

HA File No. 93.29

Winter Raptor and Waterfowl Studies  
on the Maurice River,  
Cumberland County, New Jersey  
1993-1994

Submitted July 5, 1994

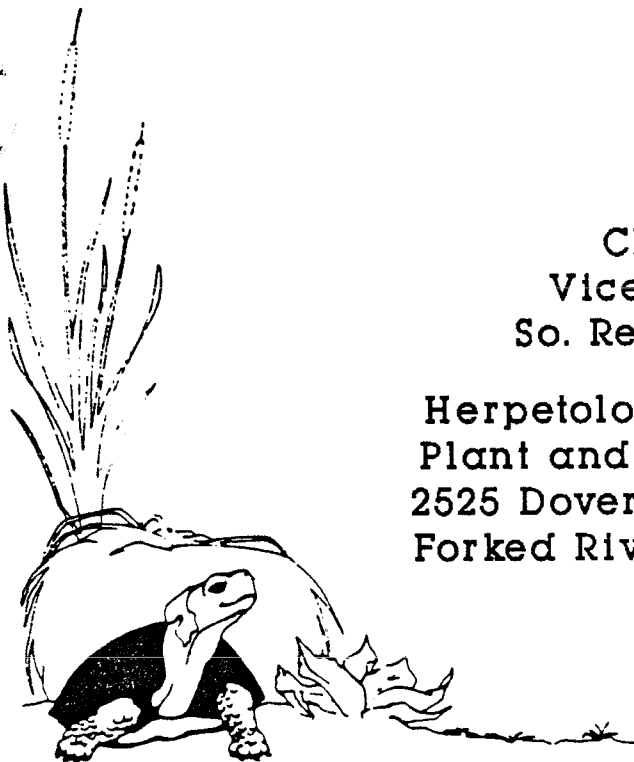
to

Mrs. Jane Galetto  
Citizens United to Protect the  
Maurice River and  
its Tributaries

by

Clay C. Sutton  
Vice President and  
So. Regional Manager

Herpetological Associates, Inc.  
Plant and Wildlife Consultants  
2525 Dover Road - Bamber Lake  
Forked River, New Jersey 08731



Bog Turtle, *Clemmys muhlenbergii*

# Herpetological Associates, Inc. - Environmental Consultants

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July 5, 1994

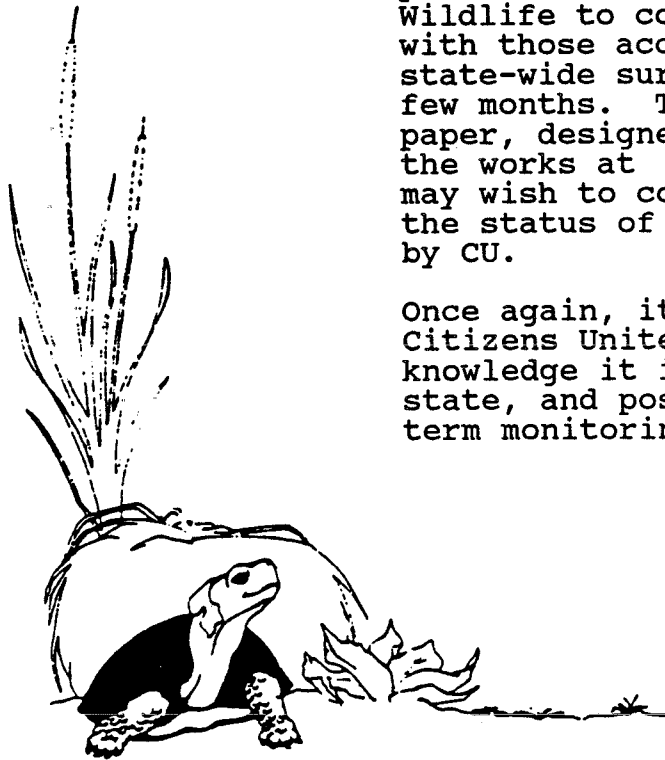
Mrs. Jane Galetto  
Citizens United to Protect the  
Maurice River and its Tributaries  
P.O. Box 474  
Millville, NJ 08332

Re: Winter Raptor and Waterfowl Studies on the  
Maurice River, Cumberland County, New Jersey  
1993-1994. HA File No. 93.29

Dear Jane,

Enclosed please find the results of the annual raptor waterfowl study of the Maurice River. This was the seventh year of what has now become a long-term study of the exceptional wildlife resources of the Maurice River. As per our agreement of March 23, 1994, we plan to work with the Division of Fish, Game and Wildlife to compare and contrast our waterfowl numbers with those accrued by the state during their annual state-wide surveys. This will be done during the next few months. To our knowledge, the long-term research paper, designed for journal publication is still in the works at the Cape May Bird Observatory, but you may wish to contact Dr. Paul Kerlinger directly as to the status of this report and when it can be expected by CU.

Once again, it has been a pleasure working with Citizens United on this important project. To our knowledge it is the only project of this type in the state, and possibly in the eastern states. True long-term monitoring projects are rarely carried out.



Specializing in "endangered" and "threatened" plants and wildlife, their ecology  
and environment, and wetlands delineation.

Mrs. Jane Galetto  
Page Two

We particularly thank you, Jane, for your personal interest, assistance and cooperation with HA on this project. We always look forward to "stop number seven" on the survey route, your hot chocolate, and warm words of support and encouragement on this project.

Please call should you have any questions regarding this report.

Sincerely,

HERPETOLOGICAL ASSOCIATES, INC.

*Clay C. Sutton*

Clay C. Sutton  
Vice President and  
Southern Regional Manager

CCS/jm  
Enclosures

cc: Donald Fauerbach, CU  
Glenn Ewan, CU  
Larry Niles, ENSP, DFGW  
Rich Kane, NJAS, Editor, RNJB  
R.T. Zappalorti, President, HA



Bog Turtle, *Clemmys muhlenbergii*

- . Bald Eagle - Bald Eagle numbers continue to rise along the Maurice River. The bitter weather and freeze-up of mid-January pushed many northern birds into the area. Sixteen individual birds were recorded on January 9, the date of the annual ENSP mid-winter eagle survey; 15 were seen on March 16. The average of 9.5 eagles per visit is the highest in the seven years of survey. Figure 2 shows wintering bald eagle use of the Maurice River, 1987 to 1994, and dramatically charts the return to the Delaware Bayshore of this endangered species. Twenty-one individual bald eagles were thought to be present in winter 1993-1994, the same number as the previous winter. Note, however, that about 20 birds is the maximum number that can be kept track of based on multiple and concurrent sightings, and individual plumage differences. There may have been far more than 21 birds present but even bald eagle's extensive age and sex-related plumage and size variations do not allow for the enumeration of an unlimited number of individual birds. For this reason, the peak numbers and average daily numbers are far better indicators of increasing winter eagle use. Some nesting and roosting data was gathered, and is available to CU upon need and request. For only the second time in seven years no golden eagles were recorded during the survey.
- . Northern Harrier - At 19.1 birds per survey harrier numbers were average during winter 1993-1994. The five year average of harriers, 1988 to 1992 was 20 birds per winter (see: "Five Year Summary of Raptor and Waterfowl Studies on the Maurice River", dated April 27, 1992, submitted to CU by HA).
- . Cooper's Hawk - At 1.7 birds per survey, Cooper's hawk numbers were the highest (by a slight margin: 1.4 in 1990-1991) in the seven years of study. Four were recorded on February 22, 1994; probably about eight wintered along the river. For only the second time in seven years no wintering northern goshawk were recorded.
- . Red-shouldered - Two different individual red-shouldered hawks were recorded, about an average number.
- . Red-tailed Hawk - The five year average, 1987-1988 to 1991-1992, for red-tailed was 36 per survey. In 1993-1994 an average of 35.8 red-tailed's were recorded. Only two rough-legged hawks were seen, a very low total which reflected the low numbers recorded throughout New Jersey during the past winter.

- . American Kestrel - At 1.67 birds per survey, the kestrel numbers were the lowest in the seven years of study. This total reflects the continuing decline of the kestrel as a breeding, migratory and wintering species in New Jersey.
- . Peregrine Falcon - Only one wintering peregrine was known to be in the Maurice River region, and was recorded on the survey of January 9 (an immature female). Probably two merlins wintered along the Maurice River, a good total.

In summary, raptor numbers for winter 1993-1994 can best be described as average when compared to the previous six years of study; only black vulture and bald eagle numbers rose significantly. It should be remembered, however, that "average" numbers of raptors for the Maurice River are among highest reported concentrations in both New Jersey and along the entire East Coast.

#### RESULTS - WATERFOWL:

The bitter cold weather and resultant "freeze-up" of Delaware Estuary marshes which brought record eagle numbers to the region were no doubt (in part) responsible for some of the lowest waterfowl numbers recorded in the seven years of survey efforts. While we have theorized that colder winters result in some of the larger waterfowl counts on the river, the winter of 1993-1994 was characterized as the coldest since 1979-1978. The Delaware Bay froze over completely in Cumberland County, and all the way south to Cape May Point, (with only the ship's channel open) for about three weeks in late January. The Maurice River had some open water, mostly on the tributaries, but on the whole, the freeze-up was greater than seen during any of the previous seven years of study. Table 2 shows the waterfowl recorded on the Maurice River, during the winter of 1993-1994.

- . Black Duck - At an average of only 953 birds per survey, and at a peak of only 1,488 birds, black duck numbers were the lowest of the seven seasons of study. The December 12 survey reflected the expected low numbers of duck hunting season, but the numbers never recovered as cold weather (theoretically) sent birds farther south. Why the late February, mid-March build-up of black, mallards and pintails did not occur is completely unknown.
- . Mallard - The 318 average is less than one-half of the previous lowest yearly average. The peak of 547 on January 9 is abysmal compared to the previous low peak of 2,178 in 1989-1990.

- . Northern Pintail - The average of 131 birds per survey is one-half of the previous lowest average (261 in 1988-1989). The expected spring build-up never occurred in 1994.
- . Common Goldeneye - The 900 goldeneye recorded at East Point on January 23 were three times the previous peak number seen on any survey. It is theorized that much of the Delaware Bay population was concentrated in the open water there, one of few open areas in the entire bay. The 4,000 unidentified diving ducks recorded there the same day were a combination of goldeneye and scaup. These 900 goldeneye combined with 500 recorded the following day at Gandy's Beach (Nantuxent Cove) represent a maxima for New Jersey. (The previous high count for anywhere in the state was 300).
- . Snow Geese - At an average of 3,796 per survey, only the snow goose bucked the trend during the winter of 1993-1994. (Previous best seasonal average: 3,898 in 1989-1990). A high of 9,200 were at East Point and Heislerville on February 27, 1994. A Ross' goose was critically identified at East Point on February 6 by Clay Sutton and Jim Dowdell, only the second record for the Maurice River (and Cumberland County).
- . Canvasback - A total of 34 canvasbacks was a good total for the river on March 23. Numbers were surprisingly high throughout the survey period. A single drake redhead on the upper river on January 9 was the first record for this species on the survey.

Low waterfowl totals recorded by HA during 1992-1993 correlated with low totals for the region recorded by NJDEPE Division of Fish, Game and Wildlife waterfowl biologists during the same time period. Comparisons of CU/HA data to Division of Fish, Game and Wildlife counts for the past seven seasons are planned and will be carried out over the next few months.

#### DISCUSSION - COMPARISONS TO THE COHANSEY RIVER:

As an adjunct to the Maurice River study conducted for Citizens United, HA carried out a similar (though less intensive) survey of the Cohansey River for another client, New Jersey Audubon Society's Cape May Bird Observatory. The data accrued during that study is presented here with CMBO's permission, and allows an important comparison between Cumberland County's (and New Jersey's) two largest tributaries to the Delaware Estuary.

Table 3 shows raptors recorded on the Cohansey River during the winter of 1993-1994. Table 4 shows waterfowl recorded on the Cohansey during this same survey. For a complete summary of methodology and previous Cohansey River survey results (for winter 1990-1991 and 1991-1992) see: "Cumberland County Delaware Estuary Study, Vol. 1, Rare, Threatened and Endangered Species Study", by Herpetological Associates, Inc., October, 1992, pages 71-73. (Note: Unpublished data, by HA for Cape May Bird Observatory, for winter 1992-1993, is available to Citizens United on request).

In comparison to the Maurice, vulture numbers averaged considerably less for the Cohansey, as did bald eagle totals. This was confirmed in the previous studies also. As in prior years, both northern harrier (at 21 birds per survey) and red-tailed hawk (at 36 birds per survey) compared very favorably with Maurice River concentrations. American kestrels proved to be much more numerous along the Cohansey (10.6 versus 1.7), due to the much greater percentage of fallow field/ agricultural lands found there.

As in the past, considerably fewer waterfowl were found along the Cohansey, no doubt due to the lack of brackish/ wild rice wetlands there. Only snow geese have proven to be far more numerous around the Cohansey (in 1993-1994 as well as in previous years), also due to the prevalence of agricultural lands. The 37,450 snow geese estimated on January 1, 1994 were a spectacular sight and significant occurrence.

#### AUTUMN HAWK MIGRATION AT EAST POINT:

As an additional adjunct to wintering raptor studies, 7.25 hours were spent during the fall of 1993 assessing raptor migration at East Point, at the mouth of the Maurice River. For a full discussion of hawk migration at East Point, see "Autumn Raptor Migration Along New Jersey's Delaware Bayshore: A Hawk Migration Study at East Point, New Jersey", by Clay Sutton, Chris Schultz, and Paul Kerlinger, submitted to Citizens United by HA, dated April 1991.

The brief studies at East Point in 1993 confirmed and corroborated the 1991 findings. Table 5 presents the hawk migration counts from East Point in the fall of 1993. A total of 143 raptors were recorded in 7.25 hours of observation, including five bald eagles and three northern goshawks. All three goshawks were seen on November 10, including a male and female seen together (one bird was photographed). East Point continues to be an exceptional location to view hawk migration in New Jersey.

# SUMMARY:

Although winter raptor populations on the Maurice River were statistically similar to the previous seven year's numbers, waterfowl counts, specifically black ducks, mallards, and pintails, were considerably lower in 1993-1994 than in previous years. It is not known whether this is attributable to the severe weather patterns or to known serious long-term declines in duck populations. During the 1993 breeding season on the North American prairies, the mallard population was estimated at 20% below its 30 year average, while pintails were 54% below the 30 year average (Source: U.S.F.W.S. in *Birder's World*, April 1994). Black ducks also continue a well documented long-term decline, and low Maurice River numbers could be linked to these factors. As duck numbers decline, the Maurice River and its tributaries take on an even added importance to beleaguered duck populations.

Two extremely positive occurrences in winter 1993-1994 should benefit Maurice waterfowl immeasurably. In early December, following sponsorship by U.S. Senator Bill Bradley and U.S. Representative William Hughes (2nd District), President Clinton signed a bill naming the Maurice River and its tributaries to the Federal Wild and Scenic Rivers System. This designation will lead to management plans which will recognize and protect the natural resources of the river, including raptors and waterfowl. Also, in February 1994, the following news release was issued by the NJDEPE Division of Fish, Game and Wildlife:

"A project to preserve and enhance New Jersey's Maurice River (Cumberland County) is slated to receive Federal funding from the North American Wetlands Conservation Council. The Department of Environmental Protection and Energy's (DEPE's) Division of Fish, Game and Wildlife submitted the proposal, together with the DEPE's Green Acres Program, Nature Conservancy, Natural Lands Trust and U.S. Environmental Protection Agency (EPA). The project will focus on land acquisition to protect against further development, and beach restoration to restore the site's natural landscape.

Partial funding will be provided by the North American Wetlands Conservation Act and administered through the United States Fish and Wildlife Service. The act matches State cooperative funding with Federal monies to protect and preserve critical wetlands habitats throughout the nation.



The project, one of 11 submitted from around the country, was ranked number one. The Federal government will provide \$1,075,000 to match a State cooperative budget of \$2,410,000 to acquire and improve critical habitats in the Maurice River portion of the Delaware Bay Estuary. Adding to the funding from private groups and the EPA, the DEPE's Green Acres and Waterfowl Stamp Programs will continue nearly \$2 million to fund the bulk of the project.

Rich in wildlife, the area remains one of the hemisphere's most prominent shorebird concentration sites as well as one of the state's most important habitats for bald eagles, several species of waterfowl and other migratory birds. In addition, the area contains the world's largest population of globally endangered joint vetches (a sensitive form of plant life related to the pea), the state's largest expanse of wild rice march and an old swamp forest, unique for its age and character".

TABLE 1 - RAPTORS RECORDED ON THE MAURICE RIVER - WINTER, 1993-1994

	12/12	12/19	01/09	01/23	02/06	02/22	02/27	03/16	03/23	AVG. SURVEY
Black Vulture	4	32	7	6	58	38	16	17	45	24.7
Turkey Vulture	46	174	266	45	82	123	95	68	62	106.7
Osprey									10	
Bald Eagle	2	6	16	8	9	8	9	15	13	9.5
No. Harrier	11	26	16	14	16	33	25	18	13	19.1
Sharp-shinned Hawk		8	2	1	1	3	1	2		2
Cooper's Hawk	1	3		2	1	4	1	2	2	1.7
No. Goshawk										
Red-shouldered Hawk			1	1						
Red-tailed Hawk	44	47	38	20	34	38	26	39	37	35.8
Rough-legged Hawk			1		1					
American Kestrel		5	1	2	1	1		1	4	1.67
Merlin		2				1			1	
Peregrine Falcon										
			1							
<b>TOTAL RAPTORS</b>	<b>108</b>	<b>303</b>	<b>349</b>	<b>99</b>	<b>203</b>	<b>249</b>	<b>172</b>	<b>162</b>	<b>187</b>	<b>203.5</b>
										<b>∞</b>

Source: HA, Inc., for CU, 1994

TABLE 2 - WATERFOWL RECORDED ON THE MAURICE RIVER - WINTER, 1993-1994

	12/12	12/19	01/09	01/23	02/06	02/22	02/27	03/16	03/23	AVG. SURVEY
Tundra Swan										
Mute Swan	14	19	10	5	3	7	10	9	12	
Snow Goose		1019	410	150	5664	7050	9200	4075	6600	3796
Canada Goose	71	4	880	179	53	14	18	5	71	
Wood Duck						5			2	
Green-winged Teal	33	11	40		12	333	311	78	355	
American Black Duck	842	842	1114	1049	1488	886	754	716	887	953
Mallard	448	260	547	135	477	344	364	157	126	318
No. Pintail	115	20	170	17	182	260	347	22	42	131
Blue-winged Teal								1		
No. Shoveler								3		
Gadwall		7						3	2	
Am. Wigeon										
Canvasback	2	5		8	3	24	19	32	34	
Ring-necked Duck								1		
Gr. Scaup		67		50			6	22	4	

TABLE 2 - CONTINUED

	12/12	12/19	01/09	01/23	02/06	02/22	02/27	03/16	03/23	AVG. SURVEY
L. Scaup	5	19		1				4	16	
Scaup (sp.)	10	40		2		12				
Oldsquaw	1	2								
Surf Scoter	1									
White-winged Scoter						1				
Com. Goldeneye		8	3	900	22	4	2	12		
Bufflehead	88	111	43	115	91	34	99	115	150	
Hooded Merganser	3	19	4			1	6	5		
Com. Merganser			2	3	4		1		2	
Red-breasted Merganser	20	56		85	21	11	12	65	20	
Ruddy Duck	34	22		1						
Unid. Diver				4000						
<b>TOTAL WATERFOWL</b>	<b>1687</b>	<b>2530</b>	<b>3224</b>	<b>6700</b>	<b>8021</b>	<b>8986</b>	<b>11149</b>	<b>5322</b>	<b>8326</b>	
<b>OTHER SIGHTINGS:</b>	<b>1</b>	<b>Redhead - 1/9</b>	<b>1</b>	<b>Ross' Goose - 2/6</b>						

Source: HA, Inc., for CU, 1994

**TABLE 3 - RAPTORS RECORDED ON THE COHANSEY RIVER  
WINTER - 1993-1994**

	01/01	01/01	03/15	AVG. SURVEY
Black Vulture		14	8	7.3
Turkey Vulture	28	146	28	67.3
Osprey				
Bald Eagle	4	3	2	3
No. Harrier	27	15	21	21
Sharp-shinned Hawk	8	1		3
Cooper's Hawk	1	1	1	1
No. Goshawk	1			
Red-shouldered Hawk	1			
Red-tailed Hawk	32	38	38	36
Rough-legged Hawk				
American Kestrel	17	4	11	10.6
Merlin		1	1	
Peregrine Falcon				
<b>TOTAL RAPTORS</b>	<b>119</b>	<b>223</b>	<b>110</b>	<b>150.6</b>

Source: HA for CMBO, 1994

**TABLE 4 - WATERFOWL RECORDED ON THE COHANSEY RIVER  
WINTER - 1993-1994**

	01/01	01/08	03/15
Tundra Swan	7		
Mute Swan	6	6	5
Snow Goose	37,450	3,001	1,050
Canada Goose	456	415	21
Wood Duck			4
Green-winged Teal	8	1	161
American Black Duck	163	47	84
Mallard	165	61	54
No. Pintail	1	1	
Gadwall	9		2
American Wigeon			4
Canvasback	75		
Gr. Scaup	8		
L. Scaup	22		
Scaup (Sp.)			15
Comm. Goldeneye	32		1
Bufflehead	1		
Hooded Merganser	4	1	
Comm. Merganser		4	5
Red-breasted Merganser	10		5
<b>TOTAL WATERFOWL</b>	<b>38,417</b>	<b>3,536</b>	<b>1,415</b>

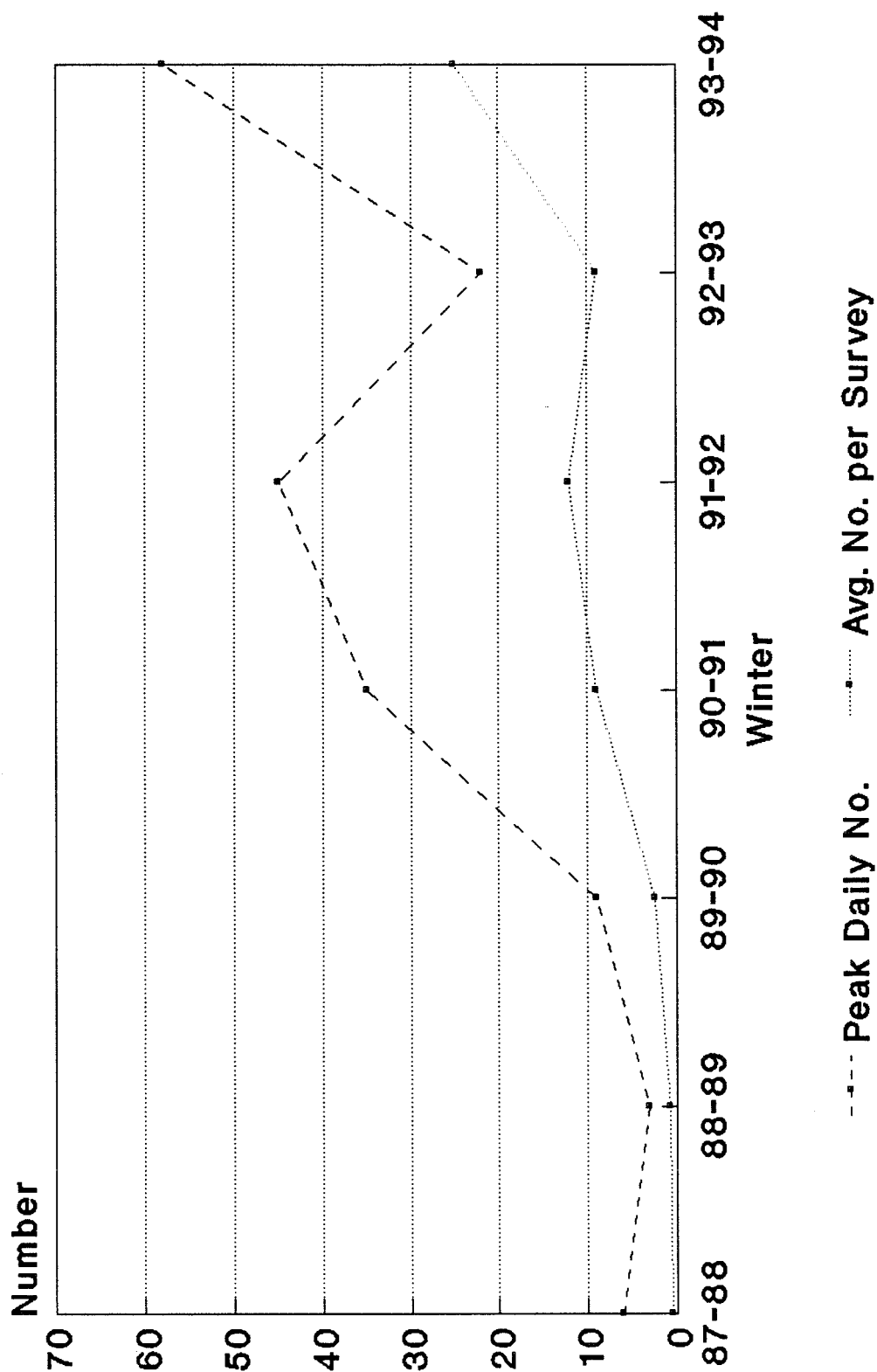
Source: HA, Inc., for CMBO, 1994

**TABLE 5 - MIGRATORY RAPTORS RECORDED AT  
EAST POINT, AUTUMN, 1993**

	10/14	10/21	11/10	11/21	TOTAL
Black Vulture		1			1
Turkey Vulture		20	20	11	51
Osprey	6				6
Bald Eagle	4			1	5
No. Harrier	4	2	7	11	24
Sharp-shinned Hawk		2	7	1	10
Cooper's Hawk		2	1	1	4
No. Goshawk			3		3
Red-shouldered Hawk			1		1
Red-tailed Hawk	2	4	15	13	34
American Kestrel		1			1
Merlin	1		1		2
Peregrine Falcon		1			1
HOURS:	(2)	(1)	(3)	(1.25)	(7.25)
<b>TOTAL</b>	<b>17</b>	<b>33</b>	<b>55</b>	<b>38</b>	<b>143</b>

Source: HA, Inc., 1994

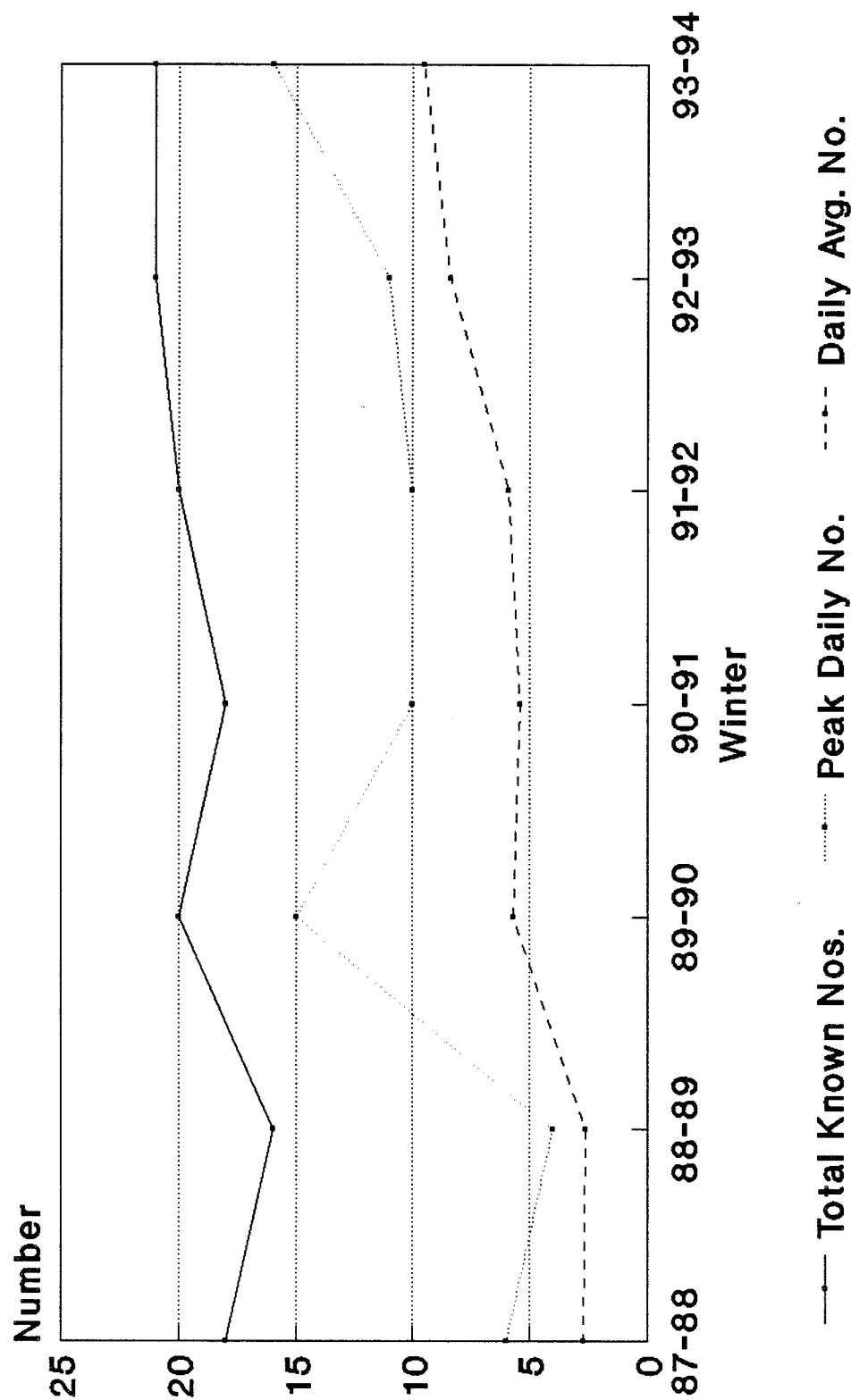
FIG. 1 - WINTERING BLACK VULTURE USE  
1987-94), MAURICE RIVER, CUMBERLAND CO.



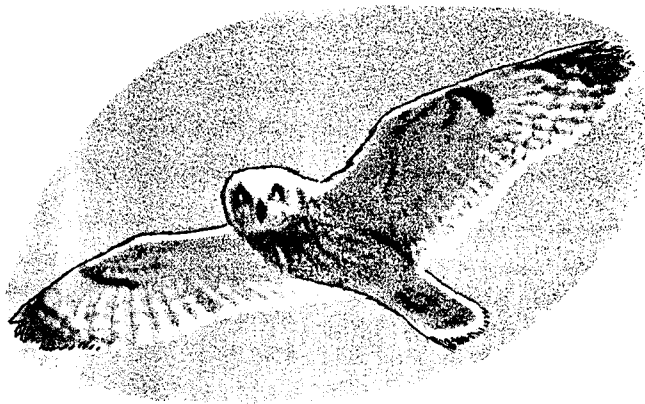
Source: HA, Inc., 1994



**FIG. 2 - WINTERING BALD EAGLE USE  
(1987-1994), MAURICE RIVER,  
CUMBERLAND COUNTY**



Source: HA, Inc., 1994



SHORT-EARED OWL

*Asio flammeus*

Herpetological Associates, Inc.  
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Forked River, New Jersey 08731