

OSPREY

Original drawing by Justin J. Harding
Havertown, Pennsylvania

MIGRATION OF THE OSPREY ALONG THE LOWER SUSQUEHANNA RIVER

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INTRODUCTION

Physiographic features such as mountain ranges and coast lines are well recognized as leading lines for migrating diurnal raptors (Brett 1973, Haugh 1972, Choate and Tilly 1973, Heintzelman 1975), but rivers have been studied relatively little in terms of leading lines for raptor migration. In this paper I present seven years (1973-79) of Osprey (*Pandion haliaetus*) observations along the lower Susquehanna River, and determine if timing of Osprey migration there is similar to that at coastal and mountain locations. Possible origins of Ospreys migrating and summering along the lower Susquehanna are discussed.

METHODS

Osprey observations along the lower Susquehanna River began in 1973 as part of a broad ecological investigation in that region. Osprey migration was studied at the Muddy Run Pumped Storage Pond and along 21 km of the Susquehanna River (Conowingo Pond) from Conowingo Dam to Holtwood Dam. This area includes portions of Lancaster and York Counties, Pennsylvania, and Cecil County, Maryland, and lies upriver from the mouth of Chesapeake Bay.

Observations were made and recorded incidental to aquatic and terrestrial field studies. No quantification of effort can be made, except that biologists were generally in the field at least three days each week. Effort cannot be considered equal between seasons within a given year or between years. The risk of counting the same bird more than once on the same day appeared minimal, and I strongly suspect that during migration Ospreys rarely stayed in the area more than one day. I base the latter assumption on the high degree of variability between numbers of sightings on consecutive days. A good account concerning accuracy of data is given by Dunne and Clark (1977).

RESULTS

A total of 572 Osprey sightings was made on the lower Susquehanna River from 1973 to 1979; of these 24% were made during the spring migration, 10% during the summer period and 66% in the fall migration (Table 1). Due to the partial overlap of seasons these percentages should be regarded as close approximations. Fifty-nine percent of the total number of Ospreys were seen during September, and 18% during April. These represent the two months of peak Osprey movement along the lower Susquehanna.

Spring migration began the first week in April; the earliest observation was 2 April 1975. Migration continued through April, peaked during the last week of the month (Figure 1), and ended by mid-May.

Summering birds were seen during late May, June, July and into August. At least one summer Osprey was sighted each year throughout the study period. Early summer birds may have been late spring migrants; late summer birds

may have included early fall migrants. The status of Ospreys observed in summer was uncertain. However, no direct evidence of breeding activity was observed.

Fall migration began by the third week of August and was well underway by the first of September. Numbers peaked during the second and third weeks of September, with high counts of 22 (10 September 1977), 16 (20 September 1977) and 17 (5 September 1979). Migration decreased abruptly in October, with only two sightings after the middle of the month. Two late migrants were also seen in November, the latest on 12 November 1973.

One dead Osprey was found 13 May 1974, floating in the Muddy Run Recreation Lake. It was directly beneath electrical transmission lines which cross the lake. Another was found 25 September 1978 floating in the discharge canal at Peach Bottom Atomic Power Station, also beneath transmission lines. It died the next day from severe internal hemorrhaging. No marked or banded Ospreys were observed.

DISCUSSION

This species is a long distance migrant, wintering as far south as the Caribbean and Central and South America (Henny and van Velzen 1972). Because of the great distances Ospreys travel, they leave the breeding grounds of eastern Canada and northeastern United States in early fall and return in late spring (Haugh 1972). This pattern is similar to the migration pattern of the Broad-winged Hawk (*Buteo platypterus*).

The timing of Osprey sightings along the lower Susquehanna River (Figure 1) agrees with what is generally known about Osprey migration in eastern North America. The timing of my spring observations corresponds well with Dunne's (1977) results at Raccoon Ridge, New Jersey, in April and May of 1976. He first saw Ospreys on 4 April, peak movement occurred during the third and fourth weeks of April, and Ospreys continued to pass during May.

Direct comparison of my fall data with Hawk Mountain data from 1973 through 1978 showed close correlation (Figure 2). Migration began during late August, peaked during mid to late September, and decreased markedly by mid October. Several late migrants were seen at both sites in November. However, at Cape May Point during fall 1976 and 1978 sightings increased steadily during September and peaked during the first week in October, two to three weeks later than along the Susquehanna (Figure 2). Numbers decreased rapidly after the middle of October, with stragglers as late as the third week of November.

Of the Ospreys banded from Rhode Island to Virginia in summer, nine were recovered inland in Pennsylvania that fall or in spring or fall of later years. However, Nagy (1977) states that fall migrants at Hawk Mountain are from an interior population breeding in New York state and Ontario. Hackman and Henny (1971) felt that the Ospreys observed at White Marsh, Maryland, may represent portions of the flights from both the Appalachians and the Atlantic Coast, but the exact source could not be confirmed. Bergey (1975)

studied fall hawk migration near Harrisburg, Pennsylvania, at the point where Blue Mountain meets the Susquehanna River. Blue Mountain is located approximately 105 km southwest of Hawk Mountain on the same ridge. He found that some raptors left the ridge and proceeded downriver during their fall migration. Marking studies of several different breeding populations would be needed to determine the origins and destinations of Ospreys migrating through the study area.

Ospreys have not been known to nest along the lower Susquehanna since the late 1800's (Warren 1890). Beck (1924) listed no recent nesting records. Birds observed in the study area during summer were possibly: (1) nonbreeders from southern populations such as Chesapeake Bay, Delaware Bay or coastal New Jersey; (2) unsuccessful breeders from southern populations; or (3) juveniles dispersing from breeding grounds. An example of post-breeding juvenile dispersal was a young Osprey incapable of sustained flight banded 12 August 1977 from the Chesapeake Bay population on Maryland's Eastern Shore and recovered near Philadelphia 13 days later. Further studies are needed to determine the origin of the Ospreys seen during the summer along the lower Susquehanna River.

TABLE 1
NUMBER OF OSPREY SIGHTINGS IN THE LOWER SUSQUEHANNA RIVER STUDY
AREA DURING SPRING, SUMMER AND FALL (DATES IN PARENTHESES)
OF 1973 THROUGH 1979.

	1973	1974	1975	1976	1977	1978	1979	Total N (%)
Spring (2 Apr - 13 May)	9	8	39	35	2*	31	12	136 (24)
Summer (25 May - 23 Aug)	6	3	1	6	18	8	15	57 (10)
Fall (25 Aug - 12 Nov)	20	20	23	94	118	35	69	379 (66)
Total	35	31	63	135	138	74	96	572 (100)

*Records incomplete for the spring migration, 1977.

SUMMARY

Seven years of Osprey observations along the lower Susquehanna River were analyzed to determine seasonal migration patterns. Spring migration commenced in early April and continued into mid-May. Peak movement was observed during the last week of April. Fall migration began in the latter part of August and continued through mid-October with late migrants observed until mid-November. Peak fall movement occurred during the second and third weeks of September. Results were similar to spring Osprey migration at Raccoon Ridge, New Jersey and fall migration at Hawk Mountain, Pennsylvania. Fall migration at Cape May Point, New Jersey showed a later peak.

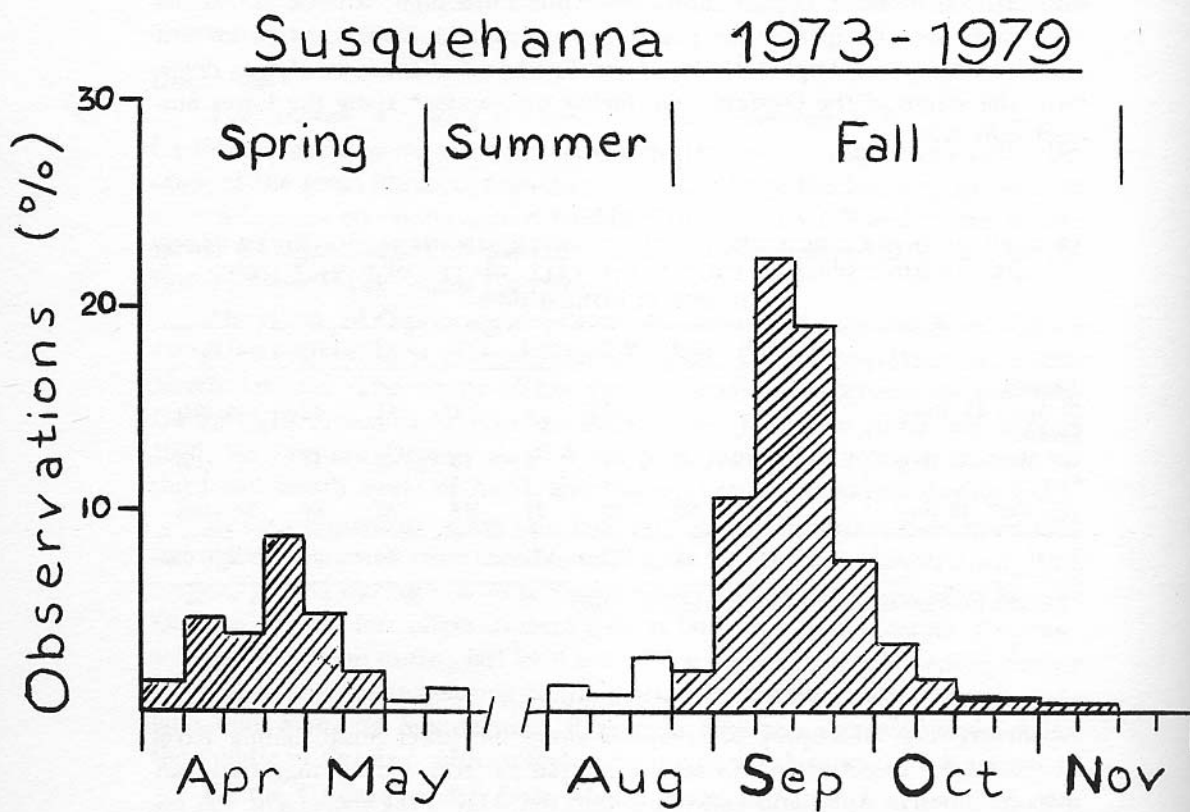


FIGURE 1.

Osprey sightings on the lower Susquehanna River expressed as weekly (7 or 8 days) percentages of the total number of observations (N = 572). Low frequency summer data have been omitted.

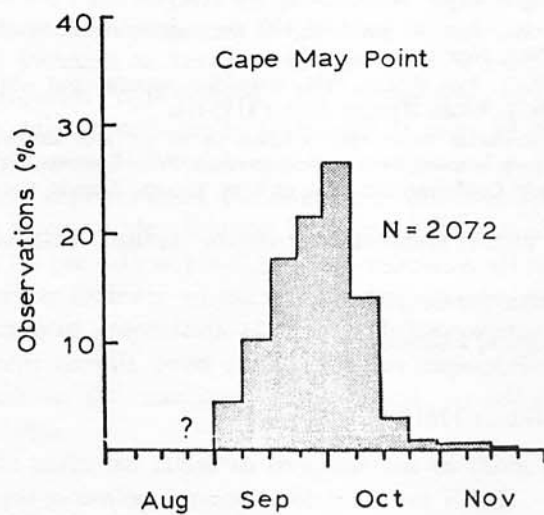
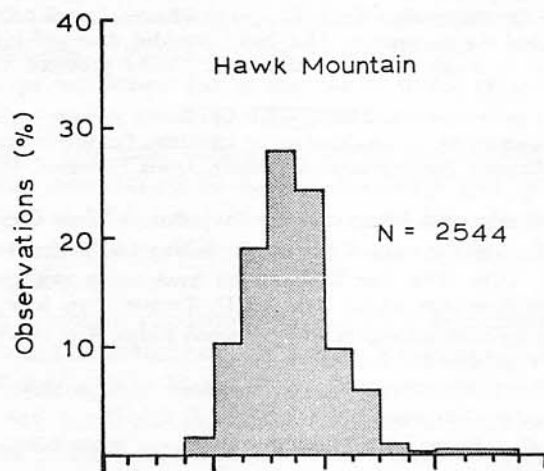
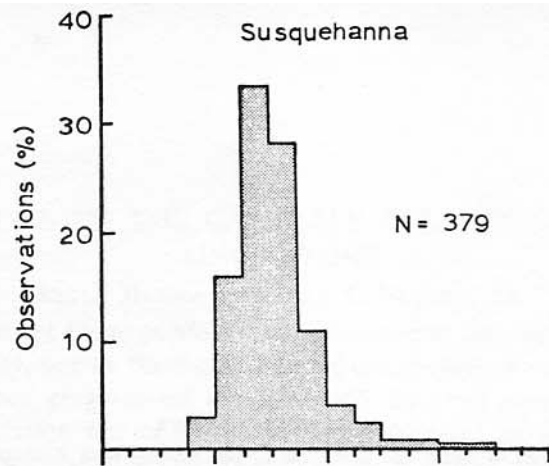


FIGURE 2.

Fall migrational patterns of the Osprey on the lower Susquehanna (1973 through 1979), Hawk Mountain (1973 through 1978), and Cape May Point (1976 and 1978). August 25 was considered the onset of fall migration.

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