

1984

## Osprey Population Studies

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PERFORMANCE REPORT

STATE: VIRGINIA PROJECT NO. W-77-R-1  
PROJECT TITLE: NON-GAME AND ENDANGERED SPECIES STUDY NO. VII  
INVESTIGATIONS JOB NO.: VII-A, B, C  
STUDY TITLE: OSPREY POPULATION STUDIES  
PERIOD COVERED: July 1, 1983 - June 30, 1984

JOB VII-A  
OBJECTIVE: To make a complete aerial and ground survey of active osprey nests in Virginia to determine total breeding population size.

JOB VII-B  
OBJECTIVE: To measure hatching and fledging success of a sample of osprey nests representative of all of the major estuaries as well as the Eastern Shore of Virginia.

JOB VII-C  
OBJECTIVE: To coordinate all transfer of young ospreys from Virginia to other states involved in reintroduction programs for this species.

SUMMARY:

Aerial and ground surveys to locate active osprey nests were conducted during April and May. The surveys resulted in the location of 743 active nests in 1983, of which 450 on the western side of Chesapeake were monitored at least three times during the breeding season. Data were considered complete for 360 of these nests. Analysis gave a maximal production of 1.28 young per active nest. Analysis of nesting data for 1984 is incomplete but preliminary figures indicate a production of less than 0.80 young per active nest. Low productivity is attributed to severe storm systems in May. Trapping of banded adults in the population resulted in the capture of 92 individuals. Age distribution and dispersal distances are provided for this sample.

HATCHING AND FLEDGING SUCCESS:

1983

Data on hatching and fledging success for 1984 are still being tabulated as many pairs still have young in the nest. Data for 1983 have been compiled and are presented below in Table 1. For purposes of comparison, the state has been divided into a number of study areas as follows:

Eastern Shore - Ocean side

Eastern Shore - Bay side

James - Chickahominy River Systems

York River System - Mouth of river to West Point

Mobjack Bay - York River to Piankatank River, including the latter

Rappahannock River - Mouth of river to Leedstown

Fleets Bay - Fleets Point to Great Wicomico River, including the latter

Potomac River - Little Wicomico River west to Nomini Bay

TABLE 1. Productivity of Ospreys in 360 Active Nests, Western Side of Chesapeake Bay, 1983

Study Area	No. of Active Nests	No. of Young Fledged	No. of Young Fledged/Active Nest
York River	50	58	1.16
Mobjack Bay	92	122	1.33
Rappahannock River	96	125	1.30
Potomac River <sup>1</sup>	77	105	1.36
Fleets Bay	45	49	1.09
Totals	360	459	1.28

<sup>1</sup> Mouth of River to Currioman Bay

A production of 1.22 - 1.25 young per active nest generally is considered necessary to maintain a stable population. The production shown in Table 1 would appear to be adequate to maintain population stability. It should be pointed out that the term, fledglings, as used in Table 1 may be birds last observed in the nest at 4-5 weeks of age.

In 1983, 60 nests were checked late in the season prior to fledging of young. These were all nests which had contained 2 or more young on the previous visit when chicks were 4-5 weeks of age. It was observed that there had been a 20 per cent loss of chicks from the nests in this intervening time. If this loss rate were applicable to all 360 nests, it would reduce the fledging rate to 1.02 young per active nest. It would appear that the fledging rate of 1.28 per active nest indicated in Table 1 is above the actual fledging rate. This pre-fledging mortality seems to be common and probably is food-related. It is a phenomenon which should be studied more closely.

Productivity data for 1984 still are being compiled. Preliminary calculations suggest that this year has been disastrous for the osprey population. Of the 450 nest samples monitored on the west side of Chesapeake Bay, the failure rate has been 52 per cent. It appears that the failure rate of nearly 200 nests on the Eastern Shore has been higher. Preliminary calculations indicate a production on the western side of Chesapeake Bay of 0.80 young per active nest. Subsequent losses have reduced this number even further. The initial losses appear attributable to a series of heavy storm systems, particularly one of May. Incubation was so far along that very few birds renested.

TOTAL POPULATION AND NESTING STRUCTURES:

Total number of known nests in 1983 was 743. Data have been tabulated on types of nest structures used by ospreys. All nests located in live or dead trees have been classified as natural structures. All other nesting structures have been classified as artificial structures. Data on type of nesting structure are indicated in Table 2 for ospreys nesting on the west side of Chesapeake Bay.

TABLE 2. Nesting Structures Used by Ospreys in Virginia, 1983

Study Area	No. of Nests	Types of Nesting Structures			
		Artificial No. of Nests	% of Nests	Natural No. of Nests	% of Nests
York River	60	49	78	11	12
Fleets Bay	52	46	78	6	12
Mobjack Bay	89	83	93	6	7
Rappahannock River	136	114	84	22	16
Potomac River	107	80	75	27	25
Totals	444	372	84	72	16

Of this sample of 444 nests on the west side of Chesapeake Bay, 84 per cent were located on artificial structures and 16 per cent on natural structures. Analysis is being made of nesting success on these types of structures.

#### TRANSFER OF YOUNG:

Eleven young each were collected from the York River and the New Point Comfort area for transfer to Pennsylvania and Tennessee for hacking purposes. Each state received eleven young of 5-5-1/2 weeks of age. Sites were selected for collection of young on the basis of preliminary data which indicated the two areas as having a high level of productivity.

Preliminary calculations for 1984 suggested an average production of 0.80 young or less per active nest on the western side of Chesapeake Bay. It was felt that removal of young to satisfy requests for birds for hacking effectively would remove 15% of the production of the population. For these reasons, no young were provided to other states for hacking in 1984.

#### ADULT TRAPPING:

The Chesapeake Bay Region supports one of the largest breeding populations of ospreys in the world. Between 1970 and 1980, a total of 6,031 osprey nestlings were banded in Virginia and Maryland. An additional 1,416 were banded between 1955-1969.

The survivors of those banded young are now individuals of known age and origin, thus providing access to considerable data for studies of population dynamics, depending on the number which can be trapped as adults.

A large portion of the nests are easily accessible. Trapping of the breeding adults permits a measurement of fledging to breeding dispersal, an estimate of annual survivorship and ages at first breeding, and investigation of sexual differences in these parameters.

Trapping was initiated in the spring-summer of 1983 and continued in 1984. A total of 66 adult birds was captured in 1983 and 70 in 1984. Some birds were captured in both years which previously had not been banded. Tables 3, 4, and 5, therefore, includes data only on 87 birds which previously had been banded. The origins of 5 are unknown and are not included.

Age distribution of banded ospreys trapped in 1983 and 1984 are shown, respectively in Tables 2 and 3.

TABLE 3. Age Distribution of Banded Adult Ospreys Trapped in Virginia, 1983

Age of Bird	No. of Males	No. of Females
4	2	3
5	2	3
6	1	6
7	0	3
8	0	2
9	3	2
10	1	6
11	2	3
12	0	2
13	1	1
14	0	0
Totals	12	31

The trapping data... the relatively greater... Age analysis presented... sample from 4 years... 1983 sample were... birds in the 1984... year age range... age class. In 1984... cohort of young...

TABLE 4. Age Distribution of Banded Adult Ospreys Trapped in Virginia, 1984

Age of Bird	No. of Males	No. of Females
0-5	0	0
6-10	0	2
11-20	1	4
21-30	2	5
31-40	4	4
41-50	1	5
51-100	0	5
100-p	1	5
Totals	11	33
	12	2
	13	0
	14	1
Totals	11	33

the data dispersal females. Virginia was... kilometers. The... River and had been... Maryland, a dist...

The trapping sample is somewhat biased toward females because of the relatively greater ease with which females may be trapped on the nest. Age analysis presently is being completed. Ages are represented in the sample from 4 years to 14 years. Seventy-two percent of the birds in the 1983 sample were in the 6-12 year age range. Ninety-one per cent of the birds in the 1984 sample were in the 6-12 year age range. Birds in the 3-5 year age range are poorly represented with no birds represented in the 3-year age class. In 1983, some birds potentially were breeders from the 1983 cohort of young, the last in which banding occurred.

TABLE 5. Dispersal distances of Ospreys  
Between Natal and Breeding Sites

Dispersal Distance In Kilometers	No. of Males	No. of Females
0-5	11	9
6-10	3	3
11-20	3	13
21-30	1	14
31-40	2	8
41-50	2	5
51-100	1	10
100-plus		2
Totals	23	64

Although sample sizes are disproportionate and analysis is incomplete, the data support the observation by workers in New England that the greatest dispersal distances are shown by females. The two longest dispersals were by females. One female breeding at Jackson Creek on the Yeocomico River in Virginia was banded as a nestling at Grasonville, Maryland, a distance of 109 kilometers. The second female was breeding at Almond's Wharf on the York River and had been banded at Saint Catherine Island on the Potomac River in Maryland, a distance of 102 kilometers.



TARGET DATE FOR COMPLETION: Continuing

STATUS OF PROGRESS: On Schedule

SIGNIFICANT DEVIATIONS IN PROGRESS: None

RECOMMENDATIONS: Continue Study

COST THIS SEGMENT: Federal \$5,665.00 : State \$1,888.00 Total \$7,553.00 :

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Chief, Division of Game

DATE: August 1, 1983

R. H. Cross, Jr.  
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