

Research Report - Blue Jay

As ecologists come to think in terms of ecosystems, the population changes of interacting organisms become important. During my fifty years of bird observation at Mohonk Lake, the Blue Jay (*Cyanocitta cristata*) has changed status from rare to common, at all times of the year.

For historical perspective it is noteworthy that E.P. Bicknell, during his visits to the Catskills in 1880-82, stated that Blue Jays were often heard about the mountains. E. H. Eaton's Birds of New York, 1914, states: "In New York it is a resident of all parts of the State but is a common species only in the less settled districts, seeming to prefer evergreen or mixed woodlands." In the spring of 1917 John Burroughs remarked on the unusually large migration of Blue Jays at West Park. He had seen not one the previous winter, which was unusual (The Birds of John Burroughs, by Jack Kligerman, 1976).

Population Trends at Mohonk Lake

My records begin in 1927 with 1 to 5 Blue Jays seen between March and November at five different locations within a half mile of Mohonk Lake. The species was noted as "very rare" in winter. In 1928, April 2nd was recorded as the migration arrival date, with the additional note that in the fall Blue Jays came to the Garden for acorns. This population level apparently continued through 1934, with rare winter and few spring records.

Beginning with 1934-35 we began to see a few Blue Jays in winter in the woods, not at bird feeders. The species was also more evident that spring. In 1939 the first nesting was recorded. This is described below. During the following decade this somewhat higher population continued. In 1951 and 1952, I noted that Blue Jays were absent from near the Mountain House through the summer (see Appendix 1).

1953 seems to be the year of increase in numbers. On 2 August I heard a Jay at the Mountain House and made note that it was the first summer record in the "winter area". On 29 September I recorded a probable migration. At the end of November there were "more than usual" in the area.

The same wording was used in May 1954. In the fall, migrants were recorded on three different days, with 53 birds over Sky Top on 24 September. My records indicate that the numbers remained the same for both winter and summer in 1955 and 1956.

1957 is noteworthy because two Blue Jays were banded, the first in 30 years of banding. See below for details.

The year 1958 stands out as the time of a dramatic increase in Blue Jay numbers during both migrations and the following winter. On 20 May I noted an "unprecedented number observed generally in last 10 days. Seen all over the mountain. Nine banded." For the summer I recorded that the normal number nested. After "more than usual through fall", 15 were reported on Mohonk's Christmas census compared to 2 the previous year.

During the period 1959 through 1961 the number of Jays continued higher than the mid-1950's, with minor fluctuations noted. For the winter of 1961-62 they were recorded as very scarce, both at Mohonk and elsewhere in Ulster County. By fall the number was high again and 28 were banded for the year. The Christmas count at Mohonk reported 17, the largest number yet recorded.

The fluctuations of Blue Jay population at Mohonk during the last fifteen years, 1962-1976, are suggested by Appendix 1. Unfortunately, data were not recorded for certain seasons of some years, making analysis for trends more difficult. Winter numbers have varied, but there have been some present every year, whereas in the early 1930's Jays were rare or absent in winter. Similarly, summer numbers have varied, but always some were present at a level higher than the early 1930's. Spring and fall migration have been evident when field observation has been possible. Previous to 1953 migration sightings do not appear in the records, which I believe indicates that numbers were so small that the movements were not noticeable.

In Appendix 1 are count numbers for the Mohonk segment of the Audubon Christmas census conducted by the John Burroughs Natural History Society. Each year the same routes of walking and driving have been covered, in an area about 2 miles long and 1 mile wide with Mohonk Lake near the center. Both the Mohonk and the Ulster County censuses have averaged much higher, starting with 1958, but, there has been considerable fluctuation in numbers.

An effort has been made to locate other observers in this area who have recorded Blue Jay populations for a comparable time. Fred Hough, who lives some five miles northwest of Mohonk Lake in the Rondout Valley, told me that he has seen no significant change in numbers of this bird in the country near Kripplebush during the last thirty years. In his area during that period the encroachment of forest in abandoned farm fields would seem to have created more habitat congenial to Blue Jays.

#### Food Habits and Behavior

On 3 July 1966 two Mohonk guests reported seeing a Blue Jay eat two young Red-eyed Vireos from a nest in a Cut-leaved Beech in the garden.

On 12 December 1933, while watching birds feeding at our shelves, I saw a Blue Jay fly down to a low stone wall and pick up something which he carried to a branch and spent several minutes pecking and eating. He then flew down to an oak stub and deposited the remainder in a small crevice in the bark. He seemed to pick up other things and deposit them on top of the hidden object. Investigation showed the object to be a crust of whole-wheat bread about an inch long which he had covered with a smaller-sized piece of wood and a small quantity of snow.

On 1 March 1952 5 Blue Jays were seen teasing a Screech Owl perched on the rough stone foundation of the Mohonk Mountain House.

On 1 October 1963, 11:30 a.m., about 25 were seen flying low over the trees on Sky Top, presumably migrating. At least 3 were carrying what looked like an acorn in their bills.

On 30 August 1970 at my feeder at the Elms 2 young were still begging food from parents.

In October 1973, Fred Hough watched a Blue Jay placing acorns in his lawn at Kripplebush.

In January, 1976 I watched one at my elevated platform feeder as it cleared away snow (about two inches deep) to get at cracked corn. It flipped its bill sideways, alternately right and left, with a small shower of snow going eight inches or a foot.

#### Molt

On 12 July 1962, as an adult was banded, molt was noted. The first two primaries (counting from the back) in each wing were new, and the third on each side was 3/4 grown. The tail feathers were worn.

#### Enemies

In 1930 the remains of a plucked Blue Jay were found on the Peregrine Falcon nesting ledge at Sky Top.

#### Nesting

On 15 May 1939 a nest containing 2 eggs was found along Birchen Trail just below the Sky Top talus. On 28 May there were 3 eggs and the bird did not flush till I was only four feet away. On the same date, a nest was found at Millbrook Mountain about seven feet above the ground, also with 3 eggs. The adult flushed when I was some eight feet away.

In 1966 a nest was found in a White Ash tree at 45 feet, and in 1967 one was located some 35 feet up in a White Elm in front

of my home (The Elms). The same year a nest was found in the framing structure under the roof of a summerhouse on upper Laurel Ledge road.

The absence of other nest records merely means that they did not happen to be found. Blue Jays are secretive and rather silent while on territory.

### Migration

The first recorded observation of Blue Jay migration in flocks at Mohonk was 29 September 1953. Perhaps before that the numbers were smaller, and migration was not distinguished as such. During the last 24 years migration was recorded as follows:

	<u>Number of years recorded</u>	<u>Average</u>	<u>Earliest</u>	<u>Latest</u>
Spring	8	14 May	3 May	27 May
Fall	17	25 Sept.	14 Sept.	8 Oct.

The normal pattern of migration that I have observed is strung-out groups of 10 to 25 birds flying silently past within ten meters of the treetops, from northeast to southwest.

### Banding

From 1929 through 1934 a considerable amount of banding was carried on at Mohonk, at all times of year, adjacent to Oak Cottage and through the Mohonk Gardens. Traps were used and some nestlings were banded. No Blue Jays were caught.

Between 1935 and 1960 relatively little banding was accomplished at times of year and places where Blue Jays might have been caught. From 1961 to the present varying amounts of banding were done, principally at the Elms, but at Oak Cottage (the original site of our banding work) and the Mountain House. During this period some 350 Blue Jays were banded and 75 returns taken.

The above detail is given as another indication of spectacular increase in Blue Jay population from the earlier to the later period of banding. This is shown graphically by Appendix 2, which plots the Blue Jay banding at a scale ten times that of the total banding of all species. The peaks of general banding during those years represent a concentration of effort on certain species, as Juncos and Purple Finches.

Appendix 3 shows the distribution of banding by season. I believe that the near-absence of fall migration bandings is the

result of the Jay's food choice at that time of year. Acorns generally are available then and are preferred to the baits used for banding. The average number banded in summer and winter seems to me to represent a reasonable proportion of the population at Mohonk at those times. The high proportion of spring migration banding would seem to be the result of the great number of Jays going through the area and the acceptability of baits in use. See reference in the discussion of returns.

Blue Jay returns are listed in Appendix 4, separated by season of banding and of return. A full analysis of the returns has not yet been made, but a few conclusions seem possible using the same categories as in my study of Juncos: 1) a year-round resident is a bird whose banding and/or return records bridge a migration; 2) a seasonal resident has been recorded only in summer or winter; 3) a migrant has been recorded only during migration.

On this basis, 4 of 46 birds were year-round residents, 29 were seasonal residents, and 13 were migrants. I suspect that if more regular summer banding had been feasible, many of the winter residents would have turned out to be year-round residents. The seasonal distribution of Blue Jay banding (or returns) closely follows that of all birds I have banded. For all species, summer is a difficult season for banding.

The overall ratio of returns and recoveries to banded Blue Jays is 13.5%. This is comparable to my total ratio of 14% for 15,586 birds banded during 49 years. Several of the returns indicate the potential life span of Blue Jays; one 7 years, two 8 years, and one 9 years.

Appendix 5 shows the three recoveries thus far recorded. These add a little more evidence of the complexity of the Blue Jay's seasonal occurrence. The Jay banded in early September had traveled some 900 miles southwest in the ensuing two months. A winter-banded bird turned up in eastern Pennsylvania during migration a year and a quarter later. An immature Blue Jay banded in late August was found dead near Rochester, N. Y., in late December the following year.

### Summary

During the late 1920's the Blue Jay at Mohonk was rare in winter, not evident in the spring and fall migrations, and uncommon in summer. An increase in number started in 1953 and became marked in 1958. Since the early 1960's the population has stabilized near the high level, with minor fluctuations. The information from banding (first in 1957), returns, and recoveries suggests that Blue Jay movements are irregular, perhaps related to food. Migrant individuals may not always winter in the same place.

Why did the dramatic increase occur at Mohonk? It seems possible that, following the loss in the 1920's of American Chestnut as a major component of Shawangunk forests on better soils, the niche was filled by Red Oak, which could make more mast available to Jays than the chestnut. This thirty-year interval would be about right to give a quantity of acorn production. I do not believe that bird feeders had an influence, as they may have in the parallel Cowbird increase. The fact that Blue Jays and Cowbirds increased in population during the same period in the late 1950's suggests to me the hypothesis that the elimination of Peregrine Falcon predation during that decade may have been the factor that precipitated the change for both species. Although Jays may rob nests of small birds, their increase at Mohonk has had less impact than that of Cowbirds may have had. The competition for acorns in fall and winter is with mammals--deer, gray squirrels and chipmunks--rather than with other birds.

Dan Smiley  
The Mohonk Trust  
New Paltz, NY 12561

## BLUE JAY INTERACTIONS

### Plants

Acorns  
American Chestnut  
Cut-leaved Beech (Vireo nest)  
Evergreens  
Mixed woodlands  
Red Oak  
White Ash (nesting)  
White Elm (nesting)

### Animals

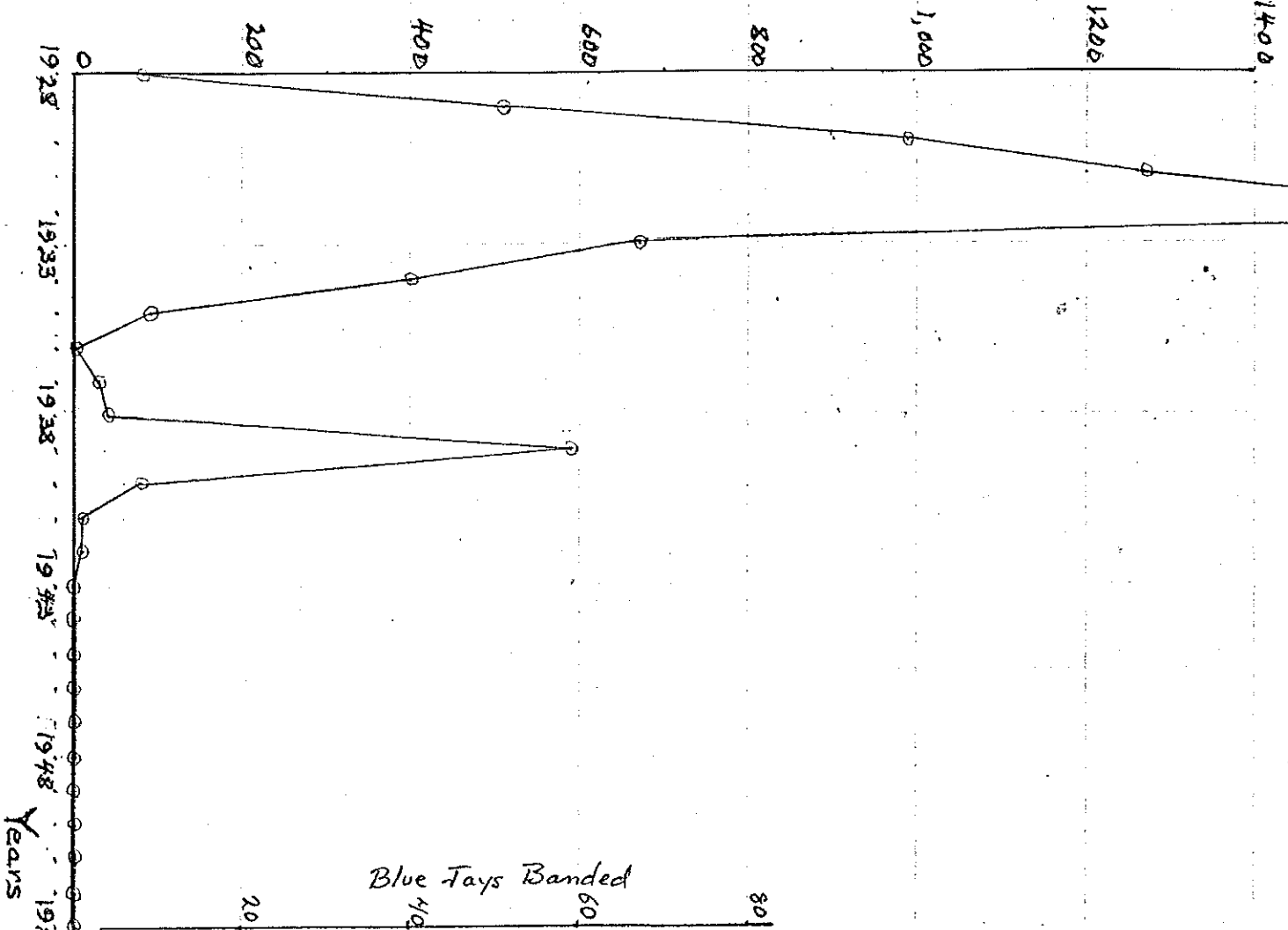
Chipmunk  
Cowbird  
Deer  
Gray Squirrel  
Junco  
Peregrine Falcon  
Purple Finch  
Red-eyed Vireo  
Screech Owl

### Human

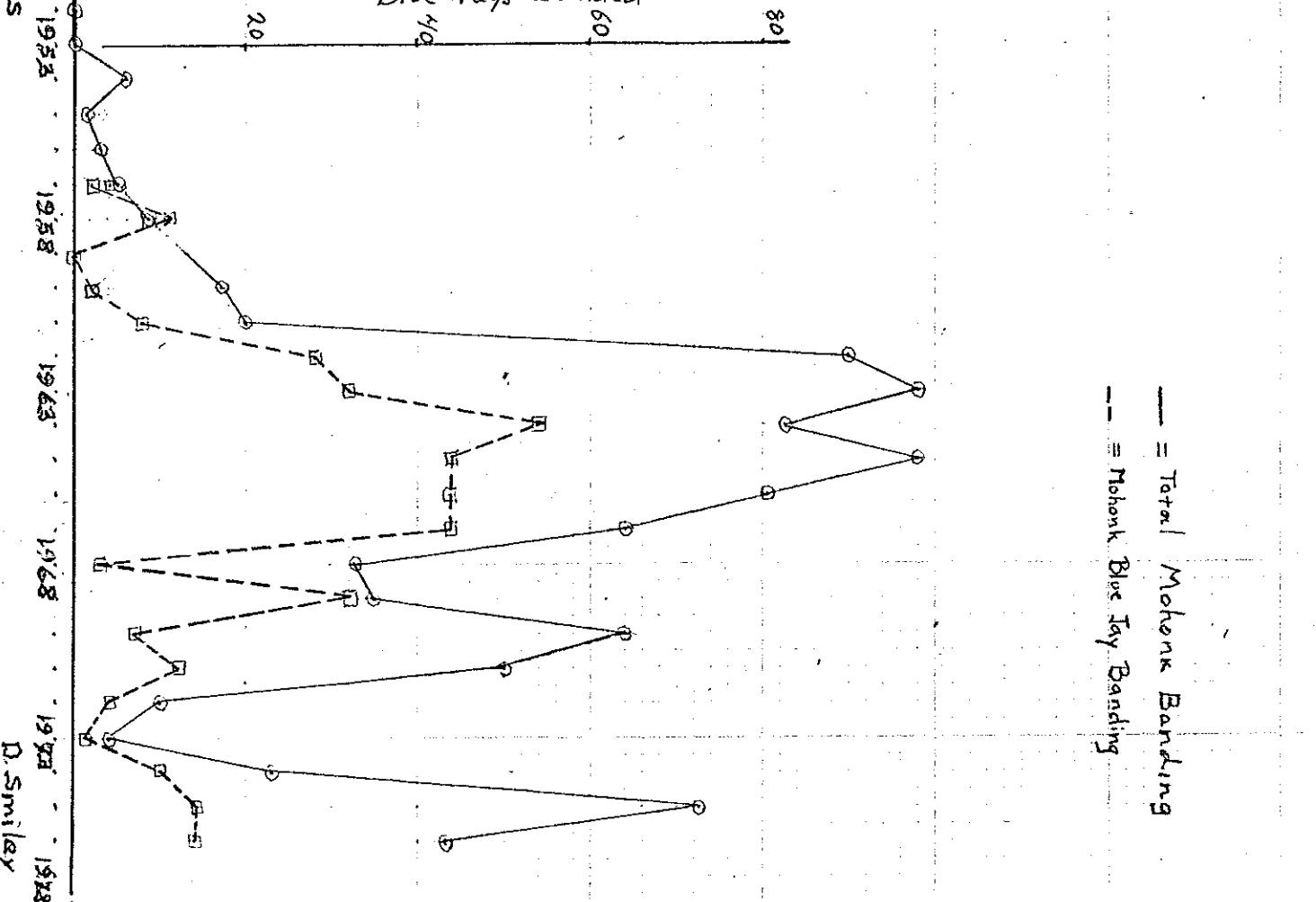
Feeders  
Bread crust  
Buildings (nest in summerhouse)

# Birds Banded at Mohawk 1928-1976

## Birds Banded (all species)



## Blue Jays Banded



— = Total Mohawk Banding  
 - - - = Mohawk Blue Jay Banding



# Blue Jay Banding Mohawk

27 Feb. '77

Appendix #3

	Winter		Spring May	Summer 1 Jun. - 10 Sep.	Fall 11 Sep. - 15 Oct.	Year
	1/1 to 4/30	10/1 to 12/31				
1922 - 1956	none		none	none	none	0
1957	0	1	0	0	1	2
1958	0	0	11	0	0	11
1959	0	0	0	0	0	0
1960	0	1	1	0	0	2
1961	0	0	1	7	0	8
1962	0	9	2	16	1	28
1963	9	0	16	7	0	32
1964	0	1	29	20	4	54
1965	1	0	37	6	0	44
1966	0	3	17	22	1	43
1967	24	0	12	7	0	43
1968	1	1	0	1	0	3
1969	1	1	30	0	0	32
1970	2	0	4	1	0	7
1971	1	0	11	0	0	12
1972	0	0	4	0	0	4
1973	1	0	0	0	0	1
1974	1	9	0	0	0	10
1975	8	5	1	0	0	13
1976	0	1	13	0	0	14
<b>Total</b>	49	32	189	87	7	364
<b>Average</b>	2.5	1.6	9.5	4.4	0.4	18.2
<b>by Occurrence</b>	4.9	3.2	12.6	9.7	1.7	-
<b>%</b>	22		52	24	2	-

D. Smiley

Mohawk:

Appendix #4 Blue Jay Returns

BAND #	BANDED				RETURN				Status	No. Returns
	W.	V.	S.	F.	W.	V.	S.	F.		
543-84816		'61				'65			Migrant	1
543-84828			'62			'63, '64, '66	'64, ('66)		M-SR	4
543-84836			'62		'67		'64, '65		Resident	3
543-84838			'62		'63, '65	'64		'64	"	4
543-84841			'62			'69			M-SR	1
543-84846	'62						'66		Resident	1
543-84849	'62				'65	'65			M-SR	2
543-84850	'62				'65, '69				"	2
543-84851	'62				'69	'65			"	2
543-84852	'62				'65	'63			"	2
543-84864		'63				'67			Migrant	1
543-84866		'63				'65			"	1
543-84867		'63				'65			"	1
543-84868		'63				'66, '69			"	2
543-84873		'63				'64, '65			"	2
543-84889		'64				'69	'64		M-SR	2
543-84893		'64				'65	'64		"	2
723-53924			'64			'65			"	1
723-53929			'64			'67			"	1
723-53931			'64			'65			"	1
723-53936			'64		'69				Resident	1
723-53938			'64			'65			M-SR	1
723-53940				'64	'67	'65, '66			"	3
723-53942				'64	'65	'66			"	2
723-53946		'65			'67				"	1
723-53955		'65				'67			Migrant	1
723-53959 old band 543-84602	'57				'63	'65			M-SR	2
723-53960		'65				'66			Migrant	1
723-53961		'65				'66			"	1
723-53977		'65						'66	M-SR	1
723-53995		'66				'68			Migrant	1
893-53507		'66			'69, '69				M-SR	2
893-53509		'66				'69			Migrant	1

2)

Mohawk  
Blue Jay Returns

Band #	BANNED				RETURN				No. of Ret.	
	W.	V.	S.	F.	W.	V.	S.	F.		
873-53511		'66			'66, '67	'69			M-SR	3
873-53512 <small>(old band 873-84805)</small>		'58				'67	'62, '64, '66		"	4
873-53513			'66		'71				"	1
873-53514			'66			'67, '69			"	2
983-34670 <small>(old band 873-53543)</small>	'67				'75				"	1
873-53562	'67					'69			"	1
983-34621	'70					'70			"	1
983-34623		'70				'73			Migrant	1
983-34624		'70				'71			"	1
983-34645	'74				'75				M-SR	1
983-34678		'76			'77				"	1
983-34685		'76						'76	"	1
1013-96375		'75			'76, '76				"	2
<u>46</u>										

Total  
%

10	23	11	2 / 46	23	39	10	3 / 75
22	50	24	4	31	52	13	4
						Migrant	- 13
						Resident	- 4
						M-SR	- 29

Age Records

543-84802 923-53957	'57				'63	'65			8 Years	2
543-84285 873-53512		'58				'67	'62, '64, '66		9 Years	4
873-53543 983-34670	'67				'75				8 Years	1
543-24241			'62			'69			7 Years	1

D.S., K.B.

Mohonk:  
Appendix #5 Blue Jay Recoveries

Band No.	Date banded at Mohonk	Recovered at / by	Date recovered	Time: months	Distance: miles	Remarks:
542-84822 (A)	3 Sept. '61	(?), Alabama a hunter	4(±) Nov. '61	2	900(±)	
543-84859 (A-U)	28 Jan. '63	Wyomissing, Pa. T. Ravel	25 Apr. '64	15	130	
872-53527 (I-U)	26 Aug. '66	Rochester, N.Y. S. Faith	31 Dec. '67	16	200	found dead
	Date banded elsewhere	Place banded	Date recovered at Mohonk			
1013-96375	19 May '75	Litchfield, Conn. G. Loary	26 Apr. '76 & 1 Dec. '76	11	50	Repeat 5/73

Appendix #1

Blue Jay Population at Mohonk  
1950-1976

	Winter	Spring	Summer	Fall	Banding	Christmas Mohonk	Courts District
1950	-	-	-	-	-	7	26
1951	normal	-	none	normal	-	2	42
1952	more	more	none	more	-	1	21
1953	more	-	more	more	-	1	38
1954	-	more	-	more	0	2	28
1955	normal	-	-	normal	0	2	134
1956	normal	-	normal	-	0	3	112
1957	-	-	normal	more	2	2	40
1958	-	very high	normal	more	11	15	280
1959	-	more	more	-	0	3	194
1960	normal	-	more	-	2	6	169
1961	-	-	more	more	2	1	47
1962	scarce	-	more	more	28	17	62
1963	normal	more	more	-	32	7	90
1964	less	more	normal	less	54	8	53
1965	less	-	-	-	44	4	63
1966	less	less	-	-	43	14	369
1967	more	-	less	more	43	3	269
1968	less	-	less	-	3	4	128
1969	more	-	less	-	22	4	282
1970	less	-	less	-	7	13	330
1971	-	-	-	-	12	0	251
1972	-	-	-	less	4	13	310
1973	-	-	-	-	1	9	402
1974	-	more	more	-	10	13	257
1975	normal	normal	less	-	13	5	268
1976	less	normal	normal	-	14	12	272