

## SPRING MIGRATION OF BLUE JAYS AT WHITEFISH POINT, MICHIGAN, AS STUDIED THROUGH BANDING

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Abstract.—Banding data from 1307 Blue Jays (*Cyanocitta cristata*) banded during spring migration at Whitefish Point, Michigan from 1980–1987 were analyzed to determine if first year birds (SY) predominated, and where Blue Jays go after leaving the point. Seventy-one percent of the Blue Jays banded retained at least one dull blue greater secondary covert and could be aged SY; the remainder could not be aged. The proportion of ageable birds (SY versus AHY) captured during a given 5 d period in different years was highly variable. AHYs preceded known SYs in the timing of migration in 1980 but not in 1985. Recoveries suggest Blue Jays travel north to east, 150 to 700 km, after leaving Whitefish Point. Most recoveries were from birds captured in fur traps during winter in northern Ontario and western Quebec.

### ESTUDIO DE LA MIGRACIÓN PRIMAVERAL DE *CYANOCITTA CRISTATA* MEDIANTE EL USO DE ANILLAS EN WHITEFISH POINT, MICHIGAN

Sinopsis.—Los datos obtenidos entre 1980–1987 del anillamiento de 1307 individuos de *Cyanocitta cristata* en Whitefish Point, Michigan, durante la migración primaveral, fueron analizados para determinar si predominaban las aves de primer año (PA), y hacia donde se dirigían éstas después de pasar por el área de estudio. El 71% de las aves anilladas retuvieron al menos una cobija secundaria mayor de color azul opaco por lo que su edad pudo ser determinada como aves de PA; al resto de la muestra no se le pudo determinar la edad (NPDE). La proporción de aves PA versus NPDE, resultó sumamente variable durante el periodo de 5 días de trabajo en diferentes años. Las NPDE precedieron a las reconocidas como PA durante la migración de 1980, aunque no fue igual durante el 1985. Las aves recobradas sugieren que la especie viaja del norte al este, entre unos 150 a 700 kms. después de abandonar a Whitefish. La mayoría de las aves recobradas fueron capturadas durante el invierno en trampas para animales de piel en el norte de Ontario y el oeste de Quebec.

Blue Jay (*Cyanocitta cristata*) migration has been examined in the eastern U.S. (Stewart 1982), in Illinois (Graber et al. 1987), and west of the 100th meridian (Smith 1979). It has been suggested that first year birds make up the bulk of migrants (Gill 1941, Hardy 1961, Kennard 1980), and that most adults are sedentary except in the extreme northern portion of the breeding range where they are believed to be regularly migratory (Forbush 1927, Gill 1941). However, Stewart (1982) and Wenger (1975, in Smith 1979) found no age difference in migratory

behavior. All the above studies dealt with bandings of both resident and migratory individuals. In this paper we summarize spring banding of migrating Blue Jays at Whitefish Point, Chippewa County, Michigan, a location 325 km from the northern edge of the breeding range (Godfrey 1986) and farther north than previous studies. The objectives were to determine whether most migrants were first year birds, to learn where Blue Jays go after leaving Whitefish Point, and to show the need for further research on Blue Jays in the northern portion of the range.

#### METHODS

Whitefish Point is located on the southeastern shore of Lake Superior in the eastern Upper Peninsula of Michigan (Fig. 1). Most Blue Jays were captured in 61 mm stretched, mesh mist nets set near a feeder. A few were captured in 121 mm stretched, mesh mist nets used to capture Sharp-shinned Hawks (*Accipiter striatus*, Devereux et al. 1985), or in 30 and 36 mm stretched mesh mist nets set out to capture other migrant passerines. Since banding for this study was done during vacations, we were never able to band Blue Jays during their entire migratory period (May–early Jun.) in any single year. Banding periods varied from 1–5 wks during 1980–1987, except for 1982 and 1984 when no banding was done (Table 1).

Blue Jays were aged SY if they retained any dull blue greater secondary coverts (Pitelka 1946); otherwise they were aged AHY since SY birds that lost all these feathers during post-juvinal molt could not be reliably distinguished from older birds (Lamb et al. 1978). The migratory period was broken into 5 d segments to examine differences in the timing of migration of known SY and AHY individuals and to examine between year variation in the proportions of these two age classes. *G* tests (Zar 1984:71) were used for all statistical analyses. Results were considered significant if  $P < 0.05$ .

#### RESULTS

A total of 1307 Blue Jays were banded from 1980–1987; 71% could be aged SY (Table 1). We captured no Blue Jays prior to 5 May, despite intensive hawk netting efforts prior to this date during most years of the study. AHY individuals preceded birds which could be aged SY in 1980 ( $G = 99.6$ ,  $df = 3$ ,  $P < 0.001$ ), but not in 1985 ( $G = 3.2$ ,  $df = 3$ ,  $P > 0.25$ ). Coverage was insufficient to examine this for other years (Table 1). During three 5 d periods there were sufficient birds banded to allow statistical comparison of between year differences in the proportion of known SY versus AHY individuals (Table 1); there was a highly significant difference ( $P < 0.001$ ) in all three comparisons (Table 2).

Seven (0.5%) of the 1307 birds banded have been recovered as of 30 Nov. 1989. Recoveries suggest that birds travel N to E after leaving Whitefish Point (Fig. 1). All winter recoveries resulted from birds captured in fur traps. The distance from Whitefish Point ranged from 150 to 560 km for winter recoveries. All birds recovered in winter were SY

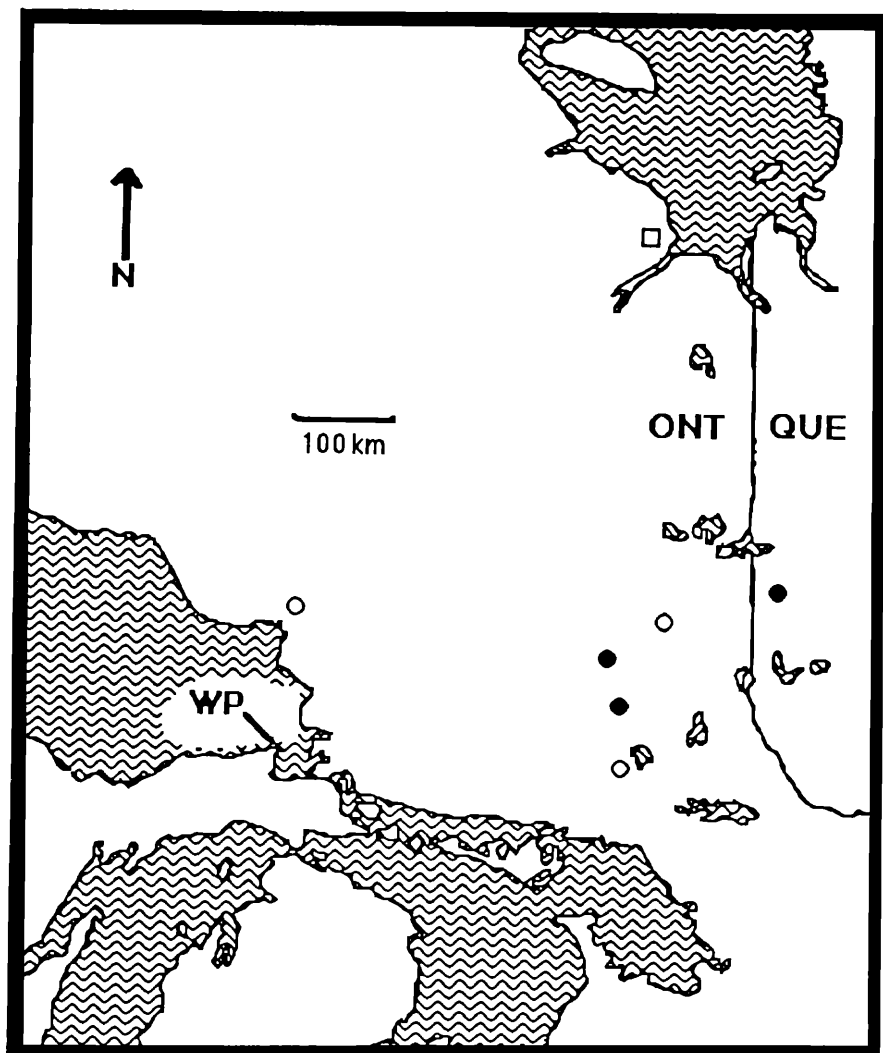


FIGURE 1. Recovery locations of Blue Jays banded at Whitefish Point, Michigan. Open circles represent birds recovered the winter following banding, closed circles birds recovered the second winter following banding, and the open square represents the summer recovery.

when banded. The only summer recovery was an AHY bird recaptured by Christopher C. Rimmer on 29 Jun. 1985 at James Bay, Ontario, 36 d after it was banded at Whitefish Point. This recovery was 700 km NE of Whitefish Point and 225 km N of the breeding range (Godfrey 1986). The bird was not in breeding condition (Rimmer, pers. comm.).

Only one (0.08%) of the 1307 birds banded has been recaptured at

TABLE 1. Numbers of Blue Jays banded at Whitefish Point, Michigan from 1980-1987.\*

Year	May												June		
	5-10		11-15		16-20		21-25		26-30		31-4		5-9		
	SY	AHY	SY	AHY	SY	AHY	SY	AHY	SY	AHY	SY	AHY	SY	AHY	
1980			1	2			50		4	181		6	86	1	
1982													17	6	
1983									61	70		27	1	1	
1985	31	4	6	1					17	22		8	23	4	
1986	2	3	71	96	1	4									
1987	1	49													
Totals	34	56	78	99	111	54	297	118	273	41	127	11	7	1	

\* Includes only Blue Jays banded by the authors.

TABLE 2. Statistical summary of the proportion of known SY versus AHY Blue Jays banded during different years for the given 5 day period.

5 day period	Years compared	<i>n</i>	G
5-10 May	1985, 1987	85	77.9*
21-25 May	1980, 1983, 1985	415	63.3*
26-30 May	1980, 1983, 1985	314	40.7*

\* =  $P < 0.001$ .

Whitefish Point in a subsequent spring; this bird was a SY and was recaptured four springs later.

#### DISCUSSION

Our return rate (0.08%) was much lower than reported by others (Bryens 1949, Dater 1970, Kennard 1980, Middleton 1974), supporting our contention that most of our banding involved migrating individuals.

The main purpose of this study was to determine if first year birds predominated during spring migration. Seventy-one percent of the Blue Jays banded in this study could be aged SY, which supports the hypothesis that most migrants were first year birds. However, the proportion of birds captured in a given 5 d period in different years that could be aged (SY versus AHY individuals) was found to be highly variable. This could be due to differences between years in the number of first year birds completely molting all their greater secondary coverts during post-juvinal molt, or to differing numbers of adults migrating during different years. A high proportion of first year birds molt all their greater secondary coverts in some populations (Dater 1970, Lamb et al. 1978, Pitelka 1946), but no studies have been conducted on breeding populations in Canada where birds banded at Whitefish Point seem to originate. Also, differences between years in the number of first year birds that completely molt all their juvinal greater secondary coverts has not been studied, though it has been shown that this is related to hatching date (Dater 1970). The consistently high proportion of known SY birds late in the season (after 25 May, Table 1), and the overall high number (71%) of known SY birds banded, suggest that most first year birds from this population do not lose all their greater secondary coverts. Dater (1970) also noted that few migrant birds from farther north had molted these feathers. Plumage studies with recaptured birds of known age are needed from northern Canada to find a reliable method to distinguish SY from ASY birds.

Gill (1941) and Forbush (1927) suggested that in the northernmost portion of the range adult Blue Jays regularly migrate. All our winter recoveries were from birds captured in fur traps in northern Ontario and western Quebec, so some adults overwinter, even in the northernmost portion of the range (also see Bock and Lepthien 1976). Our recovery rate (0.5%) was much lower than reported by others (Kennard 1980, Middleton 1974, Smith 1979, Stewart 1982). Our recoveries suggest this

was because many of the birds we banded remained as adults in northern latitudes where human populations are sparse and the likelihood of recovery was low. Movement to the NE, as shown by our recoveries, is typical of birds east of the 100th meridian (Graber et al. 1987, Smith 1979, Stewart 1982, and references therein). Bryens (1949) hypothesized that Blue Jays passing Whitefish Point originate west of Lake Michigan. The recoveries shown in Graber et al. (1987), and a spring recovery in central Illinois of a Blue Jay banded the previous spring at Whitefish Point (Lamb, unpubl.), support this hypothesis.

In summary, this study examined spring Blue Jay migration at a site located farther north than previous studies. Seventy-one percent of the Blue Jays banded could be aged SY but there were significant differences between years in the proportion of known SY versus unageable (AHY) birds captured during given 5 d periods. Further research is needed to elucidate a method to age all first year and adult Blue Jays from this population so that the causes of this between year variation can be determined.

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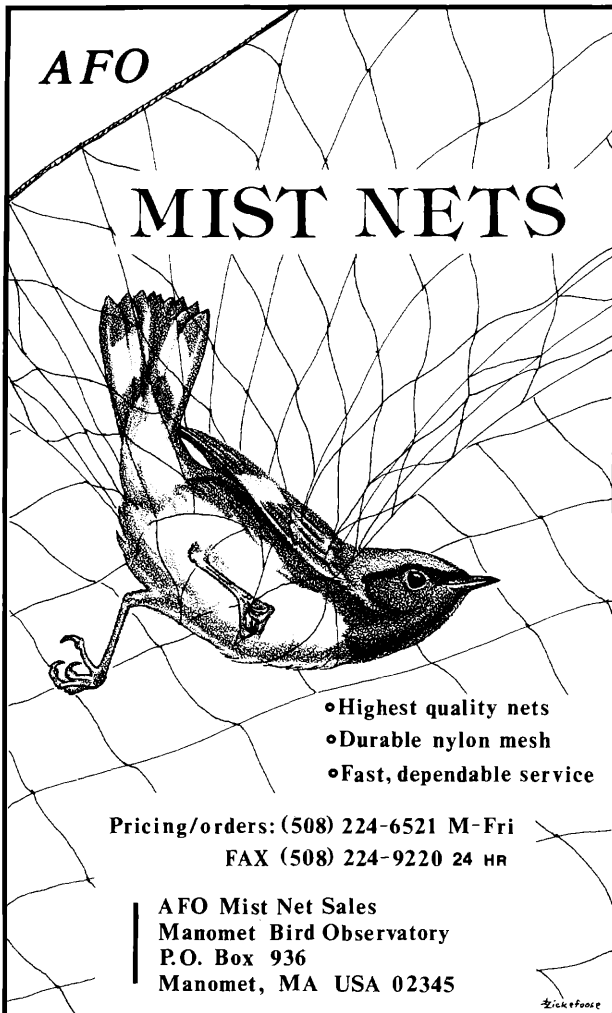
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