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A Comparison of Long-term Banding Data from Two Rose-breasted Grosbeak Populations in New York State

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INTRODUCTION

The Rose-breasted Grosbeak (*Pheucticus ludovicianus*) is a Neotropical wintering species that breeds in northern deciduous woodlands of North America and winters in Middle America south to Venezuela, Colombia, Ecuador, and Peru (AOU 1983). Between 1969 and 1994, I operated two banding stations where data were gathered on 589 grosbeaks and another 137 returns of 92 birds.

I operated one station at a feeder location at Jenny Lake, near Corinth, New York, in mature Adirondack forest, for the period 1972-1994 (24 years). At Vischer Ferry near Schenectady, New York, I operated a second station (with three other banders) in a riparian floodplain, part of which was already established woodland in 1969, and part of which was abandoned meadows beginning to go through woodland succession, through 1991 (23 years).

The banding data were used to assess seasonal abundance, return rates, and longevity by age/sex class; variations in return rate based on month of banding; age ratios among males; and annual variation in the numbers of grosbeaks captured at both sites.

METHODS

At Vischer Ferry—In 1967, I began a spring banding operation at what is now known as the Vischer Ferry Nature and Historic Preserve, managed by the Town of Clifton Park. In 1969, I relocated the net lanes within the Preserve to an area where banding continued through 1991 (23 years).

The Preserve is located in Saratoga County, seven km east of Schenectady, New York. The area was within the floodplain of the Mohawk River (47 m above sea level), between the river and the former Erie Canal. It consisted of a mixture of meadows, shrubs and woodland, marshes, and some man-made ponds. In the 1950's and 1960's, it had been managed as a wildlife area by New York State Department of Environmental Conservation for hunting. Through the 1960's to 1990's, some of the meadowlands reverted to floodplain woodland.

Banding was conducted, weather permitting, in the month of May. Typically, nets were operated on Friday afternoons and evenings and on Saturday from first light through mid- to late-morning, depending on bird activity. I was joined in this effort by Will D. Merritt, Jr. (1970-1974), Robert J. Pantle (1971-1991), and James C. Covert III (1972-1990). Together, we ran the equivalent of 24 to 74 12-m mist nets in four to eight net lanes, depending on how many of us were present. We recorded capture effort using net-hours as a measure (a net-hour defined as the use of one 12-m net open for one hour). Capture rates for grosbeaks were normalized by dividing annual totals of bandings, and returns from previous years' bandings, by the number of net-hours to give values adjusted to represent grosbeaks captured per 1000 net-hours. For this analysis, an individual bird counted only once in any given year on its date of first capture or return capture (regardless of how many times it might have repeated that year).

At Jenny Lake— In mid-summer 1970, I began a seasonal feeding/banding operation at Jenny Lake, seven km west of Corinth, Saratoga County, New York, at a summer cottage located in nearly mature regrowth forest at 378 m elevation. By 1972, the operation became year-round and has been run continuously ever since. This analysis carried through the end of the 1994 season.

I operated the equivalent of 2-1/2 to 6-1/2 12-m mist nets (2-1/2 in winter and 6-1/2 in spring and summer). Since 2-1/2 of them were immediately at three feeders (one at each feeder) and others were in adjacent woodland, I chose to use banding sessions as a measure of capture effort. A "banding session" is defined as any banding effort of approximately two or more hours duration using at least one net per feeder. Almost all grosbeaks were caught at the feeder nets rather than at the adjacent woodland nets, making banding sessions more useful than net-hours as a measure of capture effort.

Annual captures were normalized by dividing total captures of bandings and returns by the number of banding sessions for the May-August period each year. These were adjusted to reflect captures per ten banding sessions (TBS). As at Vischer Ferry,

an individual bird counted only once per year in the analysis, regardless how often it was rehandled within a particular year; and it was tallied in the month of its first capture or return.

This operation was located almost due north of the Vischer Ferry station. However, these two sites differed in elevation by approximately 330 m, as well as in habitat. Vischer Ferry was almost exclusively deciduous river valley shrub and woodland consisting of poplar (*Populus* sp.), American elm (*Ulmus americana*), and ashleaf maple (*Acer negundo*); while Jenny Lake was more maturely forested with white pine (*Pinus strobus*), eastern hemlock (*Tsuga canadensis*), spruce (*Picea* sp.) and mixed hardwoods of mostly maple (*Acer* sp.) and oak (*Quercus* sp.). Additionally, part of the Vischer Ferry area in 1969 was undergoing vegetative succession; whereas the Jenny Lake area was stable woodland of 50+ years of age in 1972.

The two stations differed also in that at Vischer Ferry we used up to 74 nets situated in up to eight net lanes separated over an area measuring approximately 350 m N to S by 530 m E to W at the net lane extremes. Nets were set over a much broader area (approximately 18.5 ha) than at Jenny Lake where the extreme distance between the farthest ends of the most separated feeder nets was 38 m. Additionally, birds at Jenny Lake were captured immediately adjacent to three feeders, while at Vischer Ferry, there was no feeding operation. Also, banding was limited to May at Vischer Ferry; while at Jenny Lake, it extended through the breeding season to include captures of young of the year.

RESULTS

Table 1 summarizes the numbers of birds banded and returned at both sites by age and sex class. Return rates are included.

Table 2 summarizes temporal occurrence of returns for the years following banding at both sites. Since an individual bird could return in more than one ensuing year from the time of banding, I have tallied both the number of returned individuals as well as the total captures of these individuals.

Table 1. Return Rates of Rose-breasted Grosbeaks by Age/Sex Class

Number Banded or Returned ¹	Age/Sex Class ²							Location ³
	ASY M	SY M	All M	AHY F	All AHY	HY M	HY F	
No. Banded	130	47	177	120	297	45	36	JL
No. Returned	25	5	30	17	47	0	0	JL
% Returned	19.2	10.6	16.9	14.2	15.8	0.0	0.0	JL
VF								
No. Banded	81	26	107	104	211	-	-	VF
No. Returned	24	7	31	14	45	-	-	VF
% Returned	29.6	26.9	29.0	13.5	21.3	-	-	VF

¹ Birds at Jenny Lake were banded 1971-1993 and returned through 1994; while birds at Vischer Ferry were banded 1969-1990 and returned through 1991.

² Abbreviations used for age and sex classes are: AHY = after hatching year; ASY = after second year; F = female; HY = hatching year; M = male; SY = second year.

³ JL = Jenny Lake; VF = Vischer Ferry

Table 2. Annual Distribution of Rose-Breasted Grosbeak Returns

Age/sex at Banding	Year of Return Following Banding									No. of Returns		Location ¹
	1	2	3	4	5	6	7	8	9	Birds	Captures	
ASY M	14	5	6	2		2		1		25	30	JL
SY M	3	1	1							5	5	JL
All M	17	6	7	2		2		1		30	35	JL
AHY F	10	7	1	2			1	1	1	17	23	JL
TOTAL	27	13	8	4		2	1	2	1	47	58	JL
VF												
ASY M	19	10	9	5	2	2				24	47	VF
SY M	5	3	3	2	3	1	1			7	18	VF
All M	24	13	12	7	5	3	1			31	65	VF
AHY F	9	4	1							14	14	VF
TOTAL	33	17	13	7	5	3	1			45	79	VF
JL/VF												
Grand Total	60	30	21	11	5	5	2	2	1	92	137	JL/VF

¹ JL = Jenny Lake; VF = Vischer Ferry

Table 3. Return rates of Jenny Lake Rose-breasted Grosbeaks by age class based on month of banding.

Month Banded	No. Banded ¹		No. of Banding Sessions (BS) ¹	Birds/TBS ²		No. Returned ³		% Returned		Total Captures/TBS ²		
	AHY	HY		AHY	HY	AHY	HY	AHY	HY	AHY	HY	TOTAL
May	42	0	109	3.85	-	7	-	16.7	-	4.50	-	4.50
Jun	83	0	84	9.88	-	14	-	16.9	-	16.67	-	16.67
Jul	159	55	245	6.49	2.24	23	0	14.5	-	7.43	2.24	9.67
Aug	13	23	237	0.55	0.97	3	0	23.1	-	0.68	0.97	1.65
Sep	0	3	150	-	0.20	1	0	-	0.0	0.07	0.20	0.27
TOTAL	297	81	825	4.40 ⁴	1.28 ⁵	48	0	16.2	0.0	5.11 ⁴	1.28 ⁵	5.15

¹ Number of birds banded and banding sessions for the period 1971-1993.

² TBS = ten banding sessions.

³ Number of birds returned for the period 1972-1994.

⁴ Calculated for the May-August period where total BS = 675 for 1971-1993.

⁵ Calculated for the July-September period where total BS = 632 for 1971-1993.

Table 4. Monthly changes in age ratio among male Jenny Lake Rose-breasted Grosbeaks.

Month (Ratio) ³	Birds Banded ¹					Total Captures ²				
	ASY M	SY M	TOTAL	% ASY	% SY	ASY M	SY M	TOTAL	% ASY	% SY
May	21	4	25	84.0	16.0	30	4	34	88.2	11.8
(Ratio)				(5.25:1)					(7.47:1)	
Jun	51	11	62	82.2	17.7	65	11	76	85.5	14.5
(Ratio)				(4.64:1)					(5.90:1)	
Jul	56	32	88	63.6	36.4	66	32	98	67.3	32.7
(Ratio)				(1.75:1)					(2.06:1)	
Aug	3	1	4	75.0	25.0	3	1	4	75.0	25.0
Sep						1		1	100.0	0.0
TOTAL	131	48	179	73.2	26.8	162	48	210	77.1	22.9
(Ratio)				(2.73:1)					(3.37:1)	

¹ Birds banded 1971-1994.

² Includes birds banded and returns for 1972-1994.

³ Ratio = ratio of ASY:SY.

Table 5. Monthly sexual distribution of banded and returned Jenny Lake Rose-breasted Grosbeaks.

Month (Ratio) ²	Birds Banded ¹												
	ASY M	SY M	All M	AHY F	TOTAL	% M	% F	HY M	HY F	TOTAL	% M	% F	
May	21	4	25	23	48	52.1	47.9						
(Ratio)						(1.09:1)							
Jun	51	11	62	21	83	74.7	24.3						
(Ratio)						(2.95:1)							
Jul	56	32	88	69	157	56.1	43.9	30	25	55	54.5	45.5	
(Ratio)						(1.28:1)					(1.20:1)		
Aug	3	1	4	9	13	30.8	69.2	13	10	23	56.5	43.5	
(Ratio)						(0.45:1)					(1.30:1)		
Sep.								2	1	3	66.7	33.3	
TOTAL	131	48	179	122	301	59.5	40.5	45	36	81	55.6	44.4	
(Ratio)						(1.47:1)					(1.25:1)		
Month (Ratio)	Total Birds Banded and Returned ³								Birds Returned ³				
	ASY M	SY M	All M	AHY F	TOTAL	% M	% F	ASY M	AHY F	TOTAL	% M	% F	
May	30	4	34	25	59	57.6	42.4	9	2	11	81.8	18.2	
(Ratio)						(1.36:1)					(4.49:1)		
Jun	65	11	76	31	107	71.0	29.0	14	10	24	58.3	41.7	
(Ratio)						(2.45:1)					(1.40:1)		
Jul	66	32	98	80	178	55.1	44.9	10	11	21	47.6	52.4	
(Ratio)						(1.23:1)					(0.91:1)		
Aug	3	1	4	10	14	28.6	71.4		1	1	0.0	100.0	
(Ratio)						(0.40:1)							
Sep	1		1		1	100.0	0.0	1		1	100.0	0.0	
TOTAL	165	48	213	146	359	59.3	40.7	34	24	58	58.6	41.4	
(Ratio)						(1.46:1)					(1.42:1)		
¹ Birds banded 1971-1994.													
² Ratio = ratio of M:F.													
³ Birds returned 1972-1994.													

Table 6. Sexual distribution of banded and returned Vischer Ferry Rose-breasted Grosbeaks.

Time Per. (Ratio) ³	Birds Banded ¹							Birds Returned ²					Total Captures						
	ASY M	SY M	All M	AHY F	T	% M	% F	ASY M	AHY F	T	% M	% F	ASY M	SY M	All M	AHY F	T	% M	% F
1-10 May	24	2	26	26	52	50.0	50.0	12	4	16	75.0	25.0	36	2	38	30	68	55.9	44.1
(Ratio)	(12.0:1)												(18.0:0)						
(Ratio)								(1.0:1)					(3.0:1)						
11-20 May	43	16	59	52	111	53.2	46.8	38	11	49	77.6	22.4	81	16	97	63	160	60.6	39.4
(Ratio)	(2.69:1)												(5.06:1)						
(Ratio)								(1.13:1)					(3.45:1)						
21-31 May	17	8	25	29	54	46.3	53.7	4	1	5	80.0	20.0	21	8	29	30	59	49.2	50.8
(Ratio)	(2.13:1)												(2.63:1)						
(Ratio)								(0.86:1)					(4.0:1)						
Total	84	26	110	107	217	50.7	49.3	54	16	70	77.1	22.9	138	26	164	123	287	57.1	42.9
(Ratio)	(3.23:1)												(5.31:1)						
(Ratio)								(1.03:1)					(3.38:1)						

¹ Birds banded 1969-1991.

² Birds returned 1970-1991.

³ The top ratio under each time period is ASY M:SY M, and the next ratio is M:F.

The Jenny Lake banding and return data listed by month of original banding are presented in Table 3. It shows monthly abundance and seasonal variability in return rate by the two age classes of mixed sex.

Since male Rose-breasted Grosbeaks are easily recognized as SY and ASY by plumage (Pyle et al. 1987), Table 4 represents data on those age ratios at Jenny Lake for the May-September period. A similar monthly distribution of all the age/sex classes at Jenny Lake is summarized in Table 5. It focuses primarily on male:female ratios among newly banded birds, returns, and the total captures of bandings and returns. Table 6 represents similar data from Vischer Ferry, segregated by monthly thirds.

Figures 1 and 2 represent annual variations in total captures at Jenny Lake and Vischer Ferry, respectively. The Jenny Lake data represent total captures per TBS. "Total captures" as used throughout this paper represents the total of banding and return captures for a given year, wherein any individual bird is counted only once in the annual total, regardless of how many times it

was captured. These captures ranged from seven to 55 per year. In the years 1971-1976, the number of May-August banding sessions ranged 33-49/year: average, 38.5/year; while for the period 1977-1994, they ranged 19-33/year: average, 26.2/year. The total number of banding sessions was 702 for May through August and 156 for September. The monthly average/total for the 24-year period was 4.8/115 for May, 3.6/87 for June, 10.6/255 for July, 10.2/245 for August, and 6.5/156 for September. The regression line fitted to these data is: Total Captures = 0.081 (year) - 0.179, wherein "year" represents the last two digits of the year; i.e., 1972 = 72 (P-value = 0.985, F = 0.522, r = 0.156).

The Vischer Ferry data in Figure 2 represent annual variation in units of total captures per 1000 net-hours. Annual captures ranged three to 20 per year; while net-hours ranged 241-1550 per year, total 22,785. The regression line fitted to these data is: Total Captures = 0.141 (year) + 2.245 with P-value = 0.901, F = 0.401 and r = 0.137. In both cases, r values are low caused by high variability in year-to-year abundances.

DISCUSSION

Age/Sex Class Return Rates at Both Locations

- The data in Table 1 show more dissimilarities than similarities between age/sex class return rates at the two locations due mainly to dissimilarities in return rates of males. The overall return rate at Vischer Ferry (21.3%) was higher than at Jenny Lake (15.8%) for all birds banded as AHY's. None of the 81 HY's banded at Jenny lake has yet been captured as a return. This is contrary to my experience with some of my more frequently banded species at this station. The Purple Finch (*Carpodacus purpureus*), for example, has shown a return rate of about 10% for HY's and nearly double that for AHY's (Yunick, unpublished data).

Females banded as AHY's show similar return rates at both sites (13.5% vs. 14.2%). Males, overall, as well as the two age classes separately, differ in return rates between sites. The male return rate at Vischer Ferry is 1.7 times greater than at Jenny Lake (29.0% vs. 16.9%). The return rates of SY males and ASY males at Vischer Ferry were nearly the same (29.6% for ASY and 26.9% for SY); while quite dissimilar at Jenny Lake, differing by a factor of 1.8 (19.2% for ASY and 10.6% for SY).

The percentages of males and females that returned at Jenny Lake were nearly the same (16.9% vs. 14.2%, or 1.19:1), while at Vischer Ferry they were quite different (29.0% vs. 13.5%, or 2.15:1), favoring males.

The similarity of female return rates at both locations and the simultaneous dissimilarity of male return rates raises the issue of whether sampling birds from two dissimilar habitats accounted for the different male return rates. Vischer Ferry birds were captured on breeding territory in May, at the beginning of the breeding season. Jenny Lake birds were banded at feeders both at the beginning and through the breeding season. Here the male return rate was reduced, mostly due to the low return rate of birds banded as SY. One possible explanation is that a small number of dominant males defended this feeding area to the exclusion of other males in the May-June peak breeding period. By July, as breeding competition lessened, the numbers of SY males

and AHY females relative to ASY males in the May-June period increased substantially, as shown in Table 5.

Return Longevity at Both Locations - Nearly the same number of individuals (47 at Jenny Lake vs. 45 at Vischer Ferry) returned to their respective site shown in Table 2; however, the Vischer Ferry birds amassed a far greater number of total captures (79 vs. 58). This was the case especially among Vischer Ferry males (1.96 captures per returned ASY, and 2.57 per SY; but only 1.67 per male for all Jenny Lake males). The female ratios were similar at both sites (1.0:1 at Vischer Ferry vs. 1.35:1 at Jenny Lake).

The oldest recaptured Jenny Lake female was ten or more years of age, greatly exceeding the oldest at Vischer Ferry that was four or more. The oldest Jenny Lake bird banded as an ASY-M was ten or more years of age, slightly exceeding the eldest ASY-M at Vischer Ferry of eight or more years. The reverse was found for males banded as SY: four years at Jenny Lake and eight years at Vischer Ferry.

If the convention of assuming a June hatching date is used for establishing age records (Kennard 1975, and Klimkiewicz and Fuchter 1987), then the Jenny Lake ten-year-old male and female referred to above become nine years, 11 months, and ten years, one month, respectively. Through December 1974, Kennard (1975) listed an age record for a male of this species at eight years, 11 months (based on a 1937 banding at Lexington, MA). When Klimkiewicz and Fuchter (1987) updated Kennard's work, they listed a 1972 banding of a male at Marshfield, VT, that was recaptured there at the age of 12 years, 11 months. This North American age record was one of 1313 re-encounters from 67,503 bandings of the species in the Bird Banding Laboratory's database as of 1986.

As of 1991, banders at Powdermill Nature Reserve, near Pittsburgh, PA (Leberman et al. 1994) had a 30-year database on 2260 banded Rose-breasted Grosbeaks, with a maximum age of nine years. The ten year, one month Jenny Lake female may represent a new female age record provided Klimkiewicz and Fuchter (1987) found no

older female when they extended the record from the Lexington male to Marshfield male. This Jenny Lake female was banded 4 July 1984 and recaptured in June and July of 1985, 1988, 1992, and finally on 2 July 1993, each time showing a brood patch.

Banding Rate Variation at Jenny Lake - Table 3 shows that AHY capture rates were highest in June at 9.88 birds/TBS for new bandings, and 16.67 for total captures. July was the peak month for HY captures at 2.24 birds/TBS. Overall, AHY's outnumbered HY's 3.44:1 for new bandings only and 3.98:1 for total captures.

The maximum captures of AHY's at these feeders coincided with the peak of the breeding season in June, and for HY's at the peak of the fledgling season in July. During post-breeding dispersal in August and peak fall migration in September, grosbeaks were scarce at these feeders. After the local breeding/natal population departed, there was essentially no new recruitment to the feeders.

Return Rate Variation by Age Class at Jenny Lake - The data in Table 3 show relatively small variability in return rates of AHY's based on month of banding. The nearly equal AHY return rates of 16.7% and 16.9% in May and June, respectively, suggest that birds banded in May have the same local breeder status as those banded in June.

This species migrates through New York in May, June is the peak of the breeding season, and the young fledge in July. Migrants banded in passage in May would not normally be expected to return to the specific banding location enroute during another flight. Thus, bandings of such migrants would depress the return rate for that period. The similarity of the May and June return rates shows no such depression. This rules out any significant migrant component to these May captures, similar to there being no passing migrants after the breeding season.

The higher return rate in August may be an artifact of the relatively small sample of AHY's banded ($n = 13$). The overall annual return rate for AHY's was 15.8%.

To date, none of the 81 banded HY's has been recaptured as a return, unlike the situation with returning Purple Finches mentioned above. This may be due to increased mortality in this age class during migration or winter, lack of site fidelity, inability of returning SY's to compete for local breeding/feeding territory, or a combination of these or other factors.

Other data presented here show that SY males do appear, are banded, and return, presumably to breed, based on capture of them with cloacal protuberances through the breeding season. Table 4 illustrates the seasonal variation in ASY:SY ratios among males.

Overall, ASY's outnumbered SY's by 2.73:1 at time of banding; but when return captures were included, the ratio increased in favor of ASY's to 3.37:1. However, there was substantial variation through the season depending on the phase of the breeding schedule. Among total captures, the ASY:SY male ratio in May was 7.47:1 when birds were newly arrived and breeding competition was at its peak. It dropped to 5.90:1 in June when females were incubating, hatching, or feeding young. It dropped to its lowest in July at 2.06:1 when young were fledging, adult males began flight feather molt, and post-breeding dispersal commenced. The early season predominance of ASY males suggests that the older males appeared at the feeders earlier in that migration than did the SY's, or may be territorily dominating the SY's. A similar earlier arrival of ASY males at Vischer Ferry is illustrated in Table 6 (see later discussion).

August and September samples in Tables 3 and 4 were too small to be reliable in addressing this age ratio among these later males.

Sexual Variation in Return Rates at Jenny Lake - Table 5 shows sexual variations in monthly return rates of Jenny Lake grosbeaks. For the entire May-September period, the ratio of males to females among AHY's was approximately 60:40 (1.46:1) regardless whether one considers new bandings only (1.47:1), returns only (1.42:1), or the combined total. The ratio of banded HY's by comparison was slightly more enriched in females

at 1.25:1. There was only a slight difference in the HY sex ratio in July compared to August (1.20:1 vs. 1.30:1).

Adults showed differences from month to month in the male:female ratio. Based on total captures, the ratio was 1.36:1 in May, increased in males in June to 2.45:1 while females spent time incubating, then increased in females in July by dropping to 1.23:1 as more females came for food for their newly fledged young. By August when the nesting duties had ceased, females outnumbered males by 2.50:1 (0.40:1 M:F ratio).

Age/Sex Ratio Variations at Vischer Ferry - Table 6 presents Vischer Ferry data similar to that from Jenny Lake in Tables 4 and 5, however, restricted to the month of May. The sex ratio among new bandings was nearly 50:50 (1.03:1) of males to females, but strongly favored males among returns by 3.37:1, giving a combined total capture ratio of 1.33:1, very similar to the 1.36:1 ratio at Jenny Lake in May. Despite the similar combined capture sex ratios, the Vischer Ferry average consisted of two divergent ratios for bandings and returns, while at Jenny Lake the two component ratios were similar.

The highest ratio of males among bandings and total captures at Vischer Ferry occurred in the 11-20 May period. The sex ratio for returns increased gradually through the month. Female captures very slightly exceeded males at month end (M:F ratio of 0.97:1).

The overall Vischer Ferry ASY:SY ratio among males varied from 3.23:1 for new bandings to 5.31:1 for total captures. The respective values at Jenny Lake for May only were 5.25:1 and 7.47:1.

At Vischer Ferry there was a strong gradient in the ASY:SY male ratio from the beginning to end of May, suggesting preferential early arrival of ASY's ahead of SY's, especially by returning ASY's. For newly banded birds, this ASY:SY ratio declined from 10.0:1 to 2.69:1 to 2.13:1 through the month. Among total captures (now including returned males that had presumably previously bred locally), the ratio ranged even more widely: from 18.0:1 for 1-10 May, to 5.06:1 for 11-20 May, to 2.63:1 for 21-31 May. These data, along with the

greater return rate of males over females at Vischer Ferry (Table 1), suggest a possible stronger breeding site fidelity by these males.

The Jenny Lake sample of males was too small ($n = 34$) to conduct a similar May only analysis; however, Table 4 shows the seasonal outnumbering of ASY to SY males greatest in May and declining thereafter. Data from both locations agree on early season preponderance of arriving ASY males over SY's.

Annual Capture Variation at Both Locations - The results in Figures 1 and 2 show at least two similarities between the two banding sites: 1) considerable annual variability in capture rates, and 2) slightly positive regression trend lines.

The peak capture rates for the years 1983, 1985, and 1992 in Figure 1 are the result of much larger than usual numbers of grosbeaks (34-55 per year) during years of average or slightly higher coverage (25-33 BS/year). The year 1983 was especially eventful. Grosbeaks were constantly present at the feeders: 55 were captured, 52 of them new. It was never apparent, based on conditions at Jenny Lake, why numbers increased or declined in various years. Banding effort in 1983 was routine. Casual observation through the years on birds appearing at the feeders, even when nets were closed, confirmed the variability in the number present from year to year.

The variability at Vischer Ferry, shown in Figure 2 is, in part, weather related. Since our banding schedule was limited to Friday evenings and Saturday mornings, unfavorable weather on Friday in the form of rain, excessive wind or cold (frost was not uncommon), and once a flood, caused cancellation of some of our banding activity. The data from 1979, 1982, 1986, and 1989 represent years of lesser coverage (241 to 561 net-hours per year). If these data are excluded from the analysis, the regression line flattens slightly and becomes: Total Captures = $0.019(\text{Year}) + 11.281$. This exclusion provides no improvement in the regression fit as both F and r decrease to 0.00894 and 0.0229, respectively.

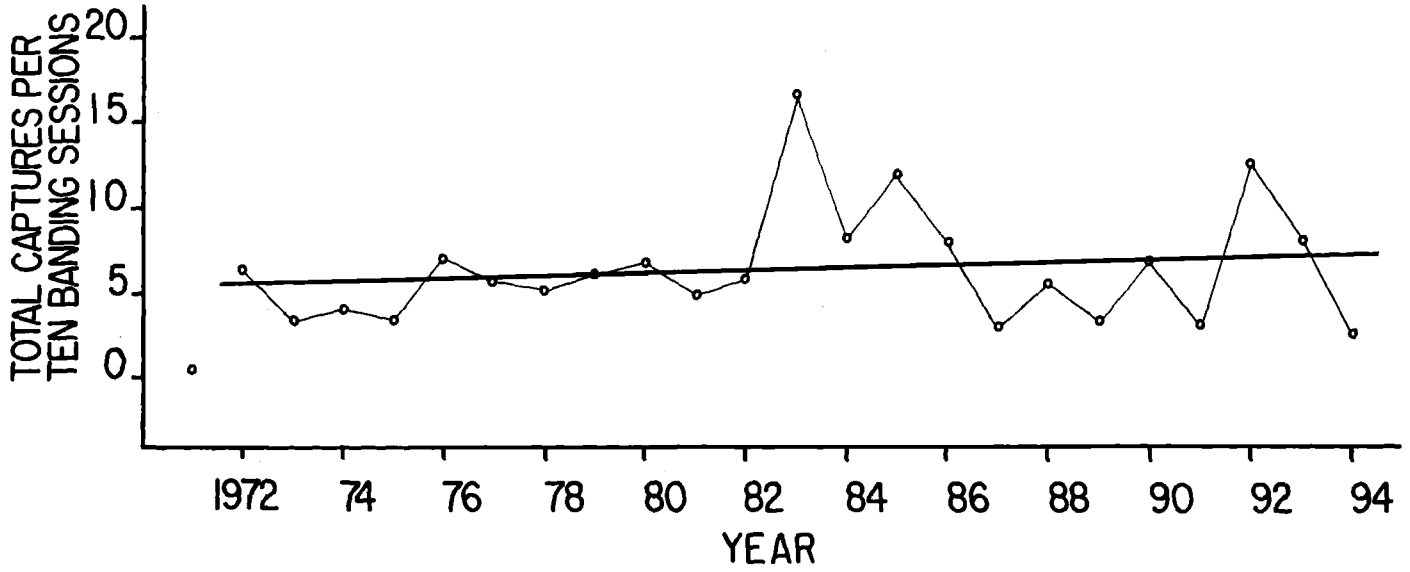


Figure 1. Annual variation of total captures of banded and returned Rose-breasted Grosbeaks at Jenny Lake, 1972-1994, expressed as total captures per ten banding sessions.

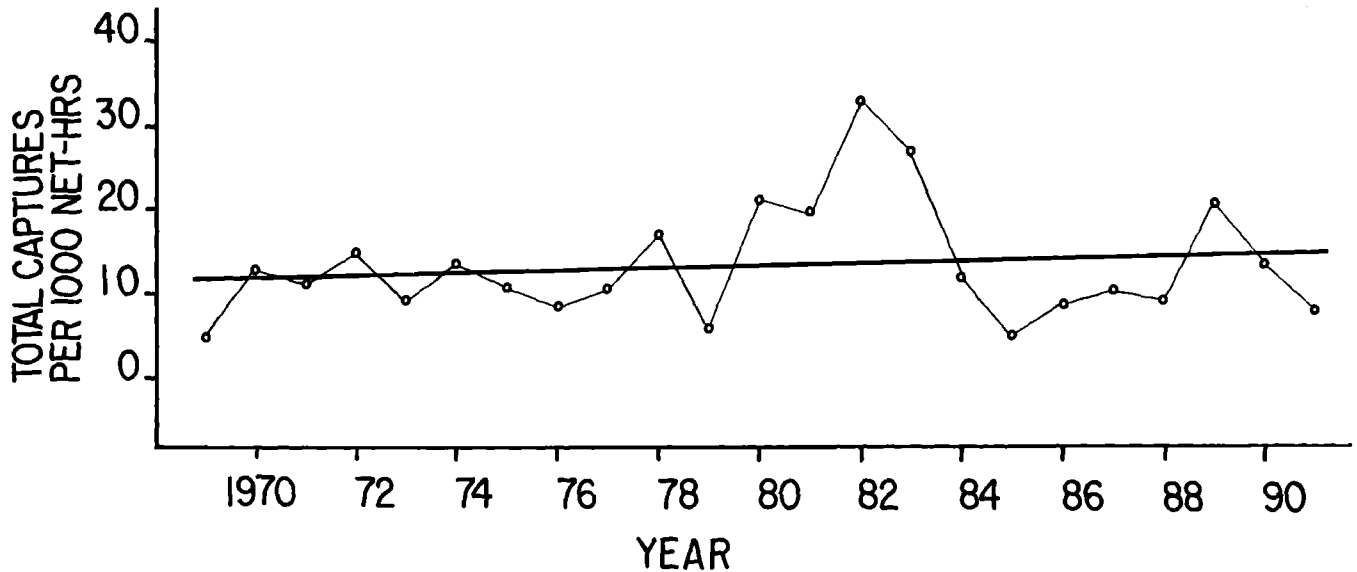


Figure 2. Annual variation of total captures of banded and returned Rose-breasted Grosbeaks at Vischer Ferry, 1969-1991, expressed as total captures per 1000 net-hours.

SUMMARY

Return rates of banded female Rose-breasted Grosbeaks at two New York banding locations were similar at 13.5 and 14.2%. Male return rates differed considerably (29.0 vs. 16.9%) with the greatest differences among SY males (26.9 vs. 10.6%). The lower rates of return occurred at the location where grosbeaks were captured at feeders. The male return rate was similar to the female rate at the feeder location, but strongly favored males by over 2:1 at the non-feeder location. None of the banded HY's at the feeder location was captured as a return.

Longevity was greater among the birds at the feeder station. The oldest female was ten years, one month; the male, nine years, 11 months. Both samples of birds appeared to consist primarily of local breeders as opposed to transients. Annual totals were variable at both locations, but showed stable trend lines.

At both locations ASY males showed a strong tendency to arrive earlier than SY males; a tendency most pronounced among returning ASY's that had previously bred in the area. The M:F sex ratio favored males and was similar at the feeder and non-feeder location at 1.46:1 and 1.33:1, respectively. The M:F ratio of banded HY's at the feeder location was 1.25:1.

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