NOTES ON THE MIGRATION OF JUVENILE OSPREYS FROM MARYLAND AND VIRGINIA

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INTRODUCTION

The migration route of Ospreys (*Pandion haliaetus*), as analyzed from banding returns, has been reported by Worth (1934, 1936), Gillespie (1960), and Henny and Wight (1969). These papers have dealt primarily with Ospreys of the northeastern United States, specifically New Jersey and New York. A recent paper by Henny and Van Velzen (1972) has geographically broadened the knowledge of Osprey migrations by including Maryland, Michigan, and Wisconsin. It is the purpose of the present paper to analyze further banding recoveries of Ospreys, specifically those of juvenile birds from Maryland and Virginia, in order to increase the understanding of Osprey migration and to learn more about the dispersal of this age group in relation to time and place after fledging.

METHODS

Recovery records prior to July 1971 for juvenile Ospreys ("juvenile" as defined here is the age between fledging and 31 December of their first year) were obtained from the Bird Banding Laboratory at Laurel, Maryland. More recent recovery data were requested from individual banders. All recoveries for this age group were used, except those within the 10-minute block in which the bird was banded. Recoveries with only month and year reported were considered valid data and were graphed in Figure 1 as the middle of the month. Although increasing error, this procedure was followed so that pertinent recoveries would not be eliminated. In Maryland, therefore, of 53 possible recoveries, 37 were used, whereas in Virginia, of 10 possibilities 10 were used, making a total of 47. Birds found highly decomposed were omitted from Figure 1, but were included in Table 1 and Figure 2. Distances from banding site to recovery locations were derived by plotting the two points on a map and measuring the straight line distance between them. Actual migration distance would likely be much longer.

MIGRATION

Table 1 and Figure 1 show that all juveniles from Maryland and Virginia remained within 100 miles of the nesting site until the last week of August. At this time, they began to migrate south along a narrow coastal route (Fig. 2) and by 15 September most had left the United States. Ospreys from the northeastern states begin migrating about one week later (Ferguson and Ferguson, 1922), with peak migrations recorded at Cape May Point, New Jersey (Allen and Peterson, 1936; Clark, 1968, 1969, 1970) and White Marsh, Maryland (Hackman and Henny, 1971) during the last half of September and the first week of October. Northeastern birds apparently do not leave the United States boundaries before October. Thus, the Virginia and Maryland Ospreys migrate one to two weeks earlier than those from more northern states.

TABLE 1. Recovery records of juvenile Ospreys from Maryland and Virginia (arranged on a North-South and East-West basis, by banding site).

No.[a]	Banding site County, Md.	Date banded	Recovery site	Distance from banding site	Recovery Date	How obtained
1.	Queen Anne's	06-27-56	Maryland	40 mi.	08-04-56	Electrocuted
2.	"	06-26-59	Colombia	2300	10-05-59	Shot
3.	Montgomery	07-27-64	Maryland	10	08-17-64	Found dead
4.	Talbot	07-02-56	Virginia	120	08-26-56	Shot
5.	"	07-02-54	N. Venezuela	2000	09-25-54	Shot
6.	"	07-02-54	Cuba	1300	09-24-54	Shot
7.	"	07-02-54	"	1150	09-21-54	Shot
8.	"	07-05-54	Maryland	10	07-18-54	Exhausted
9.	"	06-22-56	Florida	1050	12-00-56	Found dead
10.	"	06-23-59	Panama	2200	10-04-59	Injured
11.	"	07-08-71	Colombia	2100	12-24-71	Shot
12.	"	07-08-71	Virginia	80	09-16-71	Shot
13.	"	08-06-71	North Carolina	300	12-31-71	Found decomposed
14.	"	07-12-64	Colombia	2200	10-08-64	Shot
15.	"	06-21-68	Florida	800	09-12-68	Found dead
16.	"	06-27-69	Maryland	10	08-18-69	Shot
17.	"	07-03-71	Colombia	2250	10-15-71	Injured
18.	"	07-22-64	Maryland	10	07-29-64	Killed by dog
19.	"	07-11-65	North Carolina	320	09-07-65	Found dead
20.	"	06-19-69	Dominican Rep.	1450	09-07-69	Shot
21.	"	07-09-71	Cuba	1300	10-09-71	Shot
22.	"	07-09-71	Maryland	10	09-03-71	Found decomposed
23.	Dorchester	07-22-55	"	20	09-23-55	Shot
24.	"	06-17-57	Cuba	1350	10-05-57	Shot
25.	"	07-11-70	Florida	850	09-04-70	Found dead
26.	"	07-04-70	Colombia	2500	11-03-70	Shot
27.	Wicomico	06-30-70	"	2450	09-28-70	Shot
28.	"	06-30-70	Trinidad	2100	11-15-70	Shot
29.	Worchester	06-30-63	Virginia	30	08-02-63	Caught by hand
30.	Somerset	06-09-59	Cuba	1275	12-07-59	Shot
31.	Dorchester	06-28-66	Colombia	2300	10-02-66	Shot
32.	St. Mary's	06-27-57	Florida	1050	09-26-57	Found dead
33.	"	06-22-67	Colombia	2150	10-01-67	Shot
34.	"	06-22-67	"	2350	12-06-67	Shot
35.	"	06-26-68	Brazil	3000	12-28-68	Shot
36.	"	07-07-71	Colombia	2650	12-00-71	Shot
37.	Somerset	06-22-70	Ecuador	2700	11-02-70	Shot
	County, Va.					
a.	Westmoreland	06-16-57	Virginia	10	12-21-57	Found decomposed
b.	Northumberland	06-19-34	North Carolina	320	10-10-34	Injured
c.	Middlesex	06-19-71	Dominican Rep.	1300	09-28-71	Shot
d.	Lancaster	06-24-70	Trinidad	2100	10-00-70	Found dead
e.	Charles City	06-22-71	Virginia	10	07-14-71	Injured
f.	Gloucester	06-24-71	"	10	08-05-71	Injured
g.	"	06-24-71	Colombia	2250	10-00-71	Shot
h.	York	06-09-71	"	2200	10-13-71	Shot
i.	Charles City	06-22-71	Virginia	30	06-28-71	Injured
j.	Northumberland	06-28-70	Dominican Rep.	1350	10-00-70	Unknown

[a]Numbers correspond to those plotted in Figure 2.

Worth (1936) reports two possible migration routes for juveniles from New York and New Jersey: one along the coast and the other along the Appalachian Mountains. Henny and Van Velzen (1972), on the other hand, concluded that Ospreys migrate on a "broad front" with no distinct route. Because Maryland-Virginia juveniles followed a very narrow coastal route, this might indicate a population preference, and thus the "broad front" of Henny and Van Velzen (1972) could be indicative of the combined routes of several distinct populations.

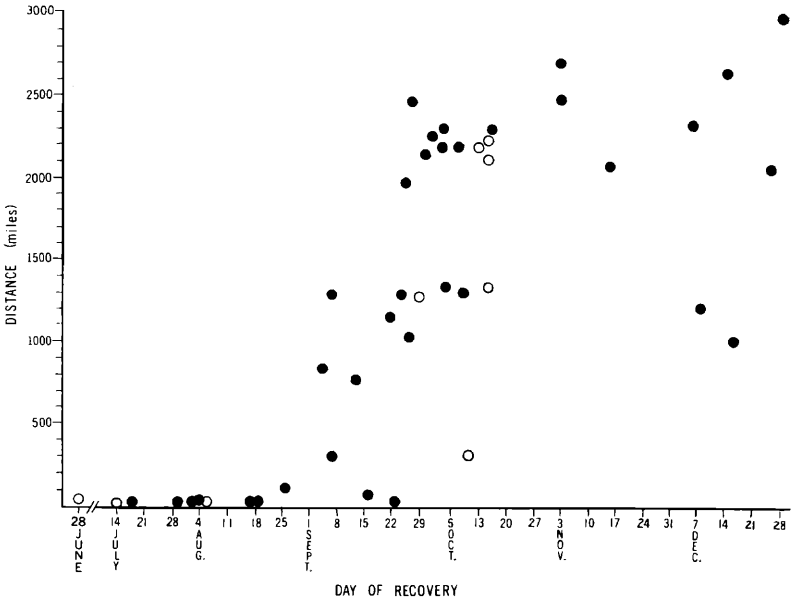

FIGURE 1. Relationship of distance from banding site to recovery date for Maryland (closed circles) and Virginia (open circles) juvenile Ospreys.

The large percentage of recoveries from South America during the period 15 September-15 October indicates a rather direct passage through the Caribbean region. The migration route is seen clearly through the Greater Antilles, with five reports from Cuba and three from the Dominican Republic, but from this region southward, the route becomes obscure. Possible routes could be through the Lesser Antilles to Venezuela, where the birds follow the coast west toward their main wintering grounds in Colombia, or on a broad front across the Caribbean Sea. Since two birds were recovered from Trinidad, and since one bird was recovered early (25 September) off the coast of Venezuela, the Lesser Antilles-Venezuelan Coast route seems probable, but because recoveries or sightings from the Lesser Antilles are lacking, this is mere speculation. With the large number of Ospreys currently being banded in Virginia and Maryland, additional records might become available to determine exactly this segment of the migration.

By 15 October, nearly all juveniles reached South America, with Colombia being the main wintering ground. The distributional pattern of wintering juveniles in Colombia seems to follow the main river systems, as previously described by Henny and Van Velzen (1972).

DISCUSSION

Because the Osprey has recently been declared an endangered species, all aspects of the life cycle of this bird should be studied. The Tidewaters of Maryland and Virginia presently house one of the largest populations of this bird, making this area an ideal one for research and preservation of the species. Several population studies are now being conducted: one in Virginia, and three in Maryland. As a result of these studies, the Ospreys are fairly well protected on the breeding grounds, but little protection is afforded them during migration.

First-year birds, as shown by Henny and Wight (1969), have a very low survival rate, between 42.7 and 46.7 per cent, with 90 per cent of the mortality occurring during the first migration. The principal cause of mortality is shooting (Henny and Wight, 1969; Table 1).

It is hoped, therefore, that by elucidating the time and route of migration of these vulnerable juvenile birds, as has been done in this paper, an international effort will be made to protect them from unnecessary death. If this can be accomplished, the recruitment rate of birds into this breeding population will be higher, and thus will partially offset the reproductive failures now experienced in some parts of Maryland (Reese, 1968; Wiemeyer, 1971) and Virginia (Kennedy, MS).

SUMMARY

Forty-seven recoveries of juvenile Ospreys from Maryland and Virginia were used to analyze their migration route. The juveniles begin migrating during the last week of August along a narrow coastal strip. Most birds leave the boundaries of the United States by September, pass through the Greater Antilles, and reach Colombia, the main wintering grounds, by 15 October. The leg of the migration route from the Greater Antilles to South America remains obscure.

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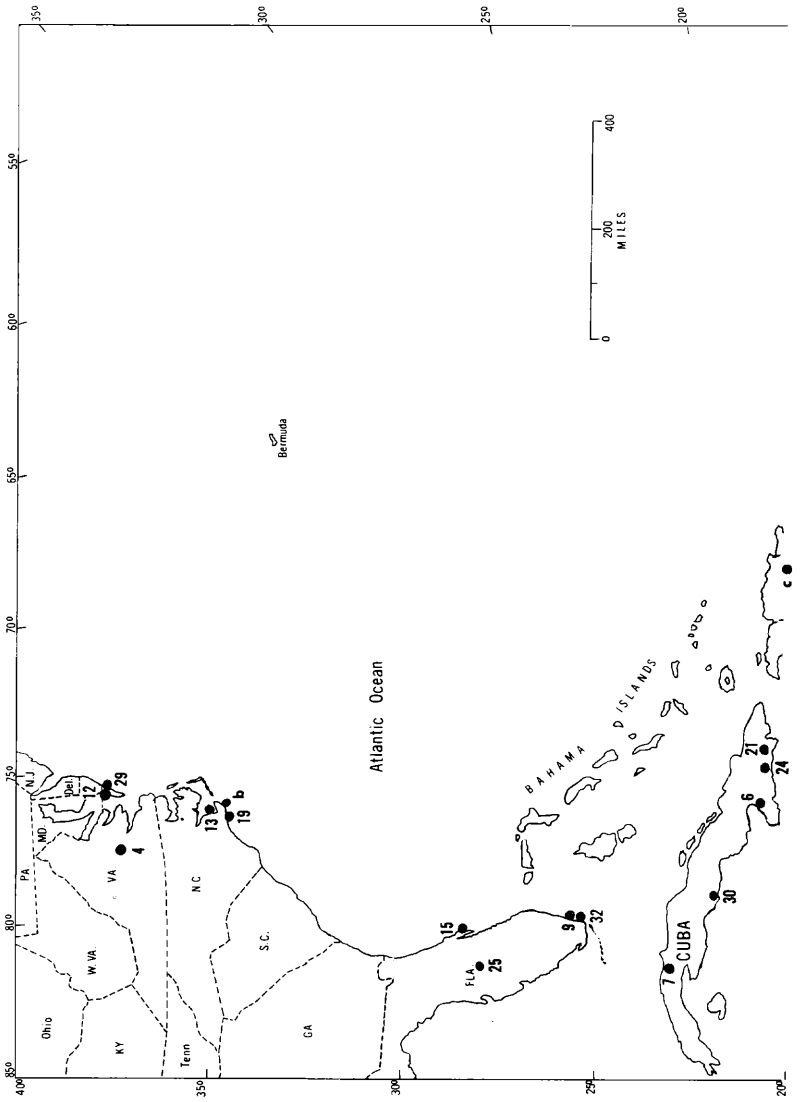
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Bermuda
BAHAMA ISLANDS
CUBA
Ohio
KY
W. VA.
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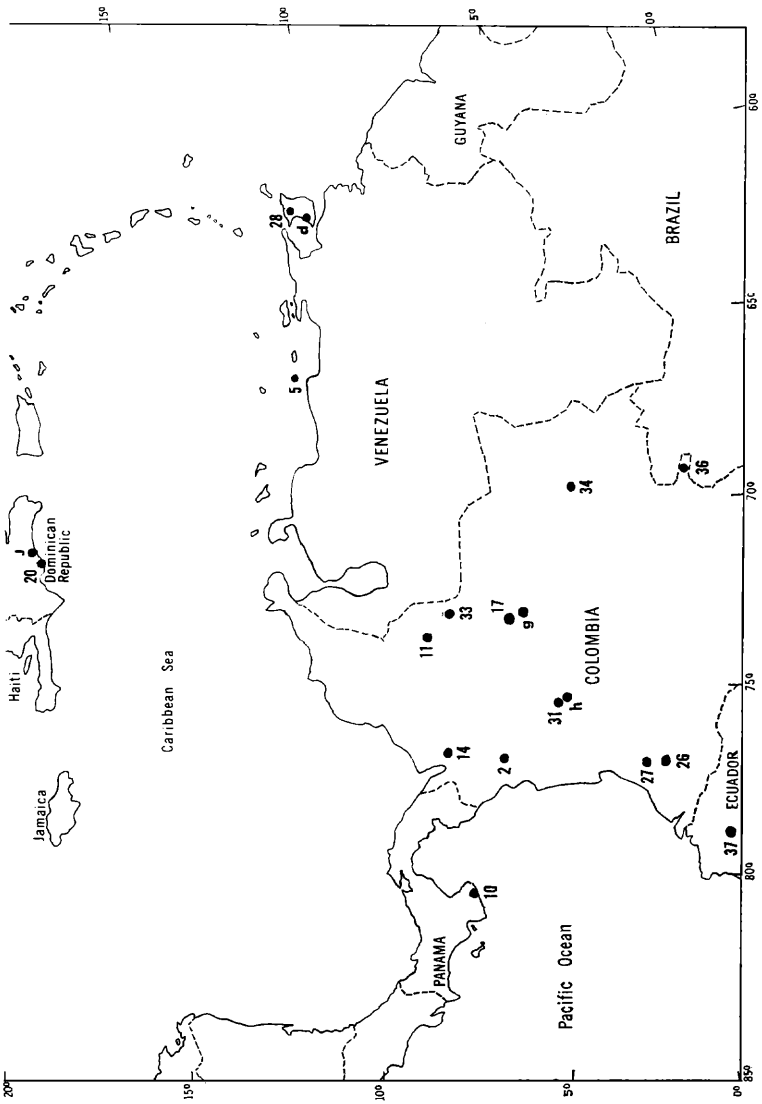

FIGURE 2. Geographical distribution of juvenile Osprey recoveries. Birds recovered within the state where they were banded and the one Brazil record are omitted.

LITERATURE CITED

ALLEN, R. P., and R. T. PETERSON. 1936. The hawk migrations at Cape May Point, New Jersey. *Auk* **53:** 393-404.

CLARK, W. S. 1968. Migration trapping of hawks at Cape May, New Jersey. *EBBA News,* **31:** 112-114.

——. 1969. Migration trapping of hawks at Cape May, New Jersey-Second Year. *EBBA News,* **32:** 69-77.

——. 1970. Migration trapping of hawks (and owls) at Cape May, New Jersey—Third Year. *EBBA News,* **33:** 181-189.

FERGUSON, A. L., and H. L. FERGUSON. 1922. The fall migration of hawks as observed at Fisher Island, N. Y. *Auk* **39:** 488-496.

GILLESPIE, M. 1960. Long distance fliers— the ospreys. *EBBA News,* **23:** 55-62.

HACKMAN, C. D., and C. J. HENNY. 1971. Hawk migration over White Marsh, Maryland. *Chesapeake Sci.* **12:** 137-141.

HENNY, C. J., and W. T. VAN VELZEN. 1972. Migration patterns and wintering localities of American ospreys. *J. Wildl. Mgmt.* **36:** 1133-1141.

HENNY, C. J. and H. M. WIGHT. 1969. An endangered osprey population: estimates of mortality and production. *Auk,* **86:** 188-198.

REESE, J. G. 1968. Breeding Osprey survey of Queen Annes County, Maryland. *Md. Birdlife,* **24:** 91-93.

WIEMEYER, S. N. 1971. Reproductive success of Potomac River ospreys—1970. *Chesapeake Sci.,* **12:** 278-280.

WORTH, C. B. 1934. Juvenile osprey migration. *Eastern Bird Banding Quart.,* **1:** 4.

——. 1936. Summary and analysis of some records of banded ospreys. *Bird-Banding,* **7:** 156-160.

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