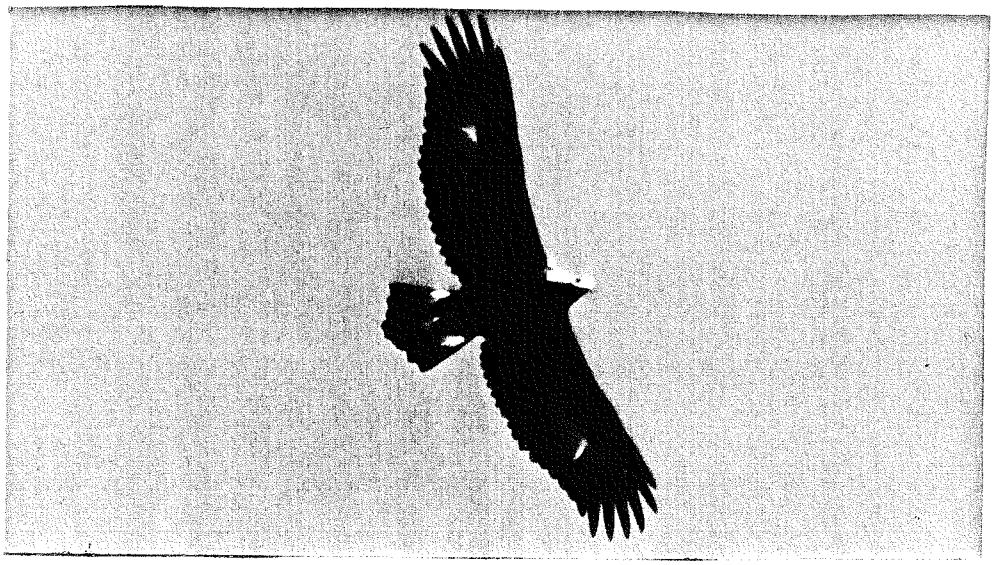
HA File No. 92.40

Sixth Annual Wintering Raptor and Waterfowl Survey on the Maurice River Cumberland County, New Jersey



(Golden Eagle, immature (1st winter plumage) photo by Clay Sutton).

Submitted April 1, 1993

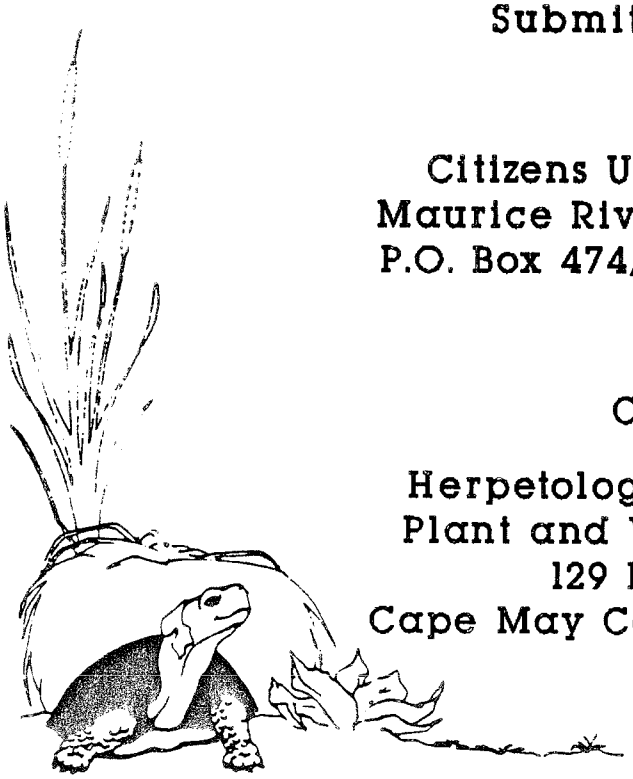
to

Citizens United to Protect the
Maurice River and Its Tributaries
P.O. Box 474, Millville, N.J. 08332

by

Clay Sutton

Herpetological Associates, Inc.
Plant and Wildlife Consultants
129 Bucks Avenue
Cape May Court House, N.J. 08210



Bog Turtle, *Clemmys muhlenbergii*

Herpetological Associates, Inc. - Environmental Consultants

Please reply to ☒ 2525 Dover Road, Bamber Lake, Forked River, N.J. 08731 (609) 693-2030
☐ 129 Buck Avenue, Cape May Court House, N.J. 08210 (609) 465-3397
☐ 68 Union Street, Rockaway, N.J. 07866 (201) 586-0845

April 5, 1993

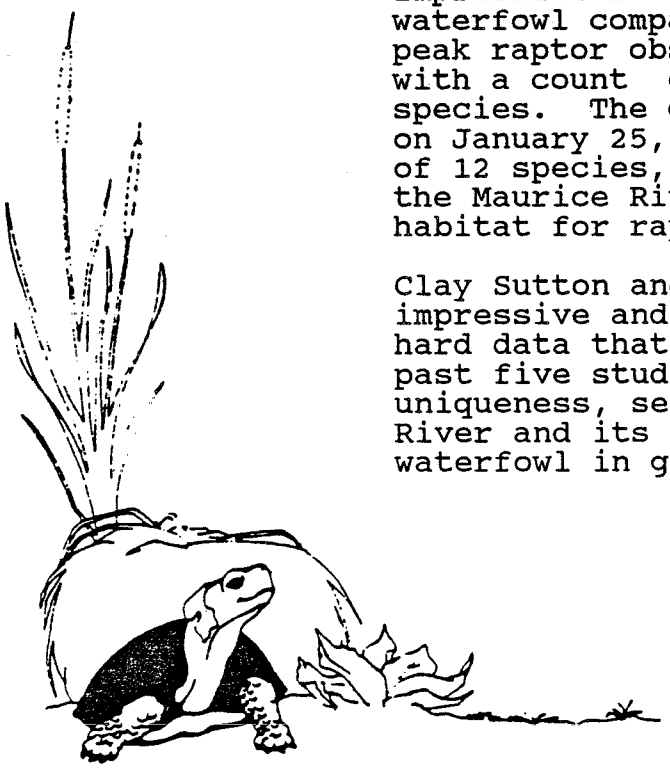
Ms. Jane Morton Galetto
Preservationist
Citizens United to Protect the
Maurice River and Its Tributaries
P.O. Box 474
Millville, New Jersey 08332

Re: Submission of Our Sixth Annual Winter Raptor and Waterfowl Survey on the Maurice River - HA File No. 92.40.

Dear Jane:

Enclosed please find several copies of our final report for distribution to your trustees, members, and other public officials. It gives me great pleasure to present the results of our sixth consecutive winter raptor and waterfowl survey conducted at eight sampling stations along the Maurice River from Millville, south to East Point. Clay Sutton and five other Herpetological Associates, Inc.'s (HA) staff members conducted the census which yielded some impressive results. The total numbers of raptors and waterfowl compare favorably with previous years. The peak raptor observations occurred on December 27, 1992 with a count of 184 individuals of 10 different species. The greatest number of waterfowl were seen on January 25, 1993 with a total of 15,420 individuals of 12 species, thus demonstrating the importance of the Maurice River wetlands corridor as "important" habitat for raptors and waterfowl.

Clay Sutton and our other associates have conducted an impressive and thorough investigation which presents hard data that is repeatable and comparable with our past five studies. These data clearly demonstrate the uniqueness, sensitivity, and importance of the Maurice River and its tributaries as "critical habitat" for waterfowl in general and the bald eagle in particular.



If you have any questions or need additional information, please do not hesitate to call upon me at 609 693-2030.

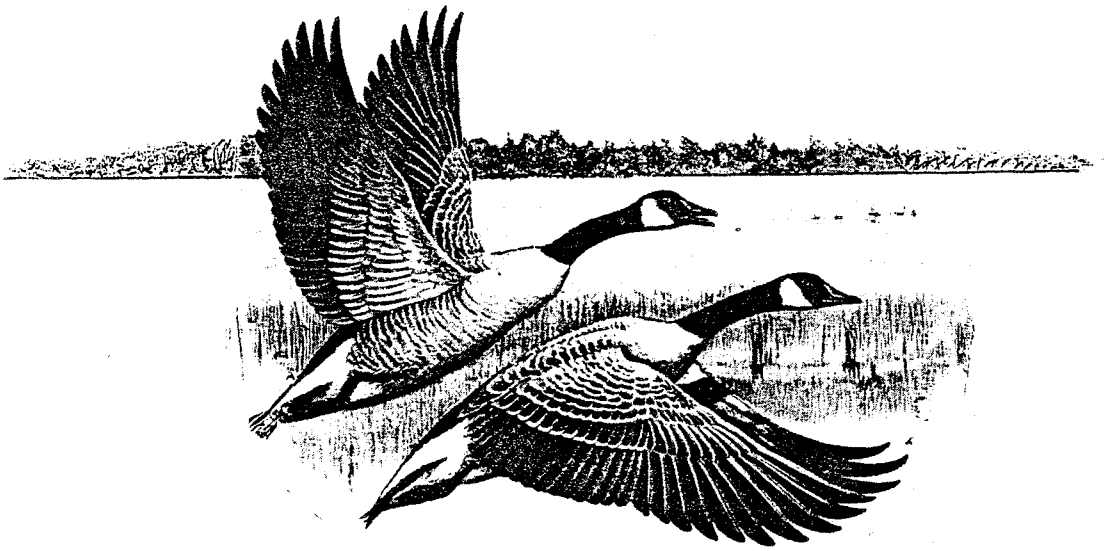
Sincerely yours,

HERPETOLOGICAL ASSOCIATES, INC.

Robert T. Zappalorti
Executive Director/President

cc: Donald L. Fauerbach, Trustee
Berwyn Kirby, Trustee
Glenn Ewan, Trustee
Dr. Larry Niles, ENSP
Anthony Pantangello, Div. FG&W
Clay Sutton, V.P., HA staff
Rick Radis, HA staff
James Dowdell, HA staff
Robert Barber, HA staff
Dan O'Connor, The Nature Conservancy

Bog Turtle, *Clemmys muhlenbergii*



Canada geese (Branta canadensis) on the Maurice River.

INTRODUCTION:

For the sixth consecutive winter season Herpetological Associates, Inc. (HA) censused wintering raptors and waterfowl on the mainstem Maurice River. Under a contract with Citizens United to Protect the Maurice River and Its Tributaries, Inc. (CU) dated December 3, 1992, HA again carried out a season-long survey of the birds of prey and ducks and geese using the river. Eight full days were spent on this monitoring effort, and two days were required to record, analyze and write-up the data and report. Once again, Clay Sutton took the lead in conducting the census assisted on two occasions by HA associate, James Dowdell, once by Mitchell Smith, and once by David Sibley. HA associate Bob Barber and Pete Dunne assisted on December 27 as well. Recorded numbers of raptors and waterfowl were found to be highly regionally significant.

METHODS:

The methodology employed for this survey effort was exactly that of the previous five seasons. By employing the same census methods, comparability, replicability, the continuity of data is ensured.

As in previous years, eight sampling stations were established along the 14 mile length of the Maurice River between Millville and East Point. Fifty minutes were spent conducting the count at each station, allowing for a full count of raptors and waterfowl present. For a complete explanation of the methods used, consult the HA report for the first years of the census, the winter of 1987-1988. Suffice it to say that the same exact methods were used this season as have been used the previous five years. With such comparability, the data set for the Maurice River, now numbering 54 surveys between the dates of the third week of November and the last week of March is virtually unparalleled in New Jersey. In 1992-1993, the river was sampled on eight days between December 9, 1992 of March 19, 1993.

RESULTS:

In conjunction with the concurrent waterfowl survey, raptor numbers were estimated on eight days during the winter of 1992-1993. Table One shows the results of this census effort, including peak daily numbers seen (shown in boldface on the chart). While the season can be summarized as a good one, above average, this varied from species to species. Table Two shows the seasonal averages of raptors compared to the previous five year averages. (The five year peaks are shown here as well, and can be compared to Table One).

TABLE 1. WINTERING RAPTORS ON THE MAURICE RIVER CUMBERLAND COUNTY, NEW JERSEY FOR 1992-1993

	12/9	12/27	1/14	1/25	2/3	2/18	3/1	3/19
Black Vulture	8	10	5	6	14	**22**	2	7
Turkey Vulture	28	**77**	53	68	**77**	52	65	48
Bald Eagle	5	6	10	10	**11**	10	9	6
Northern Harrier	13	**30**	23	13	13	11	14	14
Sharp-shinned Hawk	1	**11**	1	1	4		1	1
Cooper's Hawk	2	**5**		1	1	1	1	1
Northern Goshawk	1							
Red-shouldered Hawk		**3**						
Red-tailed Hawk	39	37	49	33	**57**	32	41	42
Rough-legged Hawk		**1**	**1**					
Golden Eagle	**1**						**1**	
American Kestrel	**4**	**4**	1	2	1	1		2
Merlin							**1**	
TOTAL RAPTORS:	102	**184**	143	133	178	129	135	121

Peak daily counts are shown in **boldface** type.
One osprey recorded on the non-survey date of March 7.

Source: Herpetological Associates, Inc,. 1993

Black vultures were seen daily on the river during the winter of 1992-1993, and the average of nine birds per census was well above the previous five year average of five. Black vultures are an increasing species throughout southern New Jersey. Turkey vultures, at 59, were well below the five year average of 72, perhaps due to low migration numbers during the fall (although we felt we never got a good "roost count" at the Laurel Lake roost due to the timing of the survey site visits. Local residents estimated over 200 turkey vultures and about 50 black vultures in this roost in mid-January).

Northern harrier numbers, at an average of 16.4 birds per visit, were down from the five year average of 20, although the peak count of 30 on December 27 was a very good number. The lower harrier average was perhaps a legacy of the extreme high tides of the fall and winter storms - tides which can significantly reduce rodent prey populations.

Sharp-shinned hawks were slightly below average at 2.5 per survey, while Cooper's hawks were above average at 1.5 per census. A single northern goshawk was recorded; a late migrant on December 9, 1992. Three red-shouldered hawks were also judged to be late migrants, all at East Point, on December 27. A freshly killed immature red-shoulder found along the road was possibly a great horned owl victim. Red-tailed hawks, a mainstay of river raptor populations, were remarkably consistent in numbers, and the average of 41 birds was above the five year average of 36. The 57 red-tails recorded on February 3 were second only to the 59 counted on February 29, 1990.

Rough-legged hawks numbers were low. Fall 1992 saw the fewest migrant rough-leggeds ever recorded in the region, and resultant wintering numbers throughout South Jersey reflected this. Few migrants coupled with presumed low prey numbers (due to tides) resulted in only two rough-legged hawks recorded on the Maurice during the season. (Short-eared owl numbers were similarly down, with only two recorded together on March 19 at East Point).

Golden eagles were, as always, a highlight of the study. This season none actually wintered, but two "migrants" were recorded, both at East Point. A subadult was a late fall migrant there on December 9, and a spring migrant (adult male) was seen there on March 1. Both were heading west up the Delaware Bayshore. Golden eagles, particularly adults, are extremely rare in spring anywhere in the state, and this was an exciting find. American kestrel numbers were down, with an average of only 1.9 per visit reflecting a region-wide trend and long-term decline. Only one merlin was seen, a probable early spring migrant on March 1. For the first time since 1989-90, and only the second time in six winters, no peregrines were seen during the census efforts. Seen as close by as Hansey creek and Moore's Beach, at least two peregrines wintered in the region, and undoubtedly used the lower river, but were never recorded on the scheduled census dates.

A glowing highlight of the 1992-1993 survey was the consistently high numbers of bald eagles using the Maurice River (see Figure 1). Although the peak of 11 balds on February 3 was below the all-time peak of 15 (on January 13, 1990), the average per river survey of 8.4 well bested the five year average of 4.5 birds. By far, 1992-1993 showed the most consistently high numbers of bald eagles ever seen on the Maurice River. This reflects a general region-wide trend, yet came during a winter when bald eagles were relatively scarce elsewhere. Perhaps high eagle numbers were linked to the extremely high wintering waterfowl numbers. An estimated 21 plus individual bald eagles used the river during the course of the survey, a figure based on concurrent and/or multiple sightings and careful plumage descriptions and notations. These 21 birds were also the highest numbers recorded in six years of study.

The high numbers of eagles using the river may have been, in part, linked to the absence of boating on the river during this winter. Perhaps due to very cold water temperatures, angler-use of the river was, oddly, at a much lower level than in previous winters. Only two boats were seen on the eight survey dates; however, they both flushed eagles as they passed by on the river. Numerous eagles were seen leaving the river in late afternoon, the direction of their flight an indication of where they were intending to roost. Eagles were seen heading to roost at Union Lake, Buckshutem Creek, Bear Swamp, Menantico Creek, the Manumuskin River, and Muskee Creek. Both Union Lake and the Menantico appeared to be the most popular roosts in 1992-1993, and indeed, eagles built a nest at Union Lake during the late winter. The venerable Bear Swamp West eagle roost was largely unused this winter, a victim of fishing pressure, boating, ATV's, and renewed sand mining activities. All roosting data is on file with HA and available upon request. (All daily sighting forms are available upon request as well). Finally, of great interest was a highly distinctive adult bald eagle seen soaring over the Menantico on February 26, 1992. This unmistakable bird was subsequently seen over 30 miles away, in Goshen, Cape May County on March 7, underscoring the importance of the Maurice and its tributaries as a roosting and feeding area for eagles throughout the entire South Jersey region. (This bird was unmistakable due to a "shredded" right wing, with few flight feathers present. Probably a shooting victim, the bird nonetheless appeared healthy when viewed on these two occasions).

In summary, 1,126 raptor sightings (of 14 species) were accrued during the 1992-1993 winter survey, for an average of 141 per survey. Once again, raptor numbers were judged to be regionally highly significant, with the highest numbers reported anywhere in the state. Bald eagle use of the Maurice continues to be the most extensive in the state, rivaled only, but not bested, by the Delaware Water Gap area - an area much larger in size than the Maurice River.

TABLE 2. SEASONAL AVERAGES OF WINTERING RAPTORS RECORDED ON THE MAURICE RIVER, CUMBERLAND COUNTY, NEW JERSEY FOR 1992-1993 COMPARED TO THE PREVIOUS FIVE YEAR AVERAGES (ALSO SHOWN ARE THE ALL-TIME FIVE YEAR PEAK NUMBERS.)

	FIVE YEAR PEAK	FIVE YEAR AVERAGE (OF PEAKS)	FIVE YEAR AVERAGE (OF AVERAGES)	1992-1993 AVERAGE (N=8)
Black Vulture	45 (91)	20	5	**9**
Turkey Vulture	209 (89)	136	72	**59**
Osprey	10 (88)	2	-	**-**
Bald Eagle	15 (90)	9	4.5	**8.4**
Northern Harrier	32 (88)	28	20	**16.4**
Sharp-shinned Hawk	13 (91)	9	3	**2.5**
Cooper's Hawk	5 (89)	3	1	**1.5**
Northern Goshawk	1 (X4)	(1)	-	**-**
Red-shouldered Hawk	2 (89)	(1)	-	**-**
Red-tailed Hawk	59 (90)	51	36	**41**
Rough-legged Hawk	4 (90-91)	3	2	**-**
Golden Eagle	2 (90)	1	-	**-**
American Kestrel	8 (89)	5	2.5	**1.9**
Merlin	1 (X3)	(1)	-	**-**
Peregrine	1 (X4)	(1)	-	**-**

Source: Herpetological Associates, Inc., 1993

Figure 1. Wintering Bald Eagle Use - Maurice River, Cumberland Co., NJ 1987-1993

Source: Herpetological Assocs, 1993

RESULTS - WATERFOWL:

Waterfowl on the Maurice River were sampled concurrently with raptors at eight stations on eight survey dates during the winter of 1992-1993. Waterfowl populations were high, in general, the best numbers seen since the first season the river was studied in 1987-1988. Table Three shows the results of the HA/CU waterfowl study. A total of 78,402 waterfowl sightings were accrued (estimated) over the eight survey dates, for an average of 9,800 ducks and geese per visit. A bare minimum of 19,910 waterfowl of 25 species used the river between December 9 and March 19, a figure derived by adding peak totals for each species - a highly conservative technique (while total usage is unknown, it is undoubtedly much, much higher than the 19,910 figure). Peak numbers and dates for each species are shown in Table Three as well.

Table Four compares the seasonal average for key species of Maurice River waterfowl to the previous five year average. Snow geese showed their second highest peak number ever (6,500 on December 27, 1992) and the seasonal average was the second highest ever, at 2,724 well above the five year average of 1,848 per visit. Canada geese were slightly down, part of a region-wide, winter-long pattern. With an average per survey of 2,916, American black ducks were slightly above, but statistically comparable to the five year average of 2,630. The peak of 4,877 blacks on February 18 just bested the 4,867 peak in 1989, but was well below the 8,120 black ducks seen on February 16, 1987.

It was the mallard and pintail numbers which were a glowing highlight of the 1992-1993 survey. Mallards showed their all time peak daily high number - 3,896 recorded on January 25, 1993, just slightly better than the previous peak of 3,758 counted on February 1, 1991. Their seasonal average of 2,048 was second only to the comparable 2,585 of 1990-1991. Northern pintails were abundant as well: the 1992-1993 seasonal average was more than three times higher than their five year average of 539. The spectacular 3,293 estimated on March 1, 1993 easily beat the previous peak of 3,020 seen by HA on March 5, 1997. For pintails it was by far the best season since the very first winter of this ongoing survey effort. The Maurice River spring pintail concentrations remain one of the highest numbers reported anywhere in the state (rivaled only by Mannington Marsh and Brigantine National Wildlife Refuge), and among the highest numbers reported on the entire Eastern Seaboard.

The percent composition of waterfowl, by species, is shown in Figure 2. This percentage is based upon the peak number recorded for each species during the winter of 1992-1993. This table clearly shows the key species of ducks and geese which comprise this Maurice River wintering waterfowl phenomena.

In the past, the larger concentrations of "puddle-ducks" (blacks, mallards, pintails) on the Maurice have been associated with extremely cold weather and resultant freeze-ups of the area marshes (when the Maurice stays open, thereby concentrating regional ducks). This season, the weather was mild with little or no freezing anywhere in the region. Therefore, it is theorized that the abundant waterfowl numbers were rooted in two other factors: 1. The 1992 duck production (breeding success) has, preliminarily, been reported to HA as the best in about ten years, as the infamous midwestern and Canadian Prairie pothole draught abated in 1992. This drought had severe impacts on waterfowl numbers, and 1992's upswing was welcome. 2. Higher number of waterfowl, coupled with the abundance of wild rice on the upper Maurice and its tributaries, contributed to high numbers on the HA/CU surveys. Long-time local resident and CU member, Glenn Ewan reported to HA that the wild rice crop in the Maurice River system in 1992 was "the best he has ever seen". In short, high duck production, coupled with unusually abundant food concentrated ducks on the Maurice in numbers previously associated with severe winters. We can only speculate what counts might have been if a regional freeze-up had occurred (what they might be if all three factors came together ...).

We don't really know the origin of the waterfowl on the Maurice River, but with the rethinking of the strict "flyway" theory, it is likely that some, if not many of the Maurice mallards and pintails, come from the Canadian Prairie pothole region. More research and consultation with waterfowl biologists would be required to shed more light on this issue, but was beyond the scope of this study and report. Of interest, however, is a banding return reported to HA of a female northern pintail shot on the Maurice River on November 27, 1992 (at Millville), that was banded on August 29, 1992 seven miles south of Twin Falls, Newfoundland (when over one year old). While more study is needed, suffice it to say that the Maurice River System greatly concentrates vast numbers of waterfowl, particularly blacks, mallards and pintails, form a wide geographical area. It is a concentration significant in the Delaware Estuary, in New Jersey, and along the entire East Coast of North America.

TABLE 3. WINTERING WATERFOWL ON THE MAURICE RIVER, CUMBERLAND COUNTY, NEW JERSEY FOR 1992-1993

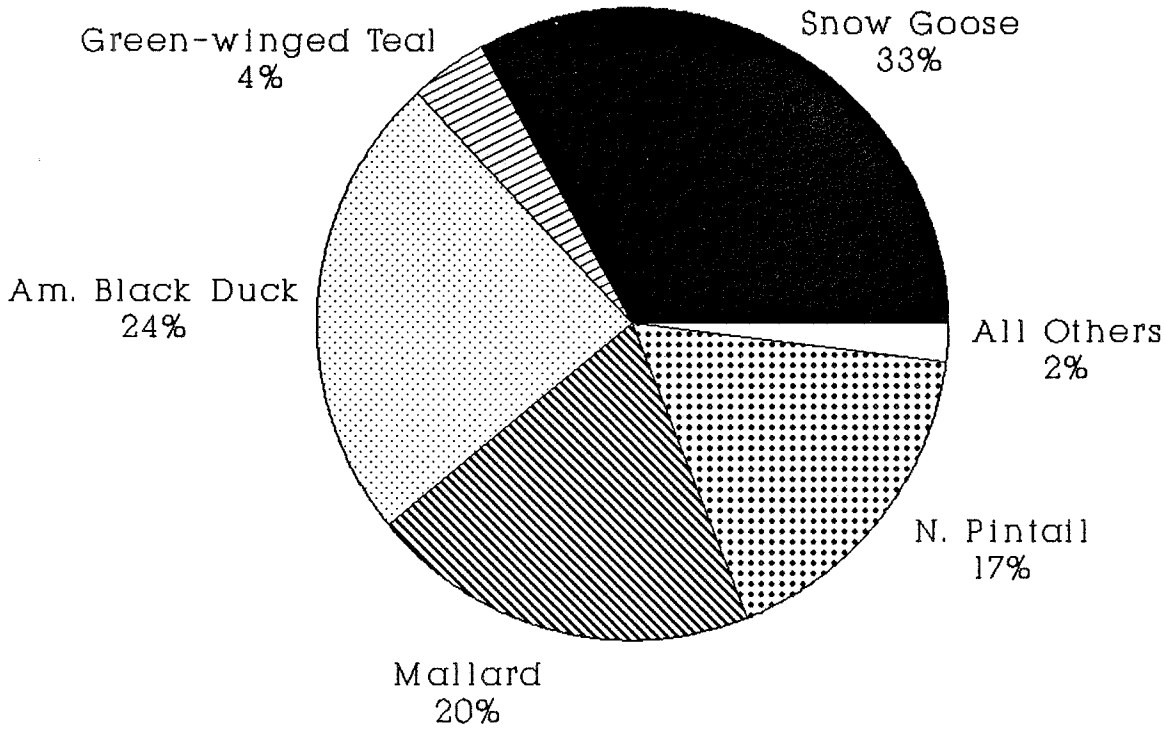
	12/9	12/27	1/14	1/25	2/3	2/18	3/1	3/19
Tundra Swan			1	22	1	1	1	**7**
Mute Swan	5	9	22	4800	13	19	24	**25**
Snow Goose	310	**6500**	5019		2	1200	64	3900
"Blue" Snow Goose				30				2
Canada Goose		**187**	150		147	36	125	89
Wood Duck								**4**
Green-winged Teal	1	39	20	154	70	220	530	**765**
Am. Black Duck	1686	3150	1588	3925	2891	**4877**	3773	1435
Mallard	460	1088	987	**3896**	3305	2835	2309	1503
N. Pintail	20	101	153	2459	2725	3197	3293	1088
Blue-winged Teal								**1**
N. Shoveler				**1**				
Gadwall		**3**				2		2
Am. Widgeon		2				**6**	4	4
Canvasback			1	1	15	2	9	**23**
Ring-necked Duck		**1**				**1**		
Greater Scaup		20	**83**				5	
Lesser Scaup							1	**10**
Scaup (Sp.)	**50**	20						
Old Squaw		**1**						
Scoter (Sp.)		**5**						
C. Goldeneye		**55**	8		2	8		8
Bufflehead	55	19	94	95	86	**108**	58	92
Hooded Merganser		11	**20**	18	6	14		13
Common Merganser	1					1	**4**	**4**
Red-breast. Merganser		4	15	19	4	12	2	**32**
Ruddy Duck		**1**						**1**
TOTAL WATERFOWL:	2588	11216	8161	**15420**	12539	12539	10202	9008

Peak daily counts are shown in **boldface** type.

TABLE 4. SEASONAL AVERAGES OF KEY SPECIES OF WINTERING WATERFOWL RECORDED ON THE MAURICE RIVER, CUMBERLAND COUNTY, NEW JERSEY FOR 1992-1993 COMPARED TO THE PREVIOUS FIVE YEAR AVERAGE (ALSO SHOWN THE ALL-TIME FIVE YEAR PEAK NUMBER FOR ALL SPECIES)

	PREVIOUS ALL TIME PEAKS (NON-SURVEY DATES)	FIVE YEAR PEAK	FIVE YEAR AVERAGE (OF PEAKS)	FIVE YEAR AVERAGE (OF AVERAGES)	1992-1993 AVERAGE (N=8)
Tundra Swan		19 (88)			
Mute Swan		25 (91)			
Snow Goose	(15,000)	14000 (90)	5510	1848	**2724**
Brant		25 (92)			
Canada Goose	(1,100)	1000 (92)	499	104	**96**
Wood Duck	(140)	6 (91)			
Green-winged Teal	(1,790)	1378 (88)			
Am. Black Duck		8120 (88)	5439	2630	**2916**
Mallard		3758 (91)	2805	1303	**2048**
N. Pintail		3020 (88)	1429	539	**1630**
Blue-winged Teal		23 (88)			
N. Shoveler		6 (88)			
Gadwall		60 (88)			
Am. Widgeon		38 (88)			
Canvasback		51 (89)			
Ring-necked Duck		78 (89)			
Greater Scaup		930 (91)			
Lesser Scaup	(70)	26 (88)			
Oldsquaw		4 (92)			
Black Scoter		2 (90)			
Surf Scoter		2160 (90)			
White-winged Scoter		200 (90)			
Common Goldeneye		305 (92)			
Bufflehead		154 (89)			
Hooden Merganser		12 (91)			
Common Merganser		74 (89)			
Red-br. Merganser		150 (90)			
Ruddy Duck	(12)	1 (89)			

Fig. 2. Percent Composition - Waterfowl by Species Based Upon Peak Nos. Recorded Maurice River Winter Waterfowl Survey 1992-1993



Source: Herpetological Assocs., 1993