

TABLE II — Continued

1966

Date	Gos	SSH	CH	RTH	RSH	BWH	BE	MH	Os	Per	Pig	SpH	UnI	Total	Hrs.	Obs.
August and September																
8/24	-	-	-	-	-	1	-	1	-	-	-	13	-	15	1	2
9/5	-	-	-	-	-	15	-	-	5	-	-	2	-	22	4	3
9/9	-	-	-	-	-	21	-	-	-	-	-	22	-	43	8	2
9/10	-	-	-	-	-	28	-	1	-	-	-	25	-	54	8	16
9/11	-	-	-	-	-	197	-	3	2	-	-	10	3	215	10	17
9/12	-	-	-	-	-	265	-	3	9	-	-	7	1	285	8	4
9/13	-	1	-	-	-	12	-	2	3	-	-	1	2	21	8	2
9/14	-	-	-	-	-	-	-	Rain	-	-	-	-	-	-	-	-
9/15	-	5	-	-	-	30	-	2	4	-	-	6	3	50	7	8
9/16	-	-	-	3	-	37	-	-	-	-	-	16	-	56	8	3
9/17	-	1	-	-	-	389	-	-	1	-	-	16	-	407	8	16
9/18	-	-	2	-	1	194	-	-	5	-	-	12	2	216	8	19
9/19	-	-	-	-	-	8	-	-	-	-	-	3	-	11	7	1
9/20	-	-	-	-	-	-	-	Rain	-	-	-	-	-	-	-	-
9/21	-	-	-	-	-	-	-	Rain	-	-	-	-	-	-	-	-
9/22	-	2	-	-	-	-	-	-	1	-	-	-	-	3	6	2
9/23	-	11	-	2	-	13	-	3	4	-	-	32	-	65	7	8
9/24	-	2	2	1	-	51	-	2	9	-	-	66	-	133	8	3
9/25	-	7	3	12	-	60	-	1	4	-	-	49	11	147	8	15
Total	0	29	7	18	1	1321	0	18	47	0	0	280	22	1743	114	
October and November																
10/2	1	19	3	18	1	56	-	2	4	-	-	108	2	214	5½	11
10/8	-	27	-	6	-	3	-	1	-	-	-	15	1	53	8	6
10/9	-	10	-	5	-	2	-	1	3	-	-	11	-	32	8	14
10/10	-	-	-	-	-	-	-	Rain	-	-	-	-	-	-	-	-
10/11	-	12	2	8	1	1	-	1	3	-	2	14	4	48	7	8
10/12	-	22	3	17	1	1	-	4	2	-	-	41	4	95	8	9
10/13	-	3	2	1	1	-	-	-	-	-	-	5	-	12	3	3
10/14	-	14	5	13	1	9	-	1	1	-	1	11	5	49	7	1
10/15	-	9	-	15	1	-	-	4	1	-	-	11	5	46	7	1
10/16	-	11	1	10	3	-	-	2	-	1	-	47	1	76	6	3
10/23	-	5	1	-	-	-	-	-	-	-	-	-	-	6	5	1
10/30	-	1	1	67	14	-	-	4	-	-	-	1	8	96	8	5
11/5	-	2	-	17	7	-	-	-	-	-	-	1	-	27	4	2
11/6	-	-	-	18	13	-	-	1	-	-	-	-	1	33	6	2
Total	1	135	18	195	43	72	0	21	14	1	3	258	26	787	82½	
S/Total	1	164	25	213	44	1393	0	39	61	1	3	538	48	2530	196½	

RECENT TOWER KILLS IN UPSTATE NEW YORK

STEPHEN W. EATON

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During two months in the fall, from mid-August to mid-October, about 10,000 song birds a year are killed at night by flying into communication towers on the Allegheny Plateau. This is a conservative estimate based on tower kills at Colden in southern Erie Co., at various towers in Cattaraugus, Allegany and Steuben Counties, and at towers checked near Elmira and Syracuse.

This is developing into a conservation problem of the magnitude of the sandpiper slaughter in spring during the 19th century, the heron plume hunters of the early 1900's, the duck plight of the 1930's and the current hawk-prey-pesticide problem. A report of the A.O.U. committee on bird protection published in the *Auk* (83:465-467, July 1966) sum-

marized the situation on a broader scale. They say, "...unfortunately the hazard of towers is growing. In 1952 of the 100 television stations in the United States, 50 had transmitter towers 500 feet or more in height, and fewer than a dozen reached 1000 feet. By 1964, according to the *Broadcasting Yearbook*, the number of stations had climbed to about 650. ... In addition, there are many towers less than 500 feet tall which are set on high terrain. ... As of 1965, the Federal Communications Commission has allocated assignments for about 1,800 television stations (three times the present number)."

The Alleghany Plateau forms an elevation south of Lakes Ontario and Erie stretching up into the sky 1000 to 2500 feet above sea level. This front, marked on the north by the Portage Escarpment, is the highest elevation many birds from the northwoods have encountered on their southward migration, from the mouth of the MacKenzie River in the west to Newfoundland in the east. The towers poke 200 to over 1000 feet above the plateau and are serious hazards.

In 1965 we "tower-watched" a communications tower about 300 feet tall atop the plateau at 2140 feet near Ellicottville in Cattaraugus Co. Although there was only a small cleared area 200 ft. by 200 ft. about the base of the tower and tall hay and weeds covered much of the rest, we picked up over 141 dead birds from Sept. 12 to Oct. 15, after which the great flights of night migrants had passed to the south. Five other towers in Cattaraugus and Allegany Counties were checked after kill nights one or two times and the dead birds found indicated similar kills were taking place at most of these. The tower at Colden, over 1000 ft. tall and at an elevation of about 1710 ft. above sea level, has been checked since the fall of 1962. The highest kill there was in that year, over 1400 birds (Able, *Kingbird* 13:192-195, October 1963). Lesser kills have been reported in subsequent years, but this source of food has become better known among the local scavengers such as cats, weasels, foxes and dogs.

On the plateau from Chautauqua Co. in the west to the New England border in the east there were in 1966, by conservative estimate, 50 towers causing kills (we know of 10 towers causing kills in Erie, Cattaraugus and Steuben Counties). Probably the number of such towers is closer to 100. If the kills at these 50 towers averaged 200 birds a year, this would amount to 10,000 night migrants killed a year.

What causes the kills? They usually occur during nights with fog or drizzly rain. It is believed the birds are forced down from the 4000 to 5000 ft. level at which they normally fly to about 2000 ft. (at least over the plateau) as cold fronts ride under warmer air coming from the south. They then strike the tower, or perhaps are attracted to the blinker lights of the tower, start orbiting and strike the guys or superstructure. Few of the birds we have skeletonized have broken bones, but most seem to have suffered some sort of cerebral hemorrhage. Little is

known about this type of killing, in contrast to the cielometer kills of the 1950's. By using some sort of blue filters killing at cielometers has been reduced, and when a kill begins the operators have in the main been instructed to turn off the lights. The towers we have been checking, which are the most common type, are the unattended towers which automatically turn on blinker lights at low light intensities. Much work needs to be done to help reduce the kills at these towers. It seems to me that a team consisting of a biologist, a physicist and an engineer would be most productive in working out a solution.

What species are involved in the kills on the Allegheny Plateau? From *Audubon Field Notes* and the *Kingbird* from 1956 to 1966 fifty-two species were tabulated (Table 1). These include 6 non-passerine birds, 2 flycatchers, Catbird, 5 species of thrushes, 2 species of kinglets, Starling, 4 species of vireos, 26 species of warblers, Bobolink, Baltimore Oriole, Scarlet Tanager and 6 species of finches. It is only a question of time before herons, ducks, rails, wrens and other species of the families listed in Table 1 will be added to this list if we can apply what Stoddard (*Tall Timbers Research Station Bull. 1*, 1962) and Tordoff and Mengel (*Univ. of Kansas Publ. Mus. Zool.* 10:1-44, 1956) observed in Florida and Kansas.

TABLE 1

List of night migrants found dead under towers on the Allegheny Plateau (from *Aud. Field Notes*, *Kingbird*, author's field notes 1956-1966)

Pied-billed Grebe	Black-throated Blue Warbler
Solitary Sandpiper	Myrtle Warbler
Black-billed Cuckoo	Black-throated Green Warbler
Yellow-billed Cuckoo	Blackburnian Warbler
Yellow-bellied Sapsucker	Chestnut-sided Warbler
Yellow-shafted Flicker	Bay-breasted Warbler
Yellow-bellied Flycatcher	Blackpoll Warbler
Eastern Wood Pewee	Palm Warbler
Catbird	Ovenbird
Wood Thrush	Northern Waterthrush
Swainson's Thrush	Connecticut Warbler
Gray-checked Thrush	Mourning Warbler
Veery	Yellowthroat
Robin	Yellow-breasted Chat
Golden-crowned Kinglet	Hooded Warbler
Ruby-crowned Kinglet	Wilson's Warbler
Brown Creeper	Canada Warbler
Starling	Redstart
Red-eyed Vireo	Bobolink
Philadelphia Vireo	Baltimore Oriole
Warbling Vireo	Scarlet Tanager
Solitary Vireo	Rose-breasted Grosbeak
Black-and-white Warbler	Savannah Sparrow
Tennessee Warbler	Slate-colored Junco
Orange-crowned Warbler	White-throated Sparrow
Nashville Warbler	Lincoln's Sparrow
Parula Warbler	Song Sparrow
Yellow Warbler	
Magnolia Warbler	
Cape May Warbler	

57 species

Limited studies in the fall of 1965 and 1966 indicate that the greatest kills can be expected between Sept. 12 and Sept. 26, and involve for the most part Swainson's and Gray-cheeked Thrushes, Red-eyed Vireos, Magnolia, Chestnut-sided, Bay-breasted and Blackpoll Warblers, Ovenbirds and Yellowthroats. Kills will follow or precede passage of cold fronts through the lower Great Lakes (Fig. 1).

So far, the species which has yielded the most data from our salvage attempts is the Ovenbird. Table 3 gives a fair profile of the passage of this species over Western New York. These data are about as accurate as can be obtained, for the birds were snatched from the skies on migration. One always wonders when observing an Ovenbird on the ground in Western New York whether it is from a locally breeding population or one from further north. Not only do tower kills represent an accurate picture of the passage of a species, but by thorough processing of the birds we know that in the Ovenbird adults and immatures migrate at the same time, not immatures earlier or later.

The amount of fat, the sex and other data can be observed and added to the total understanding of the species' migration. By organizing volunteers to check as many towers as possible and to properly preserve and handle the specimens until they can get to a common processing point, we could learn much more.

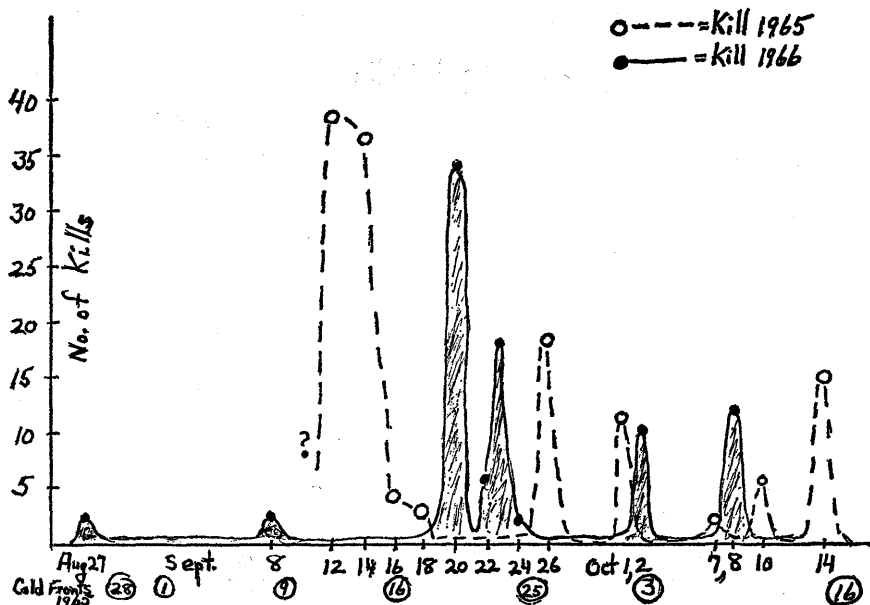


Figure 1. Tower kills 1965 and 1966 and Passage of Cold Fronts 1965

To get the most valuable data from the kills one should:

1. From Sept. 1 to Oct. 1 check towers daily (preferably in early AM), if this is not possible, at least every other day.
2. Take Kodachrome slide of the kill, weigh each bird and place weight (to nearest tenth of a gram), date, locality and collector's name on a label attached to foot of each specimen.
3. Deep freeze the specimens in plastic bags — separate as to place and date of collection.
4. After collection period, drop a card to the person in charge of processing so that specimens can be transported to collection point.

We are much indebted to those people who helped collect data during 1965 and 1966, especially Andrew Klemer, David C. Krieg, Eric Saylor, Clarence Klingensmith and family, John and Mary Forness, Mrs. W. Carlton Baker, Mr. & Mrs. Jerome Prosser and F. G. Meyer.

If you are interested in helping carry on this cooperative study, please contact the author at the Department of Biology, St. Bonaventure University, St. Bonaventure, N.Y. 14778.

TABLE 3

Ovenbird kills in 1965 and 1966, Cattaraugus and Allegany Cos.

	September				October			
	8	12-18	19-23	24-28	2-6	8-12	14	Totals
Imm.....	1	3	6	4	2	1	0	17
Adult.....	0	8	7	6	3	1	1	26

Ovenbird Kills

