

Lower Delmarva Peninsula raptor migration study: Year 1999 report.

REESE F. LUKEI, JR.
Center for Conservation Biology
Department of Biology
College of William and Mary
Williamsburg, VA 23187-8795

MITCHELL A. BYRD
Center for Conservation Biology
Department of Biology
College of William and Mary
Williamsburg, VA 23187-8795

Recommended Citation:

Lukei, R.F., Jr. and M.A. Byrd. 2000. Lower Delmarva Peninsula raptor migration study: Year 1999 report. Center for Conservation Biology Technical Report, CCB-00-01. College of William and Mary, Williamsburg, VA. 13pp.

A Cooperative Project By:

**National Oceanic and Atmospheric Administration
Eastern Shore of Virginia National Wildlife Refuge
Virginia Department of Game and Inland Fisheries**



The Center for Conservation Biology is an organization dedicated to discovering innovative solutions to environmental problems that are both scientifically sound and practical within today's social context. Our philosophy has been to use a general systems approach to locate critical information needs and to plot a deliberate course of action to reach what we believe are essential information endpoints.

ACKNOWLEDGEMENTS

We thank Sue Rice for permitting access to the Eastern Shore of Virginia National Wildlife Refuge. Back Bay National Wildlife Refuge volunteers Gordon Rothrock, Chuck Cohick and Bill Smith deserve thanks for their assistance with clearing the banding site. Walter Conrad provided lumber to replace the front of the blind, and Andy Zadnik with the Virginia Department of Game and Inland Fisheries helped with the installation. We especially wish to recognize the outstanding assistance and support we have received over the past 15 years from refuge staff Irene Morris, Bob Carpenter and Jerry Loomis.

This project was supported in part by a grant from the Virginia Department of Environmental Quality and from funds provided by the Center for Conservation Biology. The Virginia Department of Game and Inland Fisheries provided additional funding support for the raptor banding project, and the U.S. Fish and Wildlife Service made funding available to purchase new mist nets.

Table of Contents

Acknowledgements.....	2
Introduction.....	4
Methods.....	4
Results.....	6
Observations.....	12

INTRODUCTION

This project was operated at Wise Point on the Eastern Shore of Virginia National Wildlife Refuge under Special Use Permit # 99-077 issued to Reese F. Lukei, Jr., volunteer research associate, The Center for Conservation Biology at The College of William and Mary, and U.S. Fish and Wildlife Service volunteer. This project is funded through the Non-game and Endangered Species Program of the Virginia Department of Game and Inland Fisheries, and funds from the U.S. Fish and Wildlife Service. It is administered by Dr. Mitchell A. Byrd, Director Emeritus of The Center for Conservation Biology. The daily operation of the banding site was by Reese F. Lukei, Jr., 1046 Azalea Court, Virginia Beach, Virginia 23452, telephone 757-340-5948, Federal banding permit #09351-H.

The purpose of the project is to trap and band raptors (hawks and falcons) during their fall migration. Data collected is provided to the U.S. Fish and Wildlife Service Bird Banding Laboratory, the Virginia Department of Game and Inland Fisheries, and the Eastern Shore of Virginia National Wildlife Refuge. Emphasis is placed on observations of the movement of the Peregrine Falcon, removed as an endangered species in 1999, but subject to a 13 year monitoring period. This project has been undertaken since 1982.

The Eastern Shore of Virginia NWR is a significant site for this activity because of its location at the southern tip of the Eastern Shore of Virginia. The raptors and other birds migrating south during the fall months follow the Atlantic Ocean coastline and the shoreline of the Chesapeake, and upon reaching the 18 miles of open water at the mouth of Chesapeake Bay, sometimes pause and wait for favorable winds before crossing the Bay to Virginia Beach. This is similar to the situation at Cape May, New Jersey. As a result, a large number of raptors are present from about mid-September through mid-December of each year.

METHODS

Two types of trapping equipment are used to capture the raptors. Mist nets are very fine nylon, 40 feet long, seven feet high, with four pockets, that are held in place with 3/4 inch metal poles. Five of these nets are used, with two outside nets set at about a 30 degree angle with a third and fourth in the middle, and a fifth net across the far open end of the right side of the site. The other type of trap is a bow net, which is an aluminum frame about four feet in diameter, covered

loosely with cotton crab netting, which folds in half and is activated by hinged springs. The release of the bow trap is controlled by a pull line from a blind. Two of these traps are used and are placed on the ground between the mist nets.

Pigeons (rock dove), starlings, and house sparrows are used as lures. The lure birds are placed in leather harnesses which are attached to dacron line that runs along the ground through ceramic insulators between the blind and lure poles placed beyond the far ends of the mist nets. These lines are pulled to allow the lure birds to fly, thus attracting the raptors to the banding site.

The blind is a wooden structure ten feet long, four feet wide and seven feet high, with open windows on all sides for viewing. There is a door on each end. It will accommodate four people. The blind sits on a small sandhill and faces NNE. The banding site was in operation for 72 days from September 9 through December 17, 1999 and was open most days except for rainy weather. The nets were open for 491 1/4 hours, for an average of 6.82 hours per day of operation. The nets were generally opened about sunrise and remained open until raptor activity ceased.

The bands that are used are furnished by the USFWS Bird Banding Laboratory. They are aluminum and numbered according to size. The sizes used and raptors applied to during this project were as follows in Table 1.

Table 1. Raptor leg band sizes.

Band Size	Species
2	Male Sharp-shinned hawk
3	Female Sharp-shinned hawk
3B	Female Sharp-shinned hawk
	Male and Female American Kestrel
	Male Merlin
3A	Female Sharp-shinned hawk
4	Female Merlin
	Male Cooper's hawk
	Male Northern Harrier
5	Female Cooper's hawk
	Female Northern Harrier
	Broad-winged hawk
6	Male Peregrine falcon
	Male Northern goshawk
	Broad-winged hawk
	Red-shouldered hawk
7A	Female Peregrine falcon
	Female Northern Goshawk
	Red-tailed hawk
7B	Red-tailed hawk
7D	Red-tailed hawk

Raptors observed and trapped at Wise Point include the following species in Table 2.

Table 2.

Raptors normally trapped and banded at Wise Point:	
American Kestrel	<i>Falco sparverius</i>
Merlin	<i>Falco columbarius</i>
Peregrine falcon	<i>Falco peregrinus</i>
Sharp-shinned hawk	<i>Accipiter striatus</i>
Cooper's hawk	<i>Accipiter cooperii</i>
Northern Harrier	<i>Circus cyaneus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Raptors occasionally trapped and banded include:	
Northern Goshawk	<i>Accipiter gentilis</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Broad-winged hawk	<i>Buteo platypterus</i>
Rough-legged hawk	<i>Buteo lagopus</i>
Raptors observed but not trapped:	
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Golden Eagle	<i>Aquila chrysaetos</i>
Osprey	<i>Pandion haliaetus</i>
Turkey Vulture	<i>Cathartes aura</i>
Black Vulture	<i>Coragyps atratus</i>

RESULTS

Results of 1999 trapping season follow beginning with Table 3.

Table 3.

Species	September	October	Nov-Dec	Totals
American Kestrel	37	1	-	38
Merlin	116	14	1	131
Peregrine	6	6	2	14
Sharp-shinned	68	214	94	376
Cooper's	49	83	25	157
Northern Goshawk	-	-	3	3
Red-tailed	3	19	81	103
Red-shouldered	1	-	1	2
Northern Harrier	7	1	2	10
Total banded	287	383	209	834
Foreign retraps				
Merlin	-	1	-	1
Peregrine	-	1	-	1
Sharp-shinned	-	4	1	5
Cooper's	1	6	3	10
Northern Goshawk	-	-	1	1
Red-tailed	-	-	4	4
Broad-winged	-	1	-	1
Total retraps	1	13	9	23
Total trapped	288	351	218	857

Table 4. Trapping station operation statistics.

Station Statistics	September	October	Nov-Dec	Totals
Days nets were open	18	30	24	72
Hours nets were open	139	216	136	491
Raptors trapped per day	16.0	11.7	9.1	11.9
Raptors trapped per hour	2.1	1.6	1.6	1.7
Volunteer hours	191	276	185	652

Table 5. Age and sex of species captured.

Species	Not Sexed		Male		Female		Total	
	HY	AHY	HY	AHY	HY	AHY	HY	AHY
American Kestrel			16		22		38	
Merlin			58	2	66	6	124	8
Peregrine			9		5	1	14	1
Sharp-shinned			151	2	214	14	365	16
Cooper's			76	6	79	6	155	12
Northern Goshawk			4				4	
Red-tailed	99	8					99	8
Red-shouldered	2						2	
Broad-winged	1						1	
Northern Harrier			6		4		10	
Totals	102	8	320	10	390	27	812	45
Percentage							94.75%	5.25%

Table 6. Comparative data for the raptors trapped and banded during the years 1999-1989.

Species	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989
Amer. Kestrel	38	21	23	11	50	9	13	13	12	26	56
Merlin	131	176	152	77	200	99	64	91	84	81	285
Peregrine	14	23	14	22	10	8	15	10	23	35	25
Sharp-shinned	376	339	407	396	466	384	476	518	523	434	405
Cooper's	157	75	140	136	189	121	190	136	102	150	116
Nor. Goshawk	3	-	4	-	1	-	-	-	3	-	-
Red-tailed	103	43	58	36	39	57	67	46	34	19	24
Broad-winged	-	3	-	2	1	3	2	2	1	-	-
Red-shouldered	2	-	-	1	1	2	-	1	3	1	2
Rough-legged	-	-	-	-	-	-	-	-	-	-	1
Northern Harrier	10	10	3	3	5	2	3	2	-	5	9
Total banded	834	687	805	682	964	681	832	821	784	752	921
Foreign retraps	23	21	20	22	17	13	9	15	15	19	5
Total trapped	857	708	825	704	981	694	841	836	799	771	926

Table 7. Summary data on age ratios and station effort over 11 yr. period.

Station Data	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989
# HY	812	673	784	616	939	645	796	796	761	691	870
% HY	94.7	95.0	95.0	87.5	95.7	92.9	94.6	95.3	95.2	89.8	94.0
# AHY/ASY	45	35	41	88	42	49	45	40	38	80	56
% AHY/ASY	5.3	5.0	5.0	12.5	4.3	7.1	5.4	4.7	4.8	10.2	6.0
Days nets open	72	75	65	65	57	55	52	55	47	48	54
Hrs nets open	491	511	473	424	405	373	416	395	421	386	461
Hours open/day	6.82	6.81	7.28	6.52	7.11	6.78	8.00	7.18	8.96	8.04	8.54
Trapped / day	11.9	9.4	12.7	10.8	17.2	12.6	16.2	15.2	17.0	16.1	17.1
Trapped per hr	1.7	1.4	1.7	1.7	2.4	1.9	2.0	2.1	1.9	2.0	2.0

Table 8. Raptors that were trapped at Wise Point in 1999 that had been banded at other locations, foreign retraps, (there were 13 others that return data is not yet available):

Date	Specie	Sex	Age	Band #	Banded	Where
10-14	Sharp-shinned	M	HY	602-38993	10-13-99	Kiptopeke
10-14	Cooper's	F	HY	1705-18167	10-12-99	Fisherman Island
10-14	Cooper's	F	HY	1705-41757	10-14-99	Fisherman Island
10-15	Merlin	F	ASY	614-89007	10-09-97	Kiptopeke
10-21	Peregrine	F	AHY	1807-67575	10-18-98	Assateague, MD
11-12	Red-tailed	U	HY	1387-92042	11-11-99	Kiptopeke
11-12	Red-tailed	U	HY	1387-92043	11-12-99	Kiptopeke
11-22	Cooper's	F	HY	1705-41794	11-21-99	Kiptopeke
11-22	Sharp-shinned	F	HY	1523-99093	11-22-99	Kiptopeke
12-07	Red-tailed	U	HY	1387-70347	11-28-99	Fisherman Island

Table 9. Raptors that were trapped at Wise Point in 1998 that had been banded at other locations, foreign retraps, were:

Retrapped	Banded	Band #	Species	Location
9-18-98	9-18-98	804-07513	Merlin	Kiptopeke
9-18-98	9-18-98	1043-86863	Merlin	Kiptopeke
9-21-98	9-18-98	614-54143	Merlin	Cape May, NJ
9-21-98	9-18-98	614-88983	Merlin	Cape May, NJ
9-26-98	9-24-99	973-62803	Sharp-shinned	Kiptopeke
10-01-98	9-30-98	804-07602	Merlin	Kiptopeke
10-01-98	9-29-98	614-54167	Merlin	Cape May, NJ
10-07-98	10-07-98	1705-26567	Cooper's	Kiptopeke
10-08-98	10-07-98	987-35907	Peregrine	Kiptopeke
10-08-98	10-07-98	1162-81133	Sharp-shinned	Kiptopeke
10-08-98	7-17-98	3050479	Peregrine	Narssaq, Greenland
10-08-98	10-08-98	617-15863	Peregrine	Kiptopeke
10-10-98	9-30-98	1705-29546	Cooper's	Cape May, NJ
10-10-98	10-01-98	1204-54261	Cooper's	Cape May, NJ

Table 9. cont

Retrapped	Banded	Band #	Species	Location
10-14-98	10-13-98	804-07675	Cooper's	Kiptopeke
10-16-98	10-11-98	614-21107	Cooper's	Cape May, NJ
11-05-98	10-25-98	745-82277	Cooper's	Cape May, NJ
11-09-98	11-08-98	1053-20551	Sharp-shinned	Kiptopeke
12-10-98	9-13-98	1705-26548	Cooper's	Kiptopeke
12-14-98	11-09-98	1363-42367	Sharp-shinned	Cape May, NJ
12-15-98	11-19-98	852-31826	Sharp-shinned	Kiptopeke

Table 10. Raptors that were banded at Wise Point in years prior to 1999 that have been recovered at other locations:

Species	Banded	Recovered	Location Recovered
Merlin	09-28-82	05-04-86	Baffin Island, Canada
Merlin	09-29-82	04-22-84	Solon, Maine
Peregrine	10-04-83	10-10-83	Villa Clara, Cuba
Merlin	10-09-83	12-01-85	Adelaide Beach, Florida
Cooper's	10-27-83	05-09-84	Cambridge, New York
Merlin	09-21-84	04-09-85	Guarare, Panama
Sharp-shinned	09-28-84	01-24-89	Charleston, South Carolina
Sharp-shinned	10-12-84	10-08-86	Kittatinny Mountain, NJ
Sharp-shinned	10-19-84	01-05-85	Courtland, Virginia
Red-tailed	11-03-84	02-19-85	Virginia Beach, Virginia
Sharp-shinned	09-26-85	05-04-89	Randolph, New Jersey
Cooper's	10-26-85	03-04-88	Meadowbrook, Pennsylvania
Merlin	09-16-86	09-20-86	Ponce Inlet, Florida
Merlin	09-22-86	08-01-96	Azua, Dominican Republic
Sharp-shinned	10-04-86	11-27-86	St. Augustine, Florida
Sharp-shinned	10-04-86	12-20-86	Bokeeiia, Florida
Sharp-shinned	10-04-86	12-29-86	Hendry County, Florida
Sharp-shinned	10-10-86	10-10-86	Kiptopeke Beach, Virginia
Merlin	10-10-86	10-15-87	St. Johns, Newfoundland
Merlin	10-10-86	08-10-88	Cupids, Newfoundland
Merlin	10-11-86	10-11-86	Kiptopeke Beach, Virginia
American Kestrel	09-18-87	01-20-88	Anquillia, British West Indies
Merlin	09-18-87	11-30-88	La Sierpa, Cuba
Merlin	09-30-87	05-14-88	Amherst, Virginia
Sharp-shinned	10-06-87	10-05-88	Lehigh Furnace, New Jersey
Sharp-shinned	10-06-87	10-11-88	Cape May, New Jersey
Cooper's	10-10-87	10-13-88	Cape May, New Jersey
Cooper's	10-10-87	10-15-90	Branchville, New Jersey
Sharp-shinned	10-11-87	10-18-88	Fisherman Island NWR, VA
Merlin	09-12-88	04-01-91	St. Honore, Quebec, Canada
Merlin	09-23-88	10-02-88	Bellhaven, North Carolina
Merlin	09-23-88	11-28-88	Guimaro, Cuba
Sharp-shinned	09-29-88	11-28-88	Lake City, Florida
Merlin	10-01-88	05-12-94	Lac St. Francis, Quebec, Canada
Sharp-shinned	10-01-88	11-05-88	Jacksonville, Florida

Table 10. cont.

Species	Banded	Recovered	Location Recovered
Cooper's	10-08-88	02-03-89	Swanadell Acres, Delaware
Red-tailed	12-08-88	05-13-98	Painter, Virginia
Red-tailed	12-08-88	11-21-97	Kiptopeke, Virginia
Merlin	10-14-89	02-22-90	Holguin, Cueto, Cuba
Cooper's	10-22-89	10-25-90	Fisherman Island NWR, Virginia
Sharp-shinned	10-30-89	04-20-92	Colebrook, New Hampshire
American Kestrel	09-25-90	07-01-91	Phillipsburg, New Jersey
Sharp-shinned	10-02-90	01-20-91	Dagsboro, Delaware
Cooper's	10-06-90	10-06-90	Fisherman Island NWR, Virginia
Cooper's	10-09-90	10-10-90	Fisherman Island NWR, Virginia
Cooper's	10-10-90	10-12-90	Fisherman Island NWR, Virginia
Peregrine	10-10-90	05-07-98	Aguas Belas, Brazil
Cooper's	10-11-90	10-12-90	Fisherman Island NWR, Virginia
Cooper's	10-14-90	01-16-92	Melitota, Maryland
Sharp-shinned	11-03-90	04-30-91	Skowhegan, Maine
Cooper's	11-03-90	00-00-92	Littleton, New Hampshire
Sharp-shinned	11-11-90	12-10-90	Chesapeake, Virginia
Merlin	09-18-91	02-08-92	Banao, Cuba
Merlin	09-18-91	02-01-97	Gibara, Cuba
Peregrine	10-02-91	04-26-95	Santos, Brazil
Cooper's	10-04-91	01-03-96	Miami, Florida
Sharp-shinned	10-05-91	04-22-94	St. Redempter, Quebec, Canada
Sharp-shinned	10-08-91	01-20-95	Norcross, Georgia
Cooper's	10-09-91	11-16-97	Kiptopeke State Park, Virginia
Sharp-shinned	10-15-91	12-24-91	Key West, Florida
Cooper's	09-18-92	10-23-95	Cape May, New Jersey
Merlin	10-05-92	08-28-96	St. Pierre, Quebec, Canada
Cooper's	10-08-92	02-27-93	Accomac, Virginia
Peregrine	10-10-92	10-10-92	Fisherman Island NWR, Virginia
Sharp-shinned	10-10-92	02-25-95	Santee Cooper Lakes, S. Carolina
Peregrine	10-10-92	12-01-92	Virginia Beach, Virginia
Cooper's	10-11-92	10-22-92	Cape May, New Jersey
Cooper's	10-12-92	10-29-98	Cape May, New Jersey
Cooper's	10-15-92	10-29-94	North Round Hill, West Virginia
Sharp-shinned	10-16-92	02-14-93	Charleston, South Carolina
Sharp-shinned	10-18-92	10-18-92	Kiptopeke State Park, Virginia
Sharp-shinned	10-25-92	1026-92	Kiptopeke State Park, Virginia
Northern Harrier	11-04-92	04-19-95	Braddock Bay, New York
Cooper's	11-08-92	11-25-98	Cape May, New Jersey
Red-tailed	11-13-92	07-21-95	Philadelphia, Pennsylvania
Merlin	10-01-93	06-04-94	Antigonish, Nova Scotia, Canada
Cooper's	10-03-93	10-14-98	Kiptopeke State Park, Virginia
Merlin	10-09-93	11-24-93	Holguin Cueto, Cuba
Cooper's	10-11-93	05-06-95	Center Tuftorboro, New Hampshire
Sharp-shinned	10-28-93	11-17-93	Kiptopeke State Park, Virginia
Red-tailed	10-28-93	03-02-99	Richwood, New Jersey
Red-tailed	11-11-93	11-12-93	Cape May, New Jersey
Merlin	09-25-94	05-19-99	Greenwich, Connecticut

Table 10. *cont.*

Species	Banded	Recovered	Location Recovered
Red-tailed	10-11-94	10-12-94	Kiptopeke State Park, Virginia
Sharp-shinned	10-12-94	12-21-94	Tuckahoe, New Jersey
Red-tailed	10-12-94	11-26-94	Mechanicsburg, Pennsylvania
Sharp-shinned	10-19-94	01-01-95	Smyrna, Delaware
Cooper's	10-23-94	10-24-95	Cape May, New Jersey
Red-tailed	10-25-94	10-25-94	Kiptopeke State Park, Virginia
Sharp-shinned	10-29-94	07-15-97	Gatineau, Quebec, Canada
Cooper's	10-29-94	06-08-97	Stillwater Reservoir, New York
Cooper's	11-02-94	11-08-94	Kiptopeke State Park, Virginia
Sharp-shinned	11-02-94	11-09-94	Kiptopeke State Park, Virginia
Red-tailed	11-12-94	11-14-94	Kiptopeke State Park, Virginia
Red-tailed	11-12-94	05-03-97	Westminster, Massachusetts
Merlin	09-06-95	12-03-95	Los Palos, Cuba
Merlin	09-16-95	05-02-96	Sandy River, Maine
Cooper's	09-28-95	09-28-95	Kiptopeke State Park, Virginia
Cooper's	09-28-95	08-31-98	Smyrna, Delaware
Merlin	09-29-95	06-13-97	Troy, Maine
Cooper's	09-30-95	10-28-96	Media, Pennsylvania
Merlin	10-02-95	02-13-97	Cape Neddick, Maine
Cooper's	10-08-95	10-09-95	Kiptopeke State Park, Virginia
Cooper's	10-19-95	10-20-95	Kiptopeke State Park, Virginia
Red-tailed	11-22-95	11-24-95	Kiptopeke State Park, Virginia
Merlin	09-13-96	05-07-97	Centreville, New Brunswick, Canada
Cooper's	09-25-96	03-15-97	Parksley, Virginia
Merlin	10-03-96	10-09-97	Kiptopeke State Park, Virginia
Sharp-shinned	10-04-96	10-04-96	Kiptopeke State Park, Virginia
Sharp-shinned	10-14-96	04-23-99	North Hartland, Vermont
Cooper's	10-27-96	10-28-97	Kiptopeke State Park, Virginia
Red-tailed	11-06-96	12-05-99	Egg Harbor, New Jersey
Red-tailed	11-15-96	11-15-96	Kiptopeke State Park, Virginia
Sharp-shinned	11-29-96	04-07-99	Ayer's Cliff, Quebec, Canada
Merlin	09-19-97	10-19-98	Marathon, Florida
Cooper's	09-21-97	12-15-97	Lake Suzy, Florida
Peregrine	10-05-97	10-09-97	Holden Beach, North Carolina
Sharp-shinned	10-10-97	10-10-97	Fisherman Island NWR, Virginia
Cooper's	10-20-97	10-20-97	Kiptopeke State Park, Virginia
Sharp-shinned	10-25-97	10-29-97	Kiptopeke State Park, Virginia
Red-tailed	10-28-97	10-28-97	Kiptopeke State Park, Virginia
Cooper's	10-29-97	11-03-97	Kiptopeke State Park, Virginia
Sharp-shinned	11-04-97	11-08-97	Virginia Beach, Virginia
Sharp-shinned	11-10-97	11-18-97	Kiptopeke State Park, Virginia
Red-tailed	11-15-97	11-15-97	Kiptopeke State Park, Virginia
Cooper's	11-24-97	11-25-97	Kiptopeke State Park, Virginia
Sharp-shinned	09-16-98	11-06-98	Sylacauga, Alabama
Red-tailed	09-29-98	10-01-98	Kiptopeke State Park, Virginia
Red-tailed	09-18-98	02-04-99	Johns Island, South Carolina
Cooper's	10-16-98	10-16-98	Kiptopeke State Park, Virginia
Red-tailed	10-31-98	12-15-98	Lawrenceville, New Jersey
Red-tailed	11-12-98	12-23-98	Cheriton, Virginia

OBSERVATIONS:

The 1999 season produced 857 raptors, the third highest number trapped in the past 11 years. The average number of raptors trapped during the 1989-1999 seasons is 813. September 27 was the day that the highest number of raptors were trapped, 57. The 107 red-tailed hawks trapped was the highest number ever by far. The 23 foreign retraps from other banding stations was also the most ever. The station record of ten Northern Harrier was tied with 1998 and 1989. There was a significant increase of Cooper's hawks from 82 in 1998 to 167 in 1999. It was the third best year for Cooper's. The number of Peregrine falcons and sharp-shinned hawks trapped decreased. While the number of Peregrines sighted increased, only 15 were trapped. The 381 sharp-shinned trapped was the second lowest, with only 1998 being lower at 344. For the first time a Broad-winged Hawk that had already been banded was trapped. As of the preparation of this report the location it was banded is unknown.

1998 Rare Merlin

On October 6, 1998 a female Merlin that was white and cream colored with light tan streaking over its entire body was trapped and banded - #1204-05405. It had normal colored eyes so was not a true albino, but is referred to as having dilute plumage or leucism (paleness of plumage). During 1999, contact was made with several other raptor research centers in the United States and Canada and the response from each was that there was no other record of a Merlin in this plumage. There were articles about the Merlin in the April 1999 issue of *Virginia Wildlife*, and the Fall 1999 issue of *North American Birds* where it was identified as one of the outstanding rarities of 1998.

Peregrine Falcon

The Peregrine Falcon, a Federal and Virginia endangered species until July 1999, is the focus of this project. While the number of sightings were up in 1999, the number of peregrines trapped was down considerably. One interesting fact was that a peregrine was trapped on November 10 and another on 14, the latest ever in the migration season. As in past years, the adult pair of Peregrine that reside at Fisherman Island were frequently seen and those sightings are included in the numbers in Table 11.

Table 11. Peregrine data

Year	Sightings	Trapped
1999	243	15
1998	166	26
1997	204	17
1996	161	26
1995	127	13
1994	130	9
1993	96	16
1992	70	12
1991	150	25
1990	300+	39
1989	300+	25

As has been noted in prior years, the most frequently used migration route for the Peregrine is from north to south along U.S. Route 13. Approximately 75% of the Peregrine use this route. The pine trees to the north and west of the blind have grown to such height that many Peregrines cannot be seen from the blind or are not sighted until they are past the banding site.

Bald and Golden Eagle

Bald Eagles continue to be seen at Wise Point, especially early in the fall season. On an almost regular basis, two adult and two immature Bald Eagles were observed arising or landing into the east end of the tree line denoted as "C" on map #1. The west end of this line of trees appeared to be a roost for migrating eagles during mid-season. Data on Bald Eagles observations is compiled below in Table 12. There were at least one adult and one immature Golden Eagles that were seen on 7 days.

Table 12. Bald eagle observation data

Year	Days Site Open	Days Bald Eagles Sighted
1999	72	51
1998	75	35
1997	65	35
1996	65	41
1995	57	23
1994	55	21
1993	52	18
1992	55	30