

**WINTERING RAPTORS AND WATERFOWL
ON THE MAURICE RIVER
CUMBERLAND COUNTY, NJ**

The Fifteenth Year of an Ongoing and Long-term Study

Seasonal Summary: 2001-2002

**Submitted to:
Citizens United to Protect the Maurice River and its Tributaries, Inc.**



The Northern Harrier is a hallmark species of the Maurice River

By Clay Sutton and James Dowdell

June 15, 2002

**Wintering Raptors and Waterfowl Studies
On the Maurice River
Cumberland County, NJ.**

**Seasonal Summary:
Winter 2001-2002**

The Winter of 2001-2002 marked the fifteenth consecutive season of the Citizens United-sponsored Raptor and Waterfowl Project on the Maurice River. Methodology was the same as used during the previous 14 years of this survey. Counters were the same too; all surveys were conducted by Clay Sutton and James Dowdell.

A total of 10 full surveys were conducted between the dates of December 10, 2001 and March 22, 2002. In addition, numerous migratory raptor and waterfowl counts were carried out on the lower Maurice River during autumn, 2001 (and are currently ongoing in spring and summer, 2002).

For the first time, full waterbird counts, (including Loons, Herons and Egrets and Shorebirds) were conducted as a formal adjunct to the Raptor and Waterfowl studies. In the past, considerable waterbird data were gathered during regular surveys, but summer and fall, 2001, the past winter, and Spring 2002 marked the first time information was gathered and recorded regularly and systematically. We now record *all* waterbirds while conducting regular, scheduled raptor and waterfowl counts.

The Winter of 2001-2002 was aberrant in terms of weather. An extremely mild Fall was followed by the second warmest period from December through February on record. December, the warmest month (and the month in which most wintering waterfowl either arrive or are driven south towards the Maurice River), had an average temperature of 43 degrees F., 7.2 degrees higher than normal (all weather data from National Weather Service). For this reason, waterfowl and Bald Eagles were present in lower than average numbers on the Maurice River in Winter 2001-2002. Only the final few days of December and very early January saw any "normal" winter weather and temperatures in the region. The freeze up of small tributaries to the Maurice River was only partial and very brief.

Coupled with the warm winter, the Winter of 2001-2002 was New Jersey's driest winter ever (since record keeping began in 1895). The 6.91 inches of rain for the area was 5.18 inches below normal (National Weather Service – Atlantic City data). The draught resulted in the Maurice River stream flow gauges recording extremely low river flow in winter 2001-2002. It is unknown what effects this low flow, and resulting high upriver salinity levels, may have had on those waterfowl which prefer fresh or brackish water, such as Mallard and Northern Pintail.

FINDINGS -- RAPTORS:

Maurice River Winter Raptor Survey Results for 2001-2002 are shown in **Table 1**. Peak counts are **bold-faced**. For key species, the average per survey is included.

Turkey Vulture

The mild winter weather perhaps allowed for higher numbers of Turkey Vultures than normal to remain in the Maurice River Region. The average of 108 is well above normal, the peak of 175 on December 23 is an excellent total. Approximately 130 Turkey Vultures were counted at the Laurel Lake roost on February 9.

Black Vulture

Likewise, the average 19.7 Black Vultures per survey is high, and the peak count of 51 (December 23) is the highest since the all-time high count of 76 in Winter 1997-1998. For Black Vulture, a species which ranges far from the immediate river, the peak count no doubt better reflects the Maurice River area population than the average.

Bald Eagle

Eagle numbers were average during Winter 2001-2002. The peak of 15 on February 12 was respectable, yet the seasonal average of 8.5 per survey was lower than the previous two winters. The mild winter allowed for many Bald Eagles to remain well north of New Jersey and the Delaware Bayshore; no freeze-ups mean fewer eagles. Of note is that the average would have been far lower were it not for the 6-8 resident adults now found along the river daily.

Northern Harrier

It was also an average season for Harriers: the peak of 30 (achieved twice, on December 10 and December 23), was slightly below recent peaks, and the average of 24 was slightly better than recent winters.

Sharp-shinned Hawk

The 7 seen on February 1 was a good daily peak, but the 2.9 average is just that – average, and normal for the Maurice River compared to recent years.

Cooper's Hawk

Four were seen on January 15, but the average of 2.1 per survey is just slightly lower than recent years. The Coopers is secretive; based on plumage, age and sex, and locations, we estimate that probably as many as 8-10 wintered around the river.

Northern Goshawk

Two were recorded in the ten surveys, possibly the same bird (an immature male), seen near Bivalve. Two sightings though is slightly above average for this bold yet secretive (forest dwelling) accipiter.

Red-shouldered Hawk

The single sighting, an adult near Heislerville on March 5, was below average, despite a good number being present regionally this winter season. Red-shoulders are forest-dwellers, and are inconspicuous unless harsh weather forces them to sunny edges in winter -- which rarely happened in 2001-2002.

Red-tailed Hawk

This hallmark species was present in average numbers (peak 53 on January 15, average 42), but "average" for the Maurice River are an excellent number regionally.

Rough-legged Hawk

It was a lean year for this Arctic raptor everywhere in the mid Atlantic. With the mild winter, most stayed north of us. Only one was seen, a late migrant, at East Point on December 23, which did not linger or winter locally.

Golden Eagle

For the first time in the past five years, none were recorded on the Maurice River, and none to our knowledge wintered anywhere on the Delaware Bayshore.

American Kestrel

Only two individuals wintered on the river, producing a 1.3 per survey average. The peak of 4 on March 22 included at least two early northbound migrants; otherwise the average would have been even lower. Winter counts remain perilously low. We submit that the Am. Kestrel is far rarer, and far more threatened, than Bald Eagle in New Jersey.

Merlin

Merlin continue to increase in winter in New Jersey, perhaps a factor of milder winters and/or population increases. Three were recorded, making it a good winter for this small, speedy falcon on the Maurice River.

Peregrine Falcon

Sighted in six of ten surveys, a peak of 2 was seen twice, January 15 and March 22. At least 3 individuals wintered in the Maurice River Region, an excellent number for this increasing falcon. A small male Peregrine, frenetically hunting blackbirds and harassing Bald Eagles on the upper river one blustery winter afternoon, was a highlight of the season.

FINDINGS -- WATERFOWL:

Maurice River Waterfowl totals for Winter 2001-2002 are shown in **Table 2**. Peak counts are **bold-faced**. Twenty-five species were recorded during the 10 surveys conducted. Because of the mild winter, waterfowl numbers were “only average” this season. No freeze-ups meant fewer ducks pushed to the region, and also that those that were here were not concentrated into open water. Diving duck numbers were judged particularly low in 2001-2002, a region-wide phenomenon not limited to the Maurice River.

Snow Goose

Snow Geese peaked at 6,107 on February 1, but the average of 2,461 per survey is an expected, normal number for the lower Maurice River marshes.

Canada Goose

Canada Geese numbers remain high in the region, yet Maurice River numbers were lower than during the previous four winters. The average of 245 was low by recent standards, as was the peak of 620. Few migrants were thought to be included with the “locals” – the resident Canada Geese. Most Canada Geese in the area were concentrated in fields at Bayside State Prison near Leesburg. Numbers counted (estimated) there as an adjunct to this study are shown below. It is important to remember that most if not all of these geese use the Maurice River at times, often daily and /or at night to roost and feed.

Bayside State Prison Geese, 2001-2002:

	12/10	1/2	1/15	2/1	2/12	2/21	3/5	3/21
Snow Geese	40	500	3	100	100	50	15	200
Canada Geese	850	1100	650	1450	825	550	425	400

American Black Duck

The peak of 2,270 on February 21 was the lowest since 1997-1998, and the average of 1,387 is exactly that -- average. Most were generally counted at Heislerville and Bivalve.

Mallard

Mallard numbers continue to be very low on the Maurice River compared to earlier years. They peaked at a mere 703 on January 2, and averaged a paltry 396. Continued low Mallard totals are a cause for concern; they may be a result of the loss of wild rice and /or the loss of fresh and brackish areas to increasing salinity (in turn related to draught and /or rising sea level).

Northern Pintail

Pintails bucked the trend among brackish-loving ducks. Their peak of 1,069 on the expected spring-staging date of March 5 was the best in five years, as was the average of 518. Upriver numbers were only fair -- totals were bolstered and augmented by large numbers of pintail found on the lower river at the Bivalve PSE&G Wetlands Restoration Site.

Other Waterfowl

The PSE&G Estuary Enhancement Project at Bivalve continued to concentrate Bayshore Region waterfowl, with regionally significant waterfowl numbers present.

Green-winged Teal continue to use Bivalve in excellent numbers. The 3,521 on March 22 was an excellent count (total river count -- not just Bivalve). A "Eurasian Green-Winged Teal," or **Common Teal** was present at Bivalve -- seen on the non-survey date of March 19 by James Dowdell (and others). Significant was the large flock of **Scaup** (both Lesser and Greater) in Maurice River Cove. Generally far "offshore" from the cove, they were estimated at 2,500 on December 10 and 2,300 on March 14 when winds and tide pushed them near to the shore. Also spectacular were the 430 **Ring-necked Ducks** on a sand plant pond at Mauricetown on January 15. (214 there on January 2.) 430 is a coastal record, a Cumberland County all-time maxima, and in New Jersey, second only to the 700 counted at Wolf Lake, Sussex County, on November 15, 1997. Migrants (moving north or south?), they had dwindled to only 11 by February 1.

According to the US Fish and Wildlife Service, numerous and serious drought conditions in many regions meant that duck numbers nationwide were down 14 percent in 2001 in breeding surveys. Despite that, the NJDEP, DFW Mid-Winter Waterfowl Surveys found record numbers of Black Ducks and the second highest levels of Mallards, Pintails and

Canada Geese ever counted in New Jersey. In the DFW survey, a 46 percent increase from the previous year was noted, and a 37 percent increase over the 10-year average.

This Maurice River Study for Citizens United curiously only supports the state findings for Pintail. Pintail were well above recent averages, yet Blacks were average, Canadas below average, and Mallard well below average. This is perhaps explained by the fact that in mild winters ducks are well spread out and not concentrated on open rivers by freeze-ups elsewhere. In the past, the best waterfowl numbers on the Maurice River have occurred during colder winters, when little other open water is available to ducks regionally.

On final anecdotal explanation is offered for the “average” numbers. In our experience, as Bald Eagles have become far more numerous over the years, waterfowl have become far more tolerant of them, “more used to them.” Because of hidden coves and guts on the river, best waterfowl counts over the years were always obtained on days of high eagle activity, as eagles flushed ducks which would have otherwise gone uncounted because they were out of sight. Sometimes, we believe, such “flushes” made the difference between a “good” count and a “great” count. We have anecdotally observed that in recent years, ducks seem to have become far less likely to flush at the appearance of a Bald Eagle. In short, ducks seem to have become acclimated to the constant presence of eagles. This could be an unknown (and almost certainly unquantifiable) factor in lower averages of ducks in recent years, yet it is food for thought!

FINDINGS --WATERBIRDS:

Fall, Winter and Spring of the 2001-2002 season represented the first time a full and systematic Waterbird (including Shorebird) count was done as part of the survey efforts. This was in part done to document and quantify the extremely high regional significance of the PSE&G Bivalve wetlands restoration site.

Waterbird and Shorebird findings accrued as part of this **Winter 2001-2002** study are shown in **Table 3**. The waterbirds, shorebirds, and waterfowl counted on the lower River during the **Fall of 2001** are shown in **Table 4**.

We will offer no in-depth review and analysis here. This will be deferred until:

- A. 2001-2002 data is compared and contrasted to that non-uniform and anecdotal data gathered by ourselves and others in previous seasons.
- B. Several more years data are gathered in order to properly put 2001-2002 findings into perspective and context.

However, we will here note that lower river waterbird and shorebird use, particularly of the Heislerville mudflats and at Bivalve, are highly important and regionally of major significance. The estimated 6,000 Snowy Egrets and 1,500 Great Egrets (8/24) are apparently an all-time single-spot maxima for New Jersey. 8,500 Semipalmated Sandpipers (8/24), 10,000 Dunlin (10/23) and 3,000 Short-billed Dowitchers (7/28) are very high totals, as are 1,000 Forster's Terns and 50 Caspian Terns. In short, Bivalve and the lower Maurice River mudflats are regionally highly significant, and represent major waterbird and shorebird concentration and migratory staging areas. Bivalve remains the best birding site on the New Jersey Delaware Bayshore, and one of the top sites in all of New Jersey. Spring migrant shorebird and waterbird counts at Bivalve and on the lower river are ongoing at the time of writing this report, and will be included in next year's winter report.

OTHER FINDINGS OF NOTE:

Fall Raptors

As in a number of past seasons, fall migrant raptors were counted at East Point and at other locations along the lower River. 339 total raptors were counted as migrants on five dates between August 24 and October 29, 2001 in 13 total hours of observation.

The 339 raptors in 13 hours yields a respectable 26 raptors per hour average; this brief look at migration in Fall 2001 continues to attest to the high concentrations of migratory raptors in fall at East Point and along the lower Maurice River. Fall migrant raptors counted on the Maurice River in 2001 are shown in **Table 5**.

Peek Property Counts

The Natural Lands Trust, Inc. (NLT) has been a Citizens United cooperator and partner for many years. The northernmost regular winter count site location is conducted from the Peek Property overlook. For NLT interest, site-specific raptor and waterfowl totals are included here as **Table 6**. Substantial numbers were achieved at the Peek overlook -- wetlands there are of high quality and hold numerous wintering waterfowl and raptors.

Cohansey River Winter Surveys

In past years, counts have been done along the Cohansey River in western Cumberland County as an (uncontracted) adjunct to the CU Maurice River Study, and as a comparison for the Maurice River data. In 2001-2002, two full and one partial count were carried out on the Cohansey. Cohansey River data for these three winter dates is shown in **Table 7**. As in the past, Goose numbers were much higher on the Cohansey, duck numbers lower, and raptor numbers quite similar. Of note, Bald Eagle, Northern Harrier, and Red-tailed Hawk averages are nearly identical, attesting to the Cohansey's similar high value to birds of prey.

Comparative Count from the Maurice River Bridge

The regular CU winter survey counts are always done at nine stations along the Maurice River. Providing for an interesting comparison, as part of the Cumberland County Winter Raptor Festival, Clay Sutton (and others) were stationed at the Maurice River Causeway Bridge throughout the day. Below is the count done as part of educational and interpretive activities on February 9. Of note, 9 Bald Eagles is the same number recorded for the entire river a week earlier. Also, the “roost count” of Turkey Vultures using the Laurel Lake roost compares quite favorable to ambient numbers counted as part of regular surveys. The bridge count shown below is perhaps only of anecdotal interest, yet clearly attests to the ease and quality of raptor watching on the Maurice River in winter.

Cumberland County Raptor Festival --February 9, 2002

Count conducted by Clay Sutton, Gail Dwyer, and Lloyd Shaw,
From north side of Maurice River Causeway Bridge: 9:30 am – 4:30 pm.

Black Vulture	2
Turkey Vulture	130 – roost count @ 4:30 p.m. – Laurel Lake Roost
Bald Eagle:	8 (5 ad., inc.a1 st yr ad.; 3 immature – 1, 2, 3yrs old)
Northern Harrier:	4
Sharp-shinned Hawk	1
Coopers Hawk	2
Red-tailed Hawk	12
American Kestrel	1 (male)
Peregrine Falcon	1
total raptors.....	161

Also: 200 Black Duck, 150 Mallard, 50 Pintail, 75 Canada Geese.

Another example of quality birding (and of the high quality of Maurice River habitats) was noted on September 1, 2001 when a boat trip from the mouth of the Manumuskin River south to Spring Garden yielded the following (among other birds):

44 Caspian Terns
1 Royal Tern
15 Osprey
1 Bald Eagle
1 Northern Harrier
1 Cooper's Hawk
2 Red-tailed Hawks
15 C. Nighthawks (migrating SW at dusk -- a very good count for Southern NJ).

Other sightings of note on the Maurice River in 2001-2002 included:

August 24	150 Bobolink -- at Bivalve Dike 20 Savannah Sparrows -- at Bivalve Dike
October 5	1 Northern Wheatear -- Bivalve Observation Tower
February 9	30 Snow Buntings -- Maurice River Causeway

The Northern Wheatear, well-seen by well-known observer John Gluth (from NY) at the observation tower at Bivalve, was only the second record of this species for Cumberland County, and an excellent find. Ongoing and growing bird observation in the Maurice River region continues to add to our body of ornithological knowledge for the area, and more observers continue to make more and more significant finds.

SUMMARY:

In summary, Winter 2001-2002 may have been an average one on the Maurice River, but it remains a clear fact that what constitutes "average" for the Maurice would be a red-letter day almost anywhere else. The Maurice River continues to host highly significant regional populations of raptors and waterfowl in winter, and the fall movement of raptors at East Point and along the lower river is substantial and important. Emergent studies and knowledge of waterbird and shorebird use of Maurice River habitats reveals that this area is of inestimable importance during spring and fall migrations. We are learning that the Maurice is a place for all seasons.

Maurice River habitats are some of the most valuable raptor, waterfowl, and shorebird use areas in all of New Jersey and are extremely significant in the mid-Atlantic and along the eastern seaboard. Ongoing ornithological studies continue to show that the Maurice River deserves and warrants continued strong protection, and conservation efforts and measures that will be protective for the long-term.

ACKNOWLEDGEMENTS:

In closing, we thank Jim Watson, Pat Sutton, Doyle Dowdell, Leslie Ficcaglia, and Tony Ficcaglia for their companionship and enthusiastic assistance on certain surveys. We too thank Paul Lehman and Bob Barber for providing us with Bivalve sightings information on numerous occasions. We sincerely thank Jane Galetto and all the folks at Citizens United for enabling us to continue this ongoing long-term study (now entering its 16th year), one of few true long-term bird studies being carried out anywhere in New Jersey. Thank you for the privilege and opportunity to work with Citizens United on this important project on the Wild and Scenic Maurice River.

As most of you know, Citizens United's first president and one of its founders, Keith Chain died in February 2002 at the age of 49. Keith served as president of Citizens United from its corporate beginning in 1986 until 1990. He was a true leader, and with Keith at the helm, the group went from an informal grassroots level to that of a charitable nonprofit titan of conservation efforts. It is no surprise that Keith was an enthusiastic supporter and advocate of these raptor and waterfowl studies.

He is missed by very many. As Jane Galletto recently so aptly put it, Keith was a living example of the Citizens United membership slogan, a motto he may not have penned but truly embodied -- "The stewardship of the Maurice River is in the hands of those who elect to participate in its preservation." Keith chose to participate, in a big way.

We dedicate this year's study and report to the memory and legacy of Keith Chain.

Table 1

**Raptors Recorded on the Maurice River
Winter 2001-2002**

SPECIES	DATE:	12/10	12/23	1/2	1/15	2/1	2/12	2/21	3/5	3/14	3/22	Avg.
Black Vulture		14	51	20	24	17	30	12	18	10	1	19.7
Turkey Vulture		79	175	90	139	103	113	133	82	82	83	107.9
Osprey											13	---
Bald Eagle		6	5	5	8	9	15	8	7	8	14	8.5
N. Harrier		30	30	29	25	27	15	22	20	20	20	23.8
Sharp-shinned Hawk		1	3	2	6	7	4	3	1		2	2.9
Cooper's Hawk		1	3	2	4	2	1	4		1	3	2.1
Northern Goshawk			1						1			
Red-shouldered Hawk									1			---
Red-tailed Hawk		24	41	35	53	52	45	39	51	40	42	42.2
Rough-legged Hawk			1									---
Golden Eagle												---
American Kestrel		2	1		1	2	1		1	1	4	1.3
Merlin		1			1	1						---
Peregrine Falcon			1		2	1	1		1		2	.8
Total Raptors		158	312	183	263	221	225	221	183	162	190	209.2

Average was 209 raptors / survey. 2,118 total raptor sightings accrued. Peak counts shown in **bold face**.

Table 2
Waterfowl Recorded on the Maurice River
Winter 2001-2002

SPECIES	DATE: 12/10	12/23	1/2	1/15	2/1	2/12	2/21	3/5	3/14	3/22	Avg.
Mute Swan	21	21	8	16	18	17	20	14	16	14	---
Tundra Swan		2									---
Snow Goose	1,140	3,247	1,050	2,524	6,107	2,570	3,500	2,655	1,482	322	2,461
Canada Goose	84	620	420	425	160	179	179	91	155	134	245
Brant		13									---
Wood Duck		4	5		2				1	5	---
Green-winged Teal	435	372	180	87	91	222	955	1,524	1,435	3,521	882
Am. Black Duck	1,345	1,530	823	1,245	619	1,590	2,270	1,402	1,888	1157	1,387
Mallard	387	354	703	574	329	326	519	334	363	72	396
N. Pintail	343	163	89	170	322	509	699	1,069	1,064	747	518
Blue-winged Teal										2	---
N. Shoveler	62	57		6						2	---
Gadwall	130	36	35	77	30	70	49	39	40	38	---
American Wigeon	22	23			3	4	42	15	35	21	---
Canvasback	1	1		5	11	19	19		18	8	---
Ring-necked Duck	1		214	430	11				5		---
Greater Scaup	15	500	1		20		1	1		20	---
Lesser Scaup	4			140		4				2	---
scaup spp.	2,500		50			50	200		2,300		---
Common Goldeneye		12	4		2	1			1		---
Bufflehead	97	210	105	42	155	111	141	96	15	44	102
Hooded Merganser		24	1	35		9		2	5	9	---
Common Merganser		1	1				1				---
Red-breasted Merg.	54	144	56	28	58	116	7	59	8	39	57
Ruddy Duck	1	74								3	---
Total Waterfowl	6,592	6,958	3,745	5,804	7,938	5,797	8,602	7,301	8,831	6,153	

Peak counts shown in **bold face**.

Table 3
Lower Maurice River Waterbird and Shorebird Survey - Winter 2001-2002

SPECIES	DATE: 12/10	12/23	1/2	1/15	2/1	2/12	2/21	3/5	3/14	3/22
Red-throated Loon	4	2								
Pied-billed Grebe	2		1	2			8			2
Horned Grebe		1								
Double-cr. Cormorant	3	1			1					4
Great Cormorant	3	3	1	3	1	2	2	1	2	1
American Bittern		1								
Least Bittern			1							
Great Blue Heron	24	37	17	14	10	22	16	16	5	8
Great Egret		1								
Black-cr. Nt. Heron		2	11	2	2	2		3		
Ring-necked Pheasant	1	2							2	
Wild Turkey							5			
N. Bobwhite		22				1				
Clapper Rail	2	28			2		1			
Virginia Rail		1								
Black-bellied Plover	37	89	2	25		6	126	29	206	215
Semipalmated Plover	17	1								
Killdeer	13	16	10		20	56	10	9	20	3
Greater Yellowlegs	63	91	80	30	4	36	64	26	123	155
Lesser Yellowlegs	10	5	1				49	10	72	15
Sanderling					30	20			30	
Western Sandpiper		1								
Least Sandpiper	78	51								
Dunlin	3,280	4,340	500	1,008	20	315	1,756	390	570	1,520
Sh-billed Dowitcher	1	1								
Common Snipe	4		9		4	24	30		75	9
American Woodcock		1				1				
Bonaparte's Gull		1			11	4		35	50	252
Ring-billed Gull	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Glaucous Gull	1									
Herring Gull	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Great Black-backed Gull	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Forster's Tern	6									1

Survey Area = Bivalve, Heislerville WMA, & East Point, excepting April 27 (Bivalve ONLY) and May 2 (Heislerville WMA ONLY).
Peak counts shown in **bold face**.

Table 4 (page 1 of 2)
Lower Maurice River Waterbird and Shorebird Survey
Fall Migration Counts 2001

SPECIES	DATE:	6/21	7/16	7/28	8/8	8/24	9/21	9/26	10/23	10/29
Double-cr. Cormorant	75					200	350	400	100	
Great Blue Heron	2					1	4	4	12	4
Great Egret	15		300 spp.	250 spp.		1,500	200	500	25	
Snowy Egret	65	300				6,000	750	500	20	
Little Blue Heron					5	1				
Tricolored Heron						1				
Green Heron	2									
Black-cr. Nt. Heron	7							1		
Glossy Ibis	20	225	100	40		250	1		100	50
Snow Goose									50	10
Canada Goose	35					30	30	10		
Brant	1									
Mute Swan	50					3	15	15	30	2
Gadwall		2					4	10	30	
American Wigeon										
Am Black Duck	50					1	200	110	40	250
Mallard							20	10	10	6
Blue-winged Teal							20	15	20	
Northern Shoveler									100	
Northern Pintail									20	
Green-winged Teal							250	1,020	20	100
Bufflehead										3
Red-br Merganser										1

Laughing Gull	250	✓	✓	✓	✓	10,000	1,000	5,000		
Bonaparte's Gull									✓	
Ring-billed Gull	400	✓	✓	✓	✓	200	100	100	✓	
Herring Gull	20	✓	✓	✓	✓	2,500	800	750	✓	
Great Black-backed Gull	1	✓	✓	✓	✓	400	400	400	✓	
Gull-billed Tern					3					
Caspian Tern					2			4		
Royal Tern						2		1		
Forster's Tern	75	✓	✓	✓	125	1,000	750	750		
Black Skimmer	5									
Clapper Rail	1					1	2	2		

Table 4 (page 2 of 2)
Lower Maurice River Waterbird and Shorebird Survey
Fall Migration Counts 2001

SPECIES	DATE:	6/21	7/16	7/28	8/8	8/24	9/21	9/26	10/23	10/29
Black-bellied Plover		6		✓	5	150	200	1	500	150
Semipalmated Plover				50	300	10	5	5		
Piping Plover										
Killdeer		2				6			10	
Am Oystercatcher							4			
American Avocet									2	
Greater Yellowlegs				✓	15	300	20	20	200	100
Lesser Yellowlegs				✓	50	100	200	20	20	20
Willet		60		✓	✓				6	
Spotted Sandpiper						1				
Hudsonian Godwit									3	
Marbled Godwit									2	
Ruddy Turnstone					25	35				
Red Knot									1	
Semipalmated Sdp			1,500	3,000	8,000	8,500	750	500	1	
Western Sandpiper				5	2		1			
Least Sandpiper		2		✓	10	35	30		50	
Wh-rup. Sandpiper									2	
Pectoral Sandpiper							2			
Dunlin									10,000	1,000
Sh-billed Dowitcher		1	1,500	3,000	3,000	150	25		1	
Lg-billed Dowitcher			1							
dowitcher spp.									100	

Notes: 7/16, 7/28, 8/8 fide Paul Lehman (partial count); 9/21 by boat (Schooner); 9/26 includes Bivalve and Heislerville.

Peak counts shown in **bold face**.

Table 5
Lower Maurice River Fall Migratory Raptor Survey
Autumn 2001

SPECIES	DATE:	8/24	9/21	9/26	10/23	10/29
Black Vulture					1	1
Turkey Vulture		20	10	35	20	109
Osprey		12	2		1	
Bald Eagle		1		2	1	4
N. Harrier			1	7	8	12
Sharp-shinned Hawk				6		14
Cooper's Hawk						8
Northern Goshawk						1
Red-shouldered Hawk						2
Red-tailed Hawk		2	1	7		35
American Kestrel		2		8	2	
Merlin						
Peregrine					4	
Total Raptors		37	14	65	37	186

Peak Counts **bold faced**.

Table 6

Natural Lands Trust -- Peek Property
Raptors and Waterfowl
Winter 2001 - 2002

RAPTORS	DATE:	1/2	1/15	2/1	2/12	2/21	3/5	3/14	3/22
Black Vulture		4			1	2			
Turkey Vulture		8	25	10	5	10	3		3
Osprey									3
Bald Eagle		2	2	2		1	1	1	
N. Harrier				1			1		
Sharp-shinned Hawk			2	2					1
Cooper's Hawk			2			1		1	
Red-tailed Hawk		5	6	2	5	6	2	2	2
WATERFOWL									
Snow Goose		200							
Canada Goose		250	100	15	20	20	25	8	4
Wood Duck									5
Green-winged Teal			20			12	45	70	30
Blue-winged Teal									1
Am. Black Duck		10	30	2	20	10	30	40	10
Mallard		400	260	60	100	110	70	60	15
N. Pintail		1	20	150	100	20	60	40	25

High Counts are **bold faced**.

Table 7 (Page 1 of 2)
Cohansey River Survey: Winter 2001 - 2002
Raptors, Waterfowl, and Waterbirds

RAPTORS	Date:	12/30/01	2/5/02	3/1/02	Avg.
Black Vulture		3	4	1	
Turkey Vulture		66	50	92	69.3
Bald Eagle		12	3	11	8.7
Northern Harrier		33	25	7	21.7
Sharp-sh Hawk		13	1	2	5.3
Cooper's Hawk		1	2	2	1.7
Red-sh Hawk		1	2		
Red-tailed Hawk		50	40	45	45
American Kestrel		5	2	2	3
Merlin		1			
Total Raptors		185	129	162	
Note: Bald Eagle: 12/30/01, 8 adults, 2 immature, 2 un.; 2/5/02, 3 adults; 3/1/02, 8 adults, 3 immature					
WATERFOWL					
Snow Goose		7,057	10,000	6,326	7,794
Canada Goose		1,271	2,000	474	1,248
Mute Swan		80	5	3	
Wood Duck			1		
Gadwall		2			
Am Black Duck		148	50	42	80
Mallard		286	50	45	127
Northern Pintail		1		30	
Green-winged Teal		43	31	10	
Canvasback			15		
Ring-necked Duck		3		14	
Greater Scaup			10		
Bufflehead		1			
Com. Goldeneye			1		
Hooded Merganser		4			
Common Merganser		7	1		
Total Waterfowl		8,903	12,132	6,965	

Table 7 (Page 2 of 2)
Cohansey River Survey: Winter 2001 - 2002
Raptors, Waterfowl, and Waterbirds

WATERBIRDS	Date:	12/30/01	2/5/02	3/1/02	Avg.
Red-throated Loon				2	
Pied-billed Grebe		12			
Double-cr Cormorant		3			
Great Blue Heron		23	12		

Note: 2/5/02 partial survey, north (west) side of Cohansey River only; #'s are estimates. One Great Horned Owl seen.
 3/1/02 Bald Eagles: 4 nests, all had birds on eggs; Red-tailed Hawks on eggs; Horned Lark display flight.