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THE 1945-46 SNOWY OWL INCURSION IN NEW YORK STATE

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Soon after it became evident that a major incursion of the Snowy Owl, *Nyctea scandiaca* (Linnaeus), into the northern United States was occurring in the fall of 1945 I was asked to collect data from New York State for the "Snowy Owl Committee". This paper is a report of the findings.

SOURCE OF DATA

A letter calling attention to the incursion and explaining the purpose of the survey, plus a form for supplying data, was sent to 43 ornithologists and to all (110) registered taxidermists. Of the taxidermists 73 (66 per cent) replied, of the ornithologists 25 (58 per cent) replied—a total of 98 replies. Scattered data were received from a few unsolicited observers of the Buffalo and Rochester areas.

REGIONAL DISTRIBUTION

As in the 1941-42 incursion the heaviest concentrations were along the major water courses and coast lines—the Hudson and Mohawk River valleys, the shores of Lakes Erie and Ontario (particularly around the convergence of Lake Ontario and the St. Lawrence River), and Long Island. In contrast to the state as a whole the number of birds in the Finger Lakes region was lower, in proportion, than in 1941-42 (Stoner, 1943). The mountainous regions were almost free of reports of birds. The southern tier of counties apparently received relatively few birds.

SEASONAL DISTRIBUTION

In 1941-2 three records for late September were reported and there was then a gap until October 14. In 1945-46 there were no September reports and the first recorded date was October 20 when five different birds appeared in three of the four most northern counties of the state, Jefferson, St. Lawrence, and Clinton. The next report on October 24 was again in a northern county, St. Lawrence. Birds were found next on October 28 in Otsego County in the very center of the

state, and in Suffolk County on Long Island. From that date on reports became increasingly numerous from all the invaded parts of the state.

The incursion grew rapidly to a peak in the three weeks between November 18 and December 8 when the weekly totals of all dated records were 69, 64, and 86. The month of December yielded the highest monthly total and percentage of records as shown in Table 1 with 277 (33.4 per cent) reports. The 419 records for 1941-42 reported by Stoner (1943) represent 419 different birds since he apparently recorded each bird only once in the determination of seasonal distribution, i.e., if a particular bird was reported on several different days it was recorded for only the first day. In my analysis of seasonal distribution it has seemed to me that if a bird was reported on several different days it should be counted on each of those days in determining the abundance of owls in the state on each day. Therefore, the 828 records for 1945-46 in Table 1 represent the total of all specific record dates and not necessarily 828 different birds. It will be noted that the peak seems to have come somewhat later than in 1941-42.

Also it can be seen from Table 1 that the 1945-46 birds seem to have stayed on later than in 1941-42. Stoner for 1941-42 reported only 10 records after the month of February with the last date, April 5th. My data show 62 records for March, April and May. There were 14 records later than April 5th with two in May—one for May 3rd at Rochester, and one for May 14th at Moriches Inlet on Long Island. This prolongation of the stay may be partly explained by the fact that since many more birds came into the state than in 1941-42 greater numbers probably survived to be observed at later dates.

TABLE 1
SEASONAL DISTRIBUTION OF SNOWY OWL RECORDS
1945-46 COMPARED WITH 1941-42

Season	1941-42 (*)		1945-46	
Earliest record	Sept. 28		October 20	
Height of movement	November		Nov. 18—Dec. 8	
Latest record	April 5		May 14	
Status of records by months (dated records only)	Total	%Total	Total	%Total
September	3	(0.7)	0	(0.0)
October	47	(11.2)	27	(3.3)
November	193	(46.1)	210	(25.4)
December	122	(29.1)	277	(33.5)
January	27	(6.4)	155	(18.7)
February	17	(4.1)	97	(11.7)
March	8	(1.9)	44	(5.3)
April	2	(0.5)	16	(1.9)
May	0	(0.0)	2	(0.2)
Total	419	(100.0)	828	(100.0)

(*) According to Stoner (1)

MAGNITUDE OF THE INCURSION

In such a survey the problem of duplication of records presents itself. When, for example, a single, or the same number of birds, is reported on a number of different dates from a given locality, the question arises, are these all the same birds or do they represent different transients? (Observations suggesting that they are often the same birds will be given later.) Should one count only the maximum number seen on any one date in the particular area, plus allowances for birds previously collected, or should he arbitrarily assume a certain amount of turnover and take the maximum number for any one date plus a considered percentage of the other reports? To be strictly conservative one must adopt the former policy and it has been followed in this survey in determining the total number of birds with the exception of a few instances where the only reported dates for a given area were widely separated. A certain number of undated records are included in the total where it has seemed reasonable that they were not duplications of dated records after an analysis of the localities involved, i.e., undated sight records have not been accepted from a locality from which there were also dated records.

The survey yielded reports of 839 birds (76.0 per cent of total reported birds) collected as opposed to 291 birds (69.4 per cent of total) collected in 1941-42. In addition there were 265 sight reports (24.0 per cent of total) which, according to the policy outlined above, represent different individual birds not included among the collected birds and excluded as possible duplications of sight and collection records. Stoner reported 128 sight records (30.6 per cent of total) in 1941-42. The total of collected and sight records in 1945-46 was 1104 birds as opposed to 419 in 1941-42.

TABLE 2

MAGNITUDE OF SNOWY OWL INCURSION
1945-46 COMPARED WITH 1941-42

	1941-42(*)		1945-46	
	Total	% Total	Total	% Total
Number of collecting records	291	(69.4%)	839	(76.0%)
Number of sight records	128	(30.6%)	265	(24.0%)
Total number of records	419		1104	

(*) According to Stoner (1)

COMPARISON WITH 1941-42 INCURSION

From the data already given it seems that the 1945-46 incursion was of considerably greater magnitude than that of 1941-42 which

Stoner considered, "without doubt one of the most extensive on record." Other evidence of this is that while in 1941-42 the greatest number of Snowy Owls reported as received by any one taxidermist was the 15 birds, by Mr. M. C. Huppuch of Buffalo; in 1945-46 the top figure was 61 birds by the same individual. Furthermore, even though in 1945-46 some 31 fewer reports were received from taxidermists than in 1941-42 there were 15 who reported more than Mr. Huppuch's 1941-42 maximum of 15 birds. Nine reporters in addition to Huppuch listed 25 or more birds received during this latest incursion.

INCURSION ROUTES

As previously noted, the first birds were reported from three of the most northern counties which border on the St. Lawrence River on October 20. Four days later, October 24, the next observation was made, again in the northern tier. By October 28 they had appeared in the center of the state, Otsego County, and on Long Island. A day later birds were reported from Ulster, Onondaga, Montgomery, Schenectady and Washington Counties in the Mohawk-Hudson Rivers junction area.

The route by which birds reached the Mohawk River valley is not clear from available data. Three routes are possible—first, down along Lake Ontario to central New York and then eastward and southward along the river valleys; second, down the Champlain Valley to the Hudson Valley (there is little evidence for this) with a westward spread up the Mohawk; a third possibility is that birds coming down the Atlantic coast (as suggested by Stoner) to Long Island infiltrated northward and westward up the valleys. It does not seem likely from the paucity of reports from the Adirondacks that the birds passed over these mountains in reaching the central and southern valleys.

An examination of first dates for various counties also makes it appear that the birds did not cross Lake Ontario but entered western New York by following either the lake shore southward and westward, or the Mohawk Valley westward. The basis for this theorizing is that in the entire region west of Onondaga County only one bird was reported for the month of October. This bird, in the most southwesterly county, Chautauqua, may have proceeded from Ontario down the Niagara River and along the southern shore of Lake Erie. Birds were not generally reported in western New York until the first week in November. Thus it would appear that the movement into the Mohawk-Hudson Valleys preceded that into western New York.

LOCALIZATION OF INCURSIVE BIRDS

There is evidence from the survey material to support the view that once the incursive birds have reached a certain locality they tend to remain in a fairly confined area for rather long periods. Hence during the peak and early decline (a large part of which is likely accounted for by shooting of the birds) the population distribution is probably relatively static. The normal variations in size and coloration plus the attachment to a single perch point or area make it quite possible to be reasonably certain that it is a particular bird which remains in a given locality. Following are quotations from the survey relative to birds which seemed to remain in one locality for extended periods.

Place	Reporter	Remarks
Schenectady	J. L. Voght	"Two seen regularly atop General Electric Plant buildings from November 12 to December 23." "One remained on the Iroquois Golf Club grounds from November 20 at least through February 18."
Horseheads	Mrs. H. C. York	"I saw only this one bird. I saw it repeatedly for 2½ months on a farm north of Horseheads."
Watertown	Mrs. J. A. Common	"One has stayed for several weeks at Schell farm near Theresa. Roosts all day on storage barn roof." "One has stayed near the sanatorium for several weeks."
Poughkeepsie	R. S. Palmer	"One Snowy Owl was seen regularly near Poughkeepsie from November 19 to February 25 when it was shot. It stayed in a small cat-tail marsh where numerous observers saw it."

TYPE OF TERRITORY AND HABITAT OCCUPIED

The findings of this survey confirm those of Stoner relative to the territories and habitats preferred by the owls. The greatest movements and concentrations were along fresh and salt water beaches and inland lakes and streams. More specifically, birds were found on beaches, marshes and swales, farm buildings, open fields (airports, golf courses, farmland)—occasionally on buildings in populated centers, and sparse woodland, but there were almost no

records from heavily wooded areas. The following report excerpts give further information on this point.

Date	Locality	Reporter	Remarks
1945			
October			
20	Redford	Swadling	"Along Saranac River"
November			
12	Schenectady	J. L. Voght	"2 seen regularly atop General Electric Buildings"
18	Schenectady	J. L. Voght	"2 at Schenectady airport"
19	Poughkeepsie	R. S. Palmer	"Stayed in cat-tail marsh"
20	Schenectady	J. L. Voght	"One on Iroquois Golf Club grounds"
23	Westernville	E. C. Tuthill	"One bird dead on shores of Lake Delta"
23	Schenectady	J. L. Voght	"One atop downtown Schenectady store"
24	Albany	J. L. Voght	"One on Albany building"
December			
1	Liberty	W. J. Miller	"Taken on a poultry farm"
3	Eastport	C. Raynor	"Numbers of owls on ocean beach. Saw 4 on Dec. 3rd"
4	Rochester	Krause	"Two on east side of Iron-dequoit Bay"
7	Shore Acres Monroe County	A. M. Secker	"On shore of Lake Ontario"
Undated	Saratoga Lake	C. R. Brackett	"3 at south end of Saratoga Lake in alder thicket"
	Theresa	Mrs. C. R. Common	"Roosts on storage barn roof"
	Watertown		"In low swale just outside city limits"
DeKalb Junction	M. Hutton		"Got in hen house by breaking window"
Parishville	W. E. Foster		"Plenty of Snowy Owls all found around clearings, pastures, meadows or on farm buildings. Few in light woods but none in heavy timber"
Forest Hills	F. Sauter		"Customer had one fly into his car and break its neck when it hit closed window on opposite side of car"
Horseheads	Mrs. H. C. York		"Seen repeatedly for 2½ months on farm north of Horseheads"
Ilion	E. P. Smith		"Around here Snowy Owls seem to live in cedar swamps that have many rabbits and birds"

FOOD HABITS

In a few instances remarks relative to food habits of the owls accompanied the reports. Those of W. C. Tilden and M. C. Huppuch are most valuable since they are based on examinations of stomach contents.

Place	Reporter	Remarks
Genesee County	Arnold Keller	"Killed hen pheasant in barnyard"
Erie County	M. C. Huppuch	"Food consisted of rabbits, mice, rats, wild duck, squirrels, in decreasing order. One grass snake"
Palmyra	W. C. Tilden	"7 stomachs examined; 3 empty, 4 contained mice"
Ilion	E. P. Smith	"One owl was delivered to me with a duck in its talons, partly eaten"
Saratoga Springs	C. R. Brackett	"Stomach of this bird contained balls of cottontail rabbit fur"
Pelham Bay	A. J. Vaurie	"There were many dead rabbits in neighborhood, and a bloody-necked Scaup was found on mound of grasses from which owl flew"
Lafargeville	C. Dupree	"One shot attacking pheasants"
Brownville	V. Pond	"One seen attacking pheasant which escaped"

SEX RATIO AND WEIGHTS

Data on sex were not requested but were contributed in reports on 26 birds, of which 20 were males and 6 were females. No conclusions can be drawn from such meager data, but they are recorded here for purposes of future record.

Again for future record it seems worth mentioning the reported weights which seem reliable. The lightest bird, weight 2 pounds, 12 ounces, was a male; and the heaviest, weight 5 pounds, 12 ounces, was a female—a trend in agreement with that noted by Stoner and others.

Date	Place	Reporter	Sex	Weight	
				Lbs.	Oz.
Nov. 1	Macedon	W. C. Tilden	♀	3	12
	Macedon	W. C. Tilden	♂	3	0
	Walworth	W. C. Tilden	♂	2	12
Dec. 3	Rensselaer	J. L. Voght	♂	3	10
	Clifton Springs	W. C. Tilden	♀	4	8
Jan. 1	Walworth	W. C. Tilden	♀	5	12
	Walworth	W. C. Tilden	♂	3	8
Feb. 23	Ontario County	W. C. Tilden	♂	4	0

Analysis of the 15 definitely sexed and weighed birds recorded by Stoner and the 8 in this report gives an average weight for 15 males of 3 pounds, 1 ounce; for 8 females, 3 pounds, 11 ounces.

MEASUREMENTS

Spread and length measurements were recorded by W. C. Tilden of Palmyra on seven birds as follows:

Date	Sex	Weight		Spread	Length
		Lbs.	Oz.		
Nov. 1	♀	3	12	62 ins.	25 ins.
2	♂	3	0	60 "	24 "
17	♂	2	12	56 "	23 "
Dec. 28	♀	4	8	60 "	25½ "
Jan. 1	♀	5	12	65 "	26 "
4	♂	3	12	60 "	24 "
Feb. 23	♂	4	0	60 "	24 "

4 males—average spread, 59"; average length, 23.7"

3 females—average spread, 62.3"; average length 25.5"

SEX—SEASON RELATIONSHIP

An observation was made by two taxidermists which provokes the thought that females may predominate in the early phases of an incursion, males in the latter. Mr. C. R. Brackett, of Saratoga Springs says, "The early birds seem to have quite a lot more brown than the ones that were taken in January which were mostly all white, the brown (ones) being very sparse (at that time)." Mr. Higgins, of Antwerp, states, "They turn lighter or white in color as the winter advances—less brown spots in late winter."

Forbush states that the adult male is "pure white with more or less reddish-brown or dark grayish-brown barring above, and less or pure white below: rarely unmarked but often with very few markings." Of the adult female he says, "Usually white, but with many more markings than male and often much darker." Such a sexual color variation plus a difference in sex-season relationship would explain the above observations.

A second possible explanation of such a seasonal color variation, if it exists, suggests itself. Young males in first winter plumage are stated by Forbush to be "much like adult female", while young females in first winter plumage are said to be "more heavily barred and mottled dark-brown, both above and below than first winter males or adult females." Granting this to be true the preponderance of darker, more heavily marked birds in the early phase of an incursion could be explained if it were shown that the birds of the year of both sexes form the vanguard—they would be almost entirely the

most heavily marked forms. If the adult birds follow somewhat later the proportion of adult females and hence lighter birds would rise. This rising percentage would perhaps be accentuated by the fact that a large proportion of the earlier, younger birds very probably would have been killed off by this time.

This discussion is largely speculative on the basis of two empirical observations, but it suggests an interesting line of investigation. There are an insufficient number of dated, sexed records available for statistical analysis. Furthermore, there must be more data concerning the sex ratio during an incursion to make such an analysis.

SUMMARY

1. A major incursion of Snowy Owls into New York State occurred in the late fall and winter of 1945-46 which was possibly one of the greatest on record. Available figures show that it exceeded the incursion of 1941-42 in magnitude.

2. The greatest concentrations of birds occurred along water-courses and shorelines. Mountainous areas received almost no birds.

3. Birds appeared first in northern counties on October 20. Incursion rose to a peak between November 18 and December 8. Incursion had largely waned by end of February. Latest dates were May 3 and 14. Incursive birds seem to have appeared and stayed later than in 1941-42.

4. A total of 1104 birds was recorded of which 839 (76.0 per cent) were collected and 265 (24.0 per cent) were seen only.

5. A study of records indicates birds enter the state largely by crossing St. Lawrence River into northern counties and probably also by coming down Atlantic Coast to Long Island. Possible dispersion routes through the state from these two areas are discussed.

6. There is evidence from the study that once incursive birds have reached a certain locality they tend to remain there for extended periods. The habitats preferred are open fields, marshes, shores, river courses, buildings, etc. Seldom found in wooded areas.

7. Suggestive, but inconclusive, records of food, sex-weight and measurement ratios are presented. Females tend to be heavier and larger.

8. The possibility that the early phase of the incursion is composed predominantly of females or birds in the first winter plumage is discussed.

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