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Bald Eagle Investigations

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PERFORMANCE REPORT

STATE: VIRGINIA PROJECT NO.: W-77-R-4
PROJECT TYPE: Research and/or Survey STUDY NO.: I
PROJECT TITLE: NONGAME AND ENDANGERED JOB NOS.: A-F
SPECIES INVESTIGATIONS
STUDY TITLE: BALD EAGLE INVESTIGATIONS
JOB TITLE: BALD EAGLE INVESTIGATIONS
PERIOD COVERED: July 1, 1986 - June 30, 1987
JOB I-A
OBJECTIVE: To make a winter inventory of bald eagle numbers including age composition of this population.
JOB I-B
OBJECTIVE: To determine hatching and fledging success of eagles in Virginia.
JOB I-C
OBJECTIVE: To identify ownership of nesting areas and concentration areas of bald eagles during the summer and winter season and to develop management agreements and protection strategies where possible for these areas. These areas will be monitored regularly as deemed necessary.
JOB I-D
OBJECTIVE: To band and color mark a major proportion of each year's cohort of young eagles.
JOB I-E
OBJECTIVE: To map existing and potential eagle nest sites.
JOB I-F
OBJECTIVE: To provide other states with young eagles for recovery and re-establishment efforts.

SUMMARY:

Aerial and ground surveys resulted in the location of 73 active bald eagle nests and three additional occupied territories. A total of 107 young hatched, of which all reached fledging age. This resulted in a production of 1.47 fledglings per active nest and 1.75 fledglings per productive nest. Eighty four percent of the active nests were productive, the highest success rate in the past ten years.

Shoreline surveys were conducted regularly of two summering populations, one each on the James and Potomac Rivers.

An aerial mid-winter survey of eagles was conducted in January, resulting in the location of 220 birds. The mid-winter population consisted of 125 adults and 95 immatures.

Land ownerships were determined for all nest site areas and a number of concentration areas.

JOB I-A - To make a winter inventory of bald eagle numbers including age composition of this population.

WINTER SURVEYS

Personnel on the project, in conjunction with cooperators, participated in the mid-winter survey sponsored by the National Wildlife Federation. All major tributaries of the state were covered by aerial survey by project personnel. Ground parties participated in coverage of the Potomac River and inland impoundments. All surveys were conducted during January. For purposes of comparison, data for both 1986 and 1987 are shown in Table 1.

Table 1. Bald Eagles observed During Mid-Winter Surveys, January, 1986 and 1987.

<u>Area</u>	<u>Adults</u>		<u>Immatures</u>	
	<u>1986</u>	<u>1987</u>	<u>1986</u>	<u>1987</u>
James-Chickahominy Rivers	36	24	34	20
Rappahannock-Piankatank Rivers	58	42	54	31
Potomac River	37	39	34	40
York, Pamunkey, Mattaponi Rivers	8	14	1	2
Eastern Shore-Lower Tidewater	5	4	3	1
Inland Impoundments	8	2	9	1
	152(53%)	125(57%)	135(47%)	95(43%)

The ratio of adults to immatures remained essentially the same between 1986 and 1987. Total count for the state in 1987 was down 23% from 1986. This observed decline probably relates to the extremely mild December and early January in the area as well as to the north. It is likely that many wintering birds had remained to the north of the state.

The mid-winter count revealed that Mason Neck in Fairfax County and the Rappahannock River between Drakes Marsh in Westmoreland County and Portobago Bay supported a significant wintering population of eagles. The Portobago Bay area is the site of a large housing development, an event likely to impact heavily on the eagles there.

SUMMERING CONCENTRATIONS

Potomac River

The eagle population along the Potomac River in the region of the Caledon Natural area was monitored for several years by project personnel in an effort to determine areas of significant use. These data were used as a basis for the Caledon Natural Area Management Plan.

In order to assess the possible impact of human visitation on the bald eagles of Caledon, weekly shoreline surveys were conducted at Caledon during May, June, July and August in both 1986 and 1987. Surveys were conducted by both Division of Parks personnel and project personnel. Although analysis of the data are incomplete, it appears that there has been no appreciable change in eagle use of the shoreline since limited visitation has been allowed to this part of the Natural Area.

James River

The James River has become the most significant summer concentration point for bald eagles in Virginia. The eagle roost and adjacent shoreline has been censused on a regular basis for the past several years.

In 1986, the peak count of eagles on a standard shoreline survey was 72, reached on July 8. In 1987, a count of 91 birds was reached on July 10. The peak counts of eagles have increased each of the last several years on the area, suggesting the ever increasing importance of this roost area.

It appears that there is a constant movement of eagles into and out of this roost area based on specific plumages observed as well as significant changes from week to week in adult juvenile ratios. The area may well, therefore, be supporting hundreds of different eagles through the course of the summer.

In view of the significance of this area, every effort should be made to acquire it for control by a management or conservation agency. Efforts currently are underway to accomplish this.

JOB I-B - To determine hatching and fledging success of bald eagles in Virginia.

HATCHING AND FLEDGING SUCCESS

Aerial surveys were conducted during late February and through much of March to locate active nesting territories. Total counts of young in each nest have been verified in the past through banding efforts. Since no banding was accomplished in the spring and summer of 1987, additional aerial surveys were conducted through May when young were quite large in order to verify as accurately as possible

the number of young. Surveys were conducted throughout Tidewater Virginia. Inland impoundments were not surveyed extensively. Only the known active nest on Kerr Reservoir was checked for activity.

Aerial surveys resulted in the location of 73 active nests. In addition, there were three other territories with pairs which apparently did not produce eggs. Two additional nests appeared to have single adults at them. All active nest locations were plotted on 7 1/2 minute topographic sheets. The location and fate of each active nest is shown in Table 2. Copies of maps with nest locations have been placed in files of the Department of Game and Inland Fisheries.

Table 2. Location and Productivity of Active Bald Eagle Nests in Virginia, 1986.

<u>County</u>	<u>Nest Number</u>	<u>Reproductive Success</u>	
		<u>No. of Young Hatched</u>	<u>No. of Young Fledged</u>
Accomac	Ac.80-01	1	1
Accomac	Ac.87-01	2	2
Caroline	Ca.86-01	2	2
Charles City	C.C.85-01	2	2
Charles City	C.C.87-01	2	2
Essex	Es.87-01	2	2
Essex	Es.87-02	3	3
Fairfax	F.F.80-01	1	1
Gloucester	Gl.83-01	1	1
Gloucester	Gl.87-01	0	0
Halifax	Hf.85-01	2	2
Henrico	He.83-01	2	2
Isle of Wight	IW.86-01	0	0
James City	J.C.84-01	3	3
James City	J.C.86-01	2	2
James City	J.C.87-01	2	2
James City	J.C.87-02	2	2
James City	J.C.87-03	1	1
King George	K.G.82-02	0	0
King George	K.G.85-04	2	2
King George	K.G.87-01	0	0
King George	K.G.87-02	2	2
King George	K.G.87-03	1	1
King George	K.G.87-04	2	2
King George	K.G.87-05	2	2
King George	K.G.87-06	2	2
King George	K.G.87-07	1	1
King William	K.W.85-01	2	2
King William	K.W.80-01	3	3
King William	K.W.79-01	0	0

Table 2 - continued

<u>County</u>	<u>Nest Number</u>	<u>Reproductive Success</u>	
		<u>No. of Young Hatched</u>	<u>No. of young Fledged</u>
King and Queen Courthouse	K.Q.87-01	2	2
Lancaster	La.86-01	0	0
Lancaster	La.87-01	0	0
Middlesex	Mi.77-01	2	2
Middlesex	Mi.84-01	1	1
Middlesex	Mi.86-01	3	3
Middlesex	Mi.87-02	3	3
New Kent	N.K.79-04	1	1
New Kent	N.K.83-01 (N.K.85-02)	1	1
New Kent	N.K.86-01	1	1
Newport News	N.N.87-01	1	1
Northampton	Nt.87-01	1	1
Northampton	Nt.87-02	2	2
Northumberland	Nd.86-01	0	0
Northumberland	Nd.86-02	2	2
Prince George	P.G.61-01	1	1
Prince George	P.G.86-01	2	2
Prince George	P.G.87-01	0	0
Prince George	P.G.87-02	1	1
Prince William	P.W.87-01	1	1
Richmond	Ri.81-02	2	2
Richmond	Ri.85-01	3	3
Richmond	Ri.84-02	2	2
Richmond	Ri.86-04	2	2
Richmond	Ri.87-01	1	1
Richmond	Ri.87-02	1	1
Richmond	Ri.87-03	2	2
Stafford	St.82-01	0	0
Stafford	St.85-01	2	2
Stafford	St.87-01	1	1
Stafford	St.87-02	0	0
Suffolk	Sk.86-01	2	2
Surry	Su.82-01	1	1
Surry	Su.87-02	0	0
Westmoreland	We.81-01	3	3
Westmoreland	We.83-01	3	3
Westmoreland	We.83-03	2	2
Westmoreland	We.83-04	1	1
Westmoreland	We.84-01	2	2
Westmoreland	We.84-04	2	2
Westmoreland	We.86-01	1	1
Westmoreland	We.87-02	0	0
York	Yk.86-01	2	2
Totals	73	107	107

Of the 73 active nests, 61 were productive and 12 were unproductive. No young were known to have been lost between hatching and fledging. One pre-fledgling was sent to North Carolina and successfully fledged there. Therefore, this young is included in the number of fledglings in Table 2.

One hundred and seven young apparently reached fledging age for an average of 1.47 fledglings per active nest. This is the highest level of productivity in the past 10 years.

The number of fledglings per productive nest was 1.75, a slight decline from 1986. This primarily reflects the large number of one young broods since 84 percent of the nests were successful.

A total of 7 pairs produced three young as compared with 9 pairs in 1986.

Data on productivity trends for the period 1977-1987, are summarized in Table 3. Both the percentage of nests which are successful and the number of young produced per active nest continues to improve on an annual basis.

Table 3. Bald Eagle Productivity in Virginia for the Period 1977-1987.

Year	Total Active Nests	Total Prod. Nests	Total Unprod. Nests	Percent Nest Prod.	Total Young Fledged	Fledglings Productive Nest	Fledglings Active Nest
1977	33	13	20	39	18	1.38	0.54
1978	37	14	23	38	18	1.29	0.54
1979	33	15	18	45	20	1.33	0.61
1980	35	23	12	66	35	1.52	1.00
1981	39	27	12	69	40	1.48	1.02
1982	45	28	17	62	41	1.52	0.93
1983	52	31	21	60	51	1.68	0.98
1984	60	34	26	57	58	1.68	0.97
1985	65	47	18	72	84	1.79	1.29
1986	66	43	23	65	83	1.93	1.26

Table 3 - continued

Year	Total Active Nests	Total Prod. Nests	Total Unprod. Nests	Percent Nest Prod.	Total Young Fledged	Fledglings Productive Nest	Fledglings Active Nest
1987	73	61	12	84	107	1.75	1.47

Data on productivity of bald eagles in Virginia by river system or area are included in Table 4. As may be seen, the Rappahannock River continues as one of the most productive areas in the state.

Table 4. Bald Eagle Productivity in Virginia for 1987 by River System or Area.

River System or Area	No. of Active Nests	Percent Nests Productive	No. of Fledglings Produced	Fledglings per Productive Nest	No. of Fledglings per Active Nest
York, Pamunkey Mattaponi Rivers	10	80	14	1.75	1.40
James, Chicka- hominy Rivers	16	75	22	1.83	1.38
Potomac River	21	76	26	1.63	1.24
Rappahannock River	21	86	37	2.06	1.76
Eastern Shore Reservoirs	5	100	8	1.60	1.60
Totals	73	84	107	1.75	1.47

JOB I-C - To identify ownership of nesting and concentration areas of bald eagles during the summer and winter season and to develop management agreements and protection strategies where possible for these areas.

Several summer and winter concentration areas have been identified, including the roost area on the James River identified in Job I-A. Land ownership around this roost has been identified.

Ownership of the land on which all active bald eagle nests are located has been determined.

A preliminary questionnaire was developed for submission to landowners with active nests on their property. Responses to this questionnaire will be used as a basis for subsequent contacts with owners regarding possible cooperative agreements.

As part of the job on protection and management strategies, response was made to 41 inquiries regarding land use projects which might have an impact on an eagle nest or concentration area. These inquiries came from both State and Federal agencies as well as private landowners. Five site visits were made to provide management recommendations regarding bald eagle nesting areas. Five site visits were made to verify reports of nesting eagles.

JOB I-D - Report submitted separately.

JOB I-E - To map existing and potential eagle nest sites.

The initial task was to develop a data base for storage and retrieval of information on existing and potential bald eagle nest site characteristics. Our study area was defined as the Coastal Plain of Virginia. A data base was developed on a personal computer using DBASE III+ data management software.

Ten habitat and human activity variables were coded for each of 162 occupied bald eagle nest sites (for the years 1977-1986). Distances were measured (to nearest 100 m) from the center of each nest cell to each variable on U.S.G.S. 7.5 minute topographic maps. Variables were: improved roads, transportation/communication lines (i.e., railroads, powerlines), two water categories, agriculture, low and high density development, forested land, wetlands, and forested wetland. Coded information was entered into the data base for these 162 nests.

Eighty-one random points were chosen and plotted on topographic maps within the Coastal Plain. The ten habitat and human activity variables were coded for each of these random points and entered into the data base.

Habitat variables for 81 of 162 existing nest sites were compared to the 81 random points using a discriminant analysis function (Stat Pac software package). The 81 remaining nests were tested in the resultant model. The model correctly designated 92% of the "test nest sites" as potential nest sites and incorrectly identified 2 test nest sites (8%) as random points indicating a significant degree of reliability in this model as a predictor of potential eagle nest sites.

The final tasks to be completed are: coding of potential habitat cells, data entry, and statistical analysis of these data. Data will be entered into the existing DBASE III+ data file and the discriminat

analysis model will be used to predict which cells exhibit characteristics of potential bald eagle nesting habitat.

JOB I-F - To provide other states with young eagles for recovery and re-establishment efforts.

Plans were again implemented to provide young eagles for hacking in North Carolina. Three nests containing three young each were selected as donor nests with one young to be removed from each nest. The ages of young in each nest were estimated from the air.

One nine week old young from a nest in Westmoreland County was removed and sent to North Carolina. Young in the other two nests proved to be too old for effective hacking.

TARGET DATE FOR COMPLETION:

STATUS OF PROGRESS:

SIGNIFICANT DEVIATIONS IN PROGRESS: None

RECOMMENDATIONS:

COST THIS SEGMENT: Federal 13,177.12 State 39,531.38
Total 52,708.50

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