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I earlier suggested (Stewart 1985) that bird banders at "Operation Recovery" stations could provide data for following population trends of birds captured simply by standardizing procedures used collecting data so that all data would come from nets continually and similarly operated at the same locations. I have found that a banding station in Ohio has been operated throughout the past 12 years in the manner I consider desirable, thus providing data from both spring and autumn migrations. I am using data from this station to evaluate trends in numbers of 18 species of wood warblers captured there.

Study Area and Methods

The data used in this paper were collected by Howard and Marcella Meahl operating mist nets in the 10-ha backyard at their home near Ashtabula, Ashtabula County, Ohio, 6.4 km from the southern shore of Lake Erie. Except when weather conditions prevented safe and proper operation of the nets, 35 mist nets were operated from about daybreak until shortly before sunset from the start of 1974 through 1985. Nets were kept closed only at night and during periods of precipitation.

Numerical data I have derived are totals of birds captured and banded during each of the two six-year periods, 1974-79 and 1980-85, comparison of total numbers of birds captured in the two periods being the basis for estimates of population changes. Because of assumed greater possibility that differences might occur in susceptibility of the birds to being netted in spring and autumn than in the same season of different years, it is felt that greater confidence can be placed in comparison of changes shown in the two six-year periods than in spring versus autumn records.

The question can be raised as to whether migratory movements might differ in different years, perhaps associated with weather conditions, so that the birds' susceptibility to capture might cause variation in netting success within seasons. This problem should be largely resolved by operating mist nets throughout the migration season of a species. Also, curves I experimentally constructed using the Ohio data of totals annually captured showed much variation, and this was one reason for my pooling data into six-year periods. Another goal of my pooling of data was to reduce variation caused by small samples. But some samples are still very small, exaggerating differences.

Results and Discussion

In Table 1 are given totals captured during the two six-year periods of 18 species of wood warblers, mostly nonresident in Ohio. In autumn a total of 8166 birds were captured during 1974-79, and 4744 were captured during 1980-85, with a decline of 3422 (41.9%). In spring a total of 1351 birds were captured during 1974-79 and 916 were captured during 1980-85, with a decline of 435 (32.2%). For both spring and autumn the total for 1974-79 was 9517, and the total for 1980-85 was 5660, with a decline of 3857 (40.5%). The average annual decline was 6.8%. Data for Magnolia and Yellow-rumped warblers, the two most abundant species, were analyzed with use of 5-year running averages, and decline was shown to be generally continuous during the 12 years.

During the 12 years a total of 15177 birds were captured, with 12910 (85.1%) captured in autumn and 2267 (14.9%) captured in spring. How much of this difference resulted from loss of birds and differences in susceptibility to capture in spring and autumn is unknown. However, Wallace (1986), in a popular article, made some broad brush statements to the effect that large scale loss of songbirds occurs on their South American winter grounds. Among the possible causes for loss on their winter grounds mentioned by Wallace was disappearance of tropical forests, the winter habitat for many species of Canadian nesting wood warblers. My data are consistent with the postulate that a major loss of wood warblers occurs during winter or when the birds are in migration to their winter grounds from and back to Ohio.

The relatively large sample of Yellow-rumped Warblers captured during autumn (7724) strengthens the confidence to be placed in the estimate of decline in this species (41.3%). With decline closely similar in spring and autumn, strength is given also to estimates for percentages decline among Orange-crowned, Blackburnian, and Bay-breasted warblers, declines in spring and autumn being, respectively, 72.7 and 73.4%, 57.9 and 56.3%, 18.5 and 23.3%.

Table 1. Numbers of wood warblers captured in two six-year periods during spring and autumn and percent decline in numbers.

SPECIES	SPRING			AUTUMN		
	1974-79	1980-85	% decline	1974-79	1980-85	% decline
Tennessee (*Vermivora peregrina*)	284	268	5.6	351	135	61.5
Orange-crowned (*Vermivora celata*)	11	3	72.7	79	21	73.4
Nashville (*Vermivora ruficapilla*)	108	85	21.3	557	217	61.0
Magnolia (*Dendroica magnolia*)	245	153	37.6	637	509	20.1
Cape May (*Dendroica tigrina*)	135	76	43.7	182	150	17.6
Yellow-rumped (*Dendroica coronata*)	99	74	25.3	4868	2856	41.3
Black-throated Green (*Dendroica virens*)	8	5	37.5	273	114	58.2
Black-throated Blue (*Dendroica caerulescens*)	16	4	75.0	23	21	8.7
Blackburnian (*Dendroica fusca*)	19	8	57.9	48	21	56.3
Chestnut-sided (*Dendroica pensylvanica*)	28	8	71.4	49	30	38.8
Bay-breasted (*Dendroica castanea*)	27	22	18.5	331	254	23.3
Blackpoll (*Dendroica striata*)	31	3	90.3	224	73	67.4
Palm (*Dendroica palmarum*)	15	14	6.7	83	25	69.9
Northern Waterthrush (*Seiurus noveboracensis*)	31	29	6.5	43	22	48.8
Mourning (*Opornis philadelphia*)	47	36	23.4	76	70	7.9
Connecticut (*Opornis agilis*)	5	1	80.0	15	14	6.7
Wilson's (*Wilsonia pusilla*)	155	71	54.2	278	167	39.9
Canada (*Wilsonia canadensis*)	87	56	35.6	49	45	8.2
TOTALS AND AVERAGES	1351	916	32.2	8166	4744	41.9

Percentages of decline in spring and autumn were widely different in some species, including Tennessee (5.6 and 61.5%), Black-throated Blue (75.0 and 8.7%), Palm (6.7 and 69.9%), and Connecticut warblers (80.0 and 6.7%), Northern Waterthrush (6.5 and 48.8%). The sample of five Connecticut Warblers captured in the springs of 1974-79 with one during 1980-85 offered the best available example of a case where difference between the two six-year periods was exaggerated by small samples. The samples of Tennessee Warblers were reasonably large, with 284 and 268 for spring and 351 and 135 for autumn, yet wide difference (5.6 and 61.5%) occurred in the percent decline in spring and autumn. This disparity resulted from an unusually heavy flight of Tennessee Warblers during the spring of 1981 when 171 of these birds were captured, compared with a total of 97 during the other five springs. It is suggested that unusually large samples as well as very small ones can bias results using data from mist netting stations for following population trends of wood warblers. Need for integrating operations of several stations is indicated.

Information has been published indicating that some species of wood warblers use different routes in their spring and autumn migrations. For example, Lincoln (1979) reported that Connecticut Warblers migrate southward along the Atlantic Coast of North America and northward over the interior. The total number of Connecticut Warblers captured at our Ohio station was small, but with six captured in spring and 29 in autumn, a larger number is shown migrating through Ohio in autumn than in spring. Again, data are needed from different stations to determine whether conditions were the same in other areas.

Lincoln (1979) observed that wood warblers generally travel southward from their breeding range over a broad front, their breeding range extending hundreds of kilometers east and west. With Ohio being in the northern United States near the southern limit of the breeding ranges of many Canadian nesting wood warblers, these birds can be expected to migrate southward through the state on a broad front. By the same line of reasoning, wood warblers can be expected to return through Ohio to their breeding grounds over a broad front. With broad-front movements through the Ohio bird-netting station during both spring and autumn, comparable samples from the two seasons can be expected. However, there is still the possibility that local feeding movements of the birds may differ during the two seasons and cause differences in susceptibility of the birds to capture.

The evidence is strong that wood warblers migrating through Ohio may be on a continuing course of decline, estimated at 6.8% annually. Also, at his banding station in Alberta, Canada, during 1978-85 Jones (1986) reported an increase of 103.8% in mist-net hours of operation and decline of 78.4% in total number of passerine birds captured. I hope that other researchers will provide data testing the correctness of my findings and will determine

whether conditions are similar elsewhere. If decline is confirmed I hope this will bring concern to environmentalists so that they will seek to identify the cause or causes of the decline and will direct their efforts toward reversing the trend before wood warblers join Passenger Pigeons (*Ectopistes migratorius*) in oblivion.

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Seven Multiple-recapture Encounters of Banded Birds

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When Montgomery (1979) described the round-trip capture of a Brown-headed Cowbird (*Molothrus ater*) banded in Illinois, recaptured in Wisconsin, and returned to Illinois, there were at least two other such round-trip captures reported in the literature. They included Dexter's (1979) report of a Chimney Swift (*Chaetura pelagica*) banded in Georgia, recaptured in Ohio and returned to Georgia; and Laskey's (1973) Purple Finch (*Carpodacus purpureus*) which was banded in Tennessee, captured twice in Connecticut four days apart, and returned to Tennessee where it was captured twice in four days. In all three cases, the banding and return occurred within a span of about one year, with the intermediate foreign recapture occuring as part of the bird's intervening migration.

Since then, four nearly similar multiple recaptures have been reported (Middleton 1979), differing only in that the birds were banded at one location and recaptured twice at a foreign location. They were reported incidentally as part of another study as footnotes. The purpose of this paper is to call attention to them in this multiple-recapture context; and to report on seven other multiple recapture encounters among my own banding records. Another purpose is to assess the frequency with which these encounters may be expected to occur and to encourage additional reporting of them.

The four cases reported by Middleton (1979) involved House Finches (*Carpodacus mexicanus*) banded elsewhere and retrapped in the Philadelphia area by either him or William Pepper. In two of the cases, the birds were banded in Maryland in winter and retrapped in Philadelphia in the next two consecutive years during the spring or summer seasons. Presumably these birds bred at Philadelphia and wintered in Maryland. A third bird, banded in late autumn in Maryland, was retrapped in Philadelphia late the following autumn and again the following spring. The last bird was banded in winter in Virginia and was retrapped in Philadelphia the next two consecutive winters and the autumn following the second winter.

The seven multiple-recapture encounters I have had are as follows. The abbreviations used are: AHY = after-hatching year; ASY = after-second year; BP = brood patch; CP = cloacal protuberance; F = female; FC = fat class, scale 0-3; M = male; SY = second year; U = unknown sex; WC = wing chord, mm; and WT =weight, g; HY = hatching year.

1. **Blue Jay** (*Cyanocitta cristata*) banded by Stuart S. Wilson.

Banded:	5 Feb 1968	Deposit, NY	as SY U			
Recaptured:	29 Apr 1968	Schenectady, NY	as SY U	WC 130	WT 88.7	FC0
Recaptured:	19 May 1969	Schenectady, NY	as ASY F/BP	WC 130	WT 94.3	FC0

These results suggest that the bird was on winter range at Deposit and bred at Schenectady about 153 km northeast. The second recapture confirmed breeding.