
Geographical Distribution of Re-encountered Pine Siskins Captured in Upstate, Eastern New York During the 1989-1990 Irruption

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INTRODUCTION

The Pine Siskin (*Carduelis pinus*) is an irregular winter visitor to the eastern United States and southern Canada; it has been described additionally as erratic and wandering in its migratory behavior. The species irrupts sometimes in huge numbers in response to cone crop shortages in its normal Canadian breeding range. Following such irruptions, it may breed well south of its normal range, and then disappear, presumably returning north (Bohlen 1989, Buckalew and Hall 1994, Bull 1974, Forbush 1929, Godfrey 1966, Gross 1992, Peterson 1988, Taverner 1934, and Todd 1940). However, specific details on the direction and distance of these wanderings is unclear or lacking (Gross 1992).

A nearly continent-wide irruption was noted in the regional field note reports of *American Birds*, Vol. 44(1) through 44(5). Preceding and during the winter of 1989-1990, this irruption brought exceptional numbers of siskins to eastern, upstate New York. Between 27 January and 9 June 1990, I banded 4045 Pine Siskins at three locations near Schenectady, NY. Nine of these birds (0.22%) have so far been re-encountered. Additionally, I captured four siskins previously banded at other locations. This paper provides information on these birds illustrating the wide geographic distribution of their wandering.

METHODS

I trapped or mist netted Pine Siskins at three New York feeder locations in 1990: 1) Schenectady, 2) near Amsterdam, and 3) at Jenny Lake near Corinth. The Schenectady location was my backyard banding station where I operated almost daily before and/or after work and on weekends. The Jenny Lake station, 55 km north of Schenectady and 7 km west of Corinth, was a year-round feeding station which I visited once every seven to 14 days through this period. The Amsterdam location was also a year-round feeder, 5 km southeast of the city of Amsterdam and 28 km west of my Schenectady location, operated by Thomas Palmer. I visited this site on two occasions— in February and March.

I determined age and sex of each captured bird as follows: Age was determined by contrast or lack thereof of the primary covert tract with the other upper wing covert tracts; and by rectrix shape (Yunick 1995). Birds with contrasting covert tracts and pointed, narrow rectrices were recorded as second-year birds (SY); while those lacking covert contrast with rounded, wider rectrices were classified as after-second-year birds (ASY). In May and June, hatching-year birds (HY) were recognized by their juvenal plumage. Where possible, birds were sexed by the appearance of a brood patch in females or cloacal protuberance in males. For each reported re-encounter, I wrote to the finder and requested additional information.

RESULTS AND DISCUSSION

Table 1 summarizes the monthly banding and re-encounter totals for each banding location, along with the span of capture dates. Table 2 lists information on banding and re-encounter dates; and location, distance, direction and circumstance

of re-encounter for each of the nine re-encounters. The distances given are the straight-line distance between banding and re-encounter locations measured by rule on a map. Those locations are shown in Figure 1. Additionally, I recaptured and released four previously banded Pine Siskins for which similar data are presented in Table 3 and Figure 2.

Table 1. Summary of 1990 Pine Siskin captures and re-encounters.

Month	Number Banded Per Location				Number Re-encountered From			
	Sch'dy	Jenny Lk	Amsterdam	Total	Sch'dy	Jenny Lk	Amsterdam	Total
Jan		9		9				
Feb	259	11	42	312				
Mar	1013	63	240	1316	1	1		2
Apr	1609	164		1773	4			4
May	475	134		609	2	1		3
Jun		26		26				
Total	3356	407	282	4045	7	2	0	9
Date First Capture	3 Feb	27 Jan	19 Feb	27 Jan				
Last Capture	25 May	9 Jun	31 Mar	9 June				

Table 2. Pine Siskin re-encounters from 1990 bandings in the Schenectady area.

No.	Date of Banding	Banding Location ¹	Age/Sex ²	Date of Re-encounter	Location of Re-encounter	Direction	Distance km	How Encountered
RE-1	10 Mar	JL	ASY U	3 Nov 1990	Littleton NH	NE	204	Trap/release
RE-2	11 Mar	S	SY U	7 Dec 1990	Thunder Bay ON	WNW	1356	Killed by car
RE-3	4 Apr	S	ASY U	17 Feb 1991	Darien GA	SSE	1437	Trap/release
RE-4	4 Apr	S	SY U	13 May 1990	Valcourt PQ	NNE	325	Killed striking stationary obj.
RE-5	7 Apr	S	SY M	3 May 1990	St. Emile PQ	N	344	Trap/release
RE-6	17 Apr	S	SY U	2 May 1990	Fairfax VT	NE	170	Found dead
RE-7	8 May	S	SY F	17 May 1992	Sackville NB	NE	825	Killed by cat
RE-8	18 May	S	SY U	18 Jan 1994	Greeley BC	WNW	3470	Found dead
RE-9	28 May	JL	HY U	4 Jun 1990	Corinth NY	E	13	Found dead

¹ Location code: S = Schenectady; JL = Jenny Lake.

² Age/Sex code: ASY = after-second-year; SY = second-year; HY = hatching-year; U = unknown; F = female; M = male.

Table 3. Pine Siskin recaptures during 1990 in the Schenectady, NY area.

No.	Date of Banding	Banding Location	Bander	Age/Sex ¹	Date of Recaptr.	Loc. of Recaptr ²	Direction	Distance km
RC-1	23 Oct 1989	Woodstock VT	VT Inst. of Natrl Sci.	HY U	29 Mar	S	NE	150
RC-2	30 Mar 1988	Shell Lake WI	W.R. Jones	AHY U	31 Mar	A	W	1470
RC-3	1 Mar 1988	Bar Harbor ME	W.C. Townsend	AHY U	7 Apr	S	NE	490
RC-4	26 Feb 1990	Powell's Valley PA	S.E. Boyer	AHY M	9 May	S	SW	380

¹ Age/sex code: HY = hatching-year; AHY = after-hatching-year; U = unknown; M = male.

² Location code: S = Schenectady; A = Amsterdam.

Fig. 1. Re-encounter location of Pine Siskins banded in the Schenectady, NY, area in the 1989-1990 irruption. The data are from Table 2. Each location number corresponds to the RE number in the table. Due to the proximity of Corinth to Schenectady and to the scale of this map, RE-9 is not included.

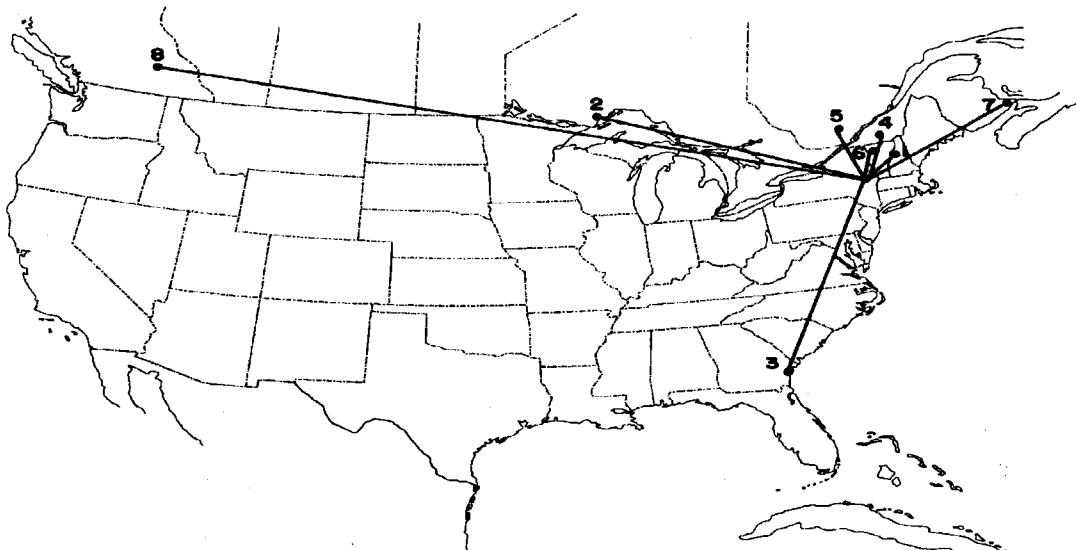
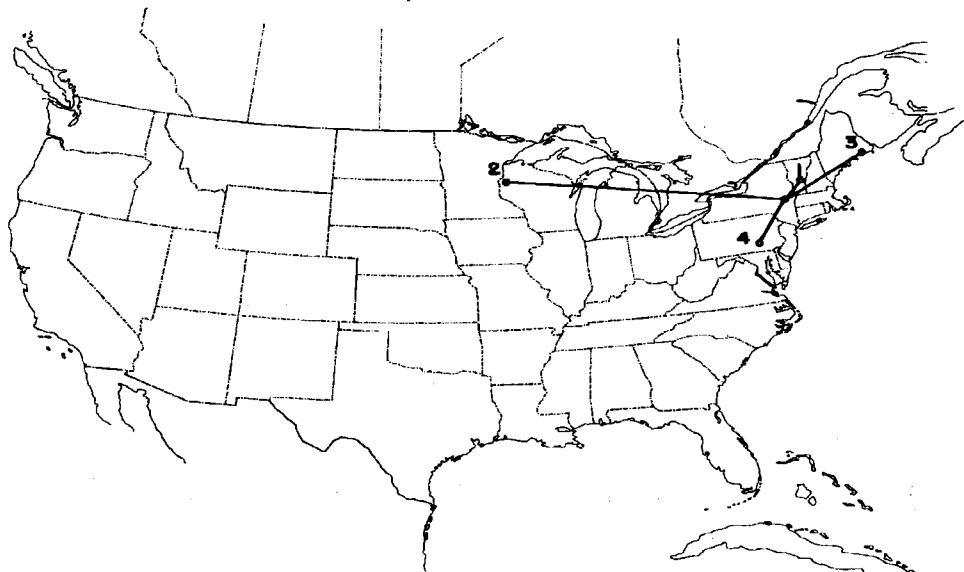


Fig. 2. Banding location of Pine Siskins recaptured in the Schenectady, NY, area during the 1989-1990 irruption. The data are from Table 3. Each location number corresponds to the RC in the table.



Direction of Migration — Figures 1 and 2 collectively illustrate what appears to be two different migratory patterns for this species. Ten of the 13 re-encounters (77%) were in a generally north-south or northeast-southwest orientation, limited to eastern states and provinces. Excluding RE-9, which likely represents an example of post-fledging dispersal rather than irruptive migration, these nine north-south re-encounters ranged from 150 to 1437 km in distance, averaging 481 km. The other three (23%) were generally east-southeast-west-northwest in direction and of longer average distance, 2099 km (range 1356-3470). All three of these re-encounters occurred between one and four fall-winter migrations following the year of banding. Among the ten north-south re-encounters, six occurred within the same migration season, and four occurred one or two fall-winter migrations after banding.

March and April were the months of highest banding totals and the peak of the northward migration through the Schenectady area. Three same-season re-encounters of April-banded birds (RE-4, -5 and -6) illustrate the north to north-east flow of migrants. All were banded in the 4-17 April period and re-encountered 15-39 days later in Vermont or Quebec (2-13 May).

Correspondence with Sylvain St. Onge who retrapped RE-5 at St. Emile, PQ, indicated that the first siskins arrived in the Quebec area in mid-April. He banded 50 in April, 84 in May, 12 in June, and four in July. He recaptured RE-5 on 3 May. I banded it on 7 April and recaptured it on 13 April. Using straight-line distances and elapsed time between captures, RE-5 averaged 17.2 km/day; while RE-4 averaged 8.3 and RE-6 11.3. The combined average for the three was 11.3 km/day.

Correspondence with Dr. Harry C. McDade who re-encountered RE-1 at Littleton, NH, in fall 1990 also affirmed the north or northeastward migratory movement. He indicated that during 1972-1990 at Littleton he retrapped seven previously banded Pine Siskins that originated as follows: two from New Jersey, one each from Pennsylvania, New York and Massachusetts, and two from Vermont. In the 1989-1990 winter he began banding siskins in February (four) followed by 73 in March, 76 in April, 60 in May and 16 in June-August.

When I examined the re-encounter records of all other Pine Siskins I banded in the Schenectady area for the period 1964-1994, excluding the 1989-1990 invasion, I found 24 re-encounters from among 9203 bandings (0.26%). All were re-encountered in the eastern states and provinces. Twelve were within New York state and the remainder included three each in Pennsylvania and Quebec, two in Nova Scotia, and one each in North Carolina, Vermont, Ontario, and Maine.

I also recaptured 37 previously banded siskins all of eastern origin. Thirty-six of these were banded and retrapped in the same invasion year, and originated as follows: ten from New Jersey, eight each from New York and Pennsylvania, six from Maryland, two from North Carolina, and one each from Delaware and West Virginia. The 37th bird was banded in Connecticut three years prior to my recapture of it.

By comparison the 1989-1990 results differ in that three of the 13 re-encounters involved distant western locations. Correspondence from Dr. John Woods of Mount Revelstoke and Glacier National Parks in British Columbia regarding RE-8 reveals an interesting perspective. He has reviewed the records of all siskin re-encounters in British Columbia; nine of the ten he reviewed originated from east-southeast directions with seven coming from eastern states and provinces. RE-2 and -8, and RC-2 fit the pattern portrayed by Dr. Woods' finding on British Columbian re-encounters.

RE-3 deserves special comment. When banded on 4 April 1990 at Schenectady, it was part of a northward flow of migrant siskins from the record siskin southward irruption of that fall-winter. The following winter was not a major irruption year for siskins, and they were scarce in the Northeast. I banded only two on 18 November 1990 at Schenectady. The retrapping of RE-3 on 17 February 1991 at Darien, GA, is unusual in that this bird penetrated deeply into the South in a non-invasion year and was captured along the Georgia coast far from its more usual inland or montane habitat.

Correspondence from Doris Cohrs, who recaptured the bird, revealed that during the record 1989-1990 invasion Pine Siskins were scarce at

Darien. She had two appear on 22 December 1989 on the occasion of a significant snowfall, the first snowfall in 115 years along the Georgia coast. These birds lingered irregularly to 30 March 1990. During the following non-invasion year (at least in the Northeast), siskins first appeared at Darien 11 February 1991. Her banding activity on 17 and 24 February resulted in a total of 20 birds banded, and the capture of RE-3, which was captured four times on 17 February and twice on 24 February. Siskins disappeared in mid-March and reappeared in mid-April with two to three seen irregularly to the date of her letter of 25 April. She commented that very few siskins were seen in that area of coastal Georgia during either of those winters.

This poses the question of whether some Pine Siskins migrate annually, as opposed to only irruptively in alternate years. Examination of the greater United States/Canadian banding data base on this species may help to answer this question.

Mode of Re-encounter — Correspondence with all of the persons reporting these re-encounters showed the following pattern of re-encounter of the eight Schenectady area bandings (I excluded the Corinth banding, RE-9, because it was a newly fledged juvenile): three were trapped and released, two were car kills, two were window kills, and one was a cat kill. The window and cat kills occurred at feeders. Based on this sample, 37.5% were live reencounters and 62.5% were fatal recoveries.

Eric Dafoe who reported RE-8 at Revelstoke, BC, indicated that this car kill was one of 104 road kills he found that day along a 2-km stretch on the Trans-Canada Highway west of Revelstoke. The road was slushy with salt and sand, an oft repeated fatal attraction for this and other boreal finches which I have also witnessed on New York roads in the Adirondack mountains. Dr. Woods who commented on the same recovery indicated that in that area a single passing vehicle sometimes killed hundreds of siskins. Gerald Racey who reported RE-2, a road kill near Thunder Bay, ON, indicated this bird was among other siskins on a road covered with 2-3 in (7-8 cm) of snow.

SUMMARY

Analysis of band re-encounter data from Pine Siskins banded near Schenectady, NY, during the record 1989-1990 invasion showed that 77% of the re-encounters were generally in a north-south or northeast-southwest direction at distances of 150 to 1437 km (average 481 km). The remaining 23% were of an east-southeast-west-northwest direction at greater distances of 1356 to 3470 km (average 2099 km). By comparison, all other of my siskin bandings at Schenectady in the period 1964-1994, excluding the 1989-1990 invasion, produced 24 re-encounters restricted to the eastern United States and Canada. Thirty-seven retraps at Schenectady of siskins banded elsewhere were similarly all of eastern origin, and 36 of them were banded and retrapped in the same invasion year.

The far-western recoveries all occurred more than one year beyond banding; while in the north-south group, six of the ten re-encounters were within the same invasion year, and the remainder one or two years later. Three of those same-invasion re-encounters were banded in April at the peak of the northward return flight and were re-encountered 15-39 days later to the northeast, having averaged 11.3 km/day between capture dates (range 8.3-17.2 km/day).

This analysis confirms the previously referred to statements about erratic and wandering migratory behavior. It identifies the geographical extent of some of this behavior from the Schenectady area for the 1989-1990 irruption.

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