills. Thirteen were aged and sexed: 2 adult males, 1 immature male, 4 adult females, and 6 immature females.

Blackpoll Warbler (*Dendroica striata*)—.(9) Adults outnumbered immatures. Seven were aged and sexed: 2 adult males, 1 immature male, 3 adult females, and 1 immature female. The small number of this species found would offer support for Nisbet's (1970) ideas on the autumn migration route of this species.

Pine Warbler (*Dendroica pinus*)—.(29) Both age groups were together in single kills. Twenty-three were aged and sexed: 5 adult males, 2 immature males, 8 adult females, and 8 immature females. Three specimens collected on 18 October were *D. p. pinus*.

Prairie Warbler (*Dendroica discolor*)—.(102) Of 92 aged, 71 were adults. Eighty-three were aged and sexed: 31 adult males, 6 immature males, 37 adult females, and 9 immature females. All age and sex classes were together in single kills. Two 14 September birds were *D. d. discolor*.

Palm Warbler (*Dendroica palmarum*)—.(517) Of 480 aged, 305 were adults. Of 421 aged and sexed, 115 were adult males, 53 were immature males, 160 were adult females, and 93 were immature females. Both races, *D. p. palmarum* and *D. p. hypochrysea*, were in the samples; the yellow race was the less common.

Ovenbird (*Seiurus aurocapillus*)—.(714) Adults outnumbered immatures and females outnumbered males. A more detailed account of the Ovenbird's autumn migration through central Florida is given by Taylor (1972).

Northern Waterthrush (*Seiurus noveboracensis*)—.(189) Of 129 sexed and aged, 36 were adult males, 15 were immature males, 48 were adult females, and 30 were immature females.

Louisiana Waterthrush (*Seiurus motacilla*)—.(3) One adult male on 14 September 1969, one immature male on 10 September 1970, and one adult female on 14 August 1971 were found.

Yellowthroat (*Geothlypis trichas*)—.(2,710) This was the most abundant species collected. Their autumn migration is prolonged and extensive through central Florida; September and October being months when most of the Yellowthroats move through this area. Of 2,252 aged, 1,463 were adults and 789 were immatures. Of 2,452 sexed, 1,216 were males and 1,236 were females. Data on 2,224 aged and sexed follow: 809 adult males, 323 immature males, 642 adult females, and 450 immature females. All age and sex classes were together in single kills. Six specimens were determined: *G. t. trichas* (11 September and 9 November); *G. t. typhicola* (11 September); *G. t. pelagitis* (11 September and 5 October); and *G. t. brachidactyla* (11 September).

Yellow-breasted Chat (*Icteria virens*)—.(5) One adult male (14 September), one adult female (29 September), one immature female (18 October), and two immature males (8 and 11 October) were collected.

American Redstart (*Setophaga ruticilla*)—.(579) Adults (309) outnumbered immatures (210), and females (282) outnumbered males (219). Of 495 aged and sexed, 127 were adult males, 92 were immature males, 167 were adult females, and 109 were immature females. All age and sex groups were together in single kills.

Bobolink (*Dolichonyx oryzivorus*)—.(155) Adults (111) outnumbered immatures in 134 aged. Of 131 aged and sexed, 52 were adult males, 16 were immature males, 58 were adult females, and 5 were immature females. All age and sex classes were together in single kills.

Baltimore Oriole (*Icterus galbula*)—.(6) All were immatures found in September; three in 1969 and three in 1970. Four were females and two were males.

Rose-breasted Grosbeak (*Pheucticus ludovicianus*)—.(3) All were immatures.

Indigo Bunting (*Passerina cyanea*)—.(12) Eleven were aged and sexed: 3 adult males; 3 immature males; 3 adult females; and 2 immature females. All age and sex classes

were together in single kills. The 1970 bunting was collected on 30 September; all others were found in October, especially in the latter half of that month. One adult male collected on 18 October was changing into winter plumage; the adult male taken on 20 October was in full winter plumage.

Painted Bunting (*Passerina ciris*)—.(4) One adult male, one immature male, and two adult females were found.

Rufous-sided Towhee (*Pipilo erythrophthalmus*)—.(2) Both were adult females found in 1969. The specimen on 24 October was *P. e. alleni* and the one on 9 November was *P. e. erythrophthalmus*.

Savannah Sparrow (*Passerculus sandwichensis*)—.(29) Twenty of 28 aged were adults. Of 26 aged and sexed, 10 were adult males, 1 was an immature male, 8 were adult females, and 7 were immature females. Three specimens collected on 18 October and on 9 November were *P. s. labradorius*.

Grasshopper Sparrow (*Ammodramus savannarum*)—.(10) Nine were aged and sexed: 1 adult male, 1 immature male, 3 adult females, and 4 immature females. Four specimens collected in October and November were *A. s. pratensis*.

Sharp-tailed Sparrow (*Ammodramus caudacuta*)—.(1) An immature male found on 5 October was *A. c. nelsoni*.

Bachman's Sparrow (*Aimophila aestivalis*)—.(2) Both were immatures. The specimen on 14 September was the local race, *A. a. aestivalis*; the one on 18 October was *A. a. bachmanii*.

Swamp Sparrow (*Melospiza georgiana*)—.(46) Thirty-nine of 46 specimens were adults: 18 males, 13 females, and 8 unsexed. Five specimens were *M. g. georgiana*.

MOLT OF THE MIGRANTS

Not all birds were examined in detail for molting feathers. Few specimens were molting and such molt as was found was generally limited to a body molt in final stages of completion. Body molt was present in the following: adult female Clapper Rail (11 September); adult male and immature male Yellow-bellied Sapsucker (18 October); immature female Swainson's Thrush (4 October); adult female and adult male White-eyed Vireo (11 and 14 September); adult female Bobolink (14 September); two adult female Rufous-sided Towhees (24 October and 9 November); immature female Bachman's Sparrow (14 September); and an adult male Indigo Bunting (18 October). Molt of the remiges was recorded in an adult female White-eyed Vireo (11 September) and in two immature Bachman's Sparrows (14 September and 18 October). The vireo had the three outermost primaries and the sixth and seventh secondaries in each wing with sheathed bases. Body molt was present, but the tail feathers were not molting. The immature Bachman's Sparrow collected on 14 September had sheathed primaries. The other immature Bachman's Sparrow had the fourth primary in each wing with sheathed bases. Molting rectrices were usually limited to one or two feathers. In-coming rectrices were recorded in six Yellowthroats (both male and female) which were collected on 11 and 14 September. All stages in the development of the black mask of the male Yellowthroat were observed.

SUMMARY

Since the erection of the 1,500-ft TV tower near Bithlo, Orange Co., Florida, studies on the disasters of nocturnal migrants have been conducted. This paper covers the autumn periods of 1969-1971; 7,782 individuals of 82 species are reported. Data on weights, ages, sexes, subspecies, and molts are presented.

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DEPARTMENT OF BIOLOGICAL SCIENCES, FLORIDA TECHNOLOGICAL UNIVERSITY,
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