

WINTERING RAPTORS AND WATERFOWL

ON THE MAURICE RIVER

CUMBERLAND COUNTY, NJ

The Sixteenth Year of an Ongoing and Long-Term Study

Seasonal Summary: 2002-2003

And Including A Review of WATERBIRD and SHOREBIRD Use: 1998-2003

Submitted to:

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



Marbled Godwit. Photo by Clay Sutton

By Clay Sutton and James Dowdell

April 15, 2003

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INTRODUCTION AND OVERVIEW:

The Winter of 2002-2003 marked the sixteenth consecutive season for the Citizens United-sponsored Raptor and Waterfowl Project on the Maurice River. As in previous years, Clay Sutton and Jim Dowdell conducted all counts. Methodology was the same as used during the previous fifteen years of the survey. As we have done since winter 1998-1999, Bivalve waterfowl were counted and are shown in overall totals.

A total of eleven full surveys were carried out between the dates of December 3, 2002 and March 19, 2003 -- dates which span the full winter season as it relates to bird-use of the Maurice River. As in winter 2001-2002, full waterbird and shorebird counts (including loons, herons, egrets, and shorebirds) were conducted as a formal adjunct to raptor and waterfowl studies. We now record *all* waterbirds and shorebirds while carrying out the regular scheduled raptor and waterfowl studies.

In addition to raptor and waterfowl summaries for 2002-2003, this report summarizes all previous data collected on waterbirds and shorebirds to date, including not only 2002-2003 and 2001-2002 findings, but also all ancillary and anecdotal records accrued on waterbirds/shorebirds since the study's inception in 1987. In short, this year's report will serve as a repository and reference for all Maurice River waterbird and shorebird records gathered during Citizens United sponsored studies in the past sixteen years. Also included here (in the waterbird summary tables) are waterfowl numbers counted on recent *non-winter season* dates, i.e.: fall migration records and spring migration records. This 2002-2003 report will accordingly serve as the baseline for all future shorebird and waterbird studies and counts.

To commemorate this enlarged scope of studies, this year's "cover bird" is, for the first time, a non-raptor or waterfowl species. This year's cover is graced by a Marbled Godwit, a rare but regular visitor on the lower Maurice River. The Marbled Godwit has a western distribution and while found here only in small numbers, it is representative of a bird which in-turn attracts birders to Cumberland County. The Marbled Godwit is a western vagrant "hotline bird" which, when found and reported, will always bring birders to the Cumberland Bayshore.

It is particularly appropriate to illustrate this year's report with a bird which represents ecotourism, for 2003 saw the publication of "*Birding Cumberland -- A Birder's Guide to Cumberland County*" (by Clay Sutton), sponsored by Citizens United and the Cumberland County Department of Planning and Economic Development.

It is important to note that not only does this (and previous reports) go hand-in-hand with *Birding Cumberland* in terms of documenting the importance of the Maurice River, but that the first fifteen years of this study played a huge role in making the book possible. Put very simply, much of the book is based on the findings of these Maurice River studies.

The winter of 2002-2003 was in many ways an "old-fashioned winter" with very cold temperatures and much heavier than average snowfall. It was an extremely wet winter, with fall 2002 and winter rain and snow amounts fully erasing the serious drought of 2001-2002.

For the Maurice River, the cold brought ice conditions of an extent and duration not seen for a number of years. Theoretically, ice conditions not only drive waterfowl to the Delaware Bay region from areas farther north, but also function to concentrate them (in ice-free reaches) on the Maurice River. In the past, our best waterfowl years have occurred during winters with major ice conditions on the river.

Also, the best Bald Eagle numbers are seen in harsh winters too, when cold, snow, and ice to the north drive Eagles south from lakes and rivers to our north. This was clearly the case in winter 2002-2003. Winter 2002-2003 was clearly the "winter of the Eagle," and record peak and average numbers of Bald Eagles were recorded. Rather than presenting a dry technical discussion of the eagle winter, we include here, as **Appendix 1**, an article written by Clay Sutton to be published in an upcoming issue of *New Jersey Audubon* titled "Some Days are Diamonds -- A Record Eagle Day on Cumberland County's Maurice River." Also included here in Appendix 1 is the sidebar to accompany that article, titled "Nothing Short of a Miracle -- The Return of Bald Eagles to the Delaware Bayshore," by Clay and Pat Sutton.

We hope you enjoy these accounts as much as we enjoyed our winter 2002-2003 studies on Cumberland's "Mighty Maurice". It was a memorable winter.

FINDINGS - RAPTORS:

Maurice River Winter Raptor Survey results for 2002-2003 are shown in **Table 1**. Peak counts are **bold-faced**. For key species the average per survey is included. Because of the 15 year summary presented in last year's report, we will not extensively discuss status and trends, but will compare 2002-2003 findings to recent peaks and averages.

Turkey Vulture

With an average 2002-2003 count of 88.7, Turkey Vultures were very close to the most recent (1997-2002) five year segment of the study, detailed in last year's report. The recent average is 85.8. The peak of 117 is somewhat lower than recent peaks. However, note that a non-survey count at the Laurel Lake roost on December 29 (by colleague Paul Taylor) yielded a count of 275 Turkey Vultures - well higher than any official survey. It is important to note that our peak number recorded during eleven full surveys was less than half of the vultures found at the roost. It is proof that our surveys are just a sample, and not absolute population totals.

Black Vulture

The average 13.4 Black Vulture in 2002-2003 is very close to the recent five year average of 13.8, but the peak of 36 is lower than recent peaks.

Bald Eagle

A new record peak daily count of 21 was achieved on 12 February, and that record was broken just 12 days later on 24 February when 25 were carefully counted. The average count of 14.2 just buries our previous best average of 10.4, and the recent five year segment average of 8.4. It was an amazing year for Bald Eagles on the Maurice River, cementing the Maurice's reputation as having the highest numbers of wintering eagles on the Delaware Bay and in all of New Jersey. For more information on the record eagle numbers see **Appendix 1**.

Northern Harrier

The average of 25.5 Harriers per survey, and the peak of 36 were good, compared to the 1997-2002 average of 23 and average peak of 32. Harriers remain a hallmark of the Maurice River.

Sharp-shinned Hawk

Sharp-shins peaked at an excellent 11 on 22 December, and the average of 4.2 is our highest-ever average. This continues the recent trend for Sharp-shinned Hawks on both the Maurice River and elsewhere in South Jersey.

Cooper's Hawk

Unlike Sharp-shinned, Cooper's had a comparatively low peak (3 - on three calendar dates) and average (2.0) compared to the recent five year segment average of 2.28 (see discussion below under Red-tailed Hawk).

Northern Goshawk

Only one Northern Goshawk was seen, an immature over Heislerville on 3 December. This is actually a good count for this large Accipiter - we generally see Goshawks on the average of every other year on the Maurice River surveys. Also, a non-survey date "Gos" was seen on 30 December near Bivalve.

Red-shouldered Hawk

The four Red-shouldered sightings were good for this secretive forest dweller. The average is about two sightings per winter. All were different birds, so at least four Red-shouldered Hawks wintered along or near the Maurice River in 2002-2003.

Red-tailed Hawk

While the peak of 55 Red-tailed Hawks is just slightly higher than the recent segment (53.4), our average for 2002-2003 of 45.4 is our best ever by a small margin (45 in 1998-1999). That said, it should be noted that there were no "bad counts" this past winter; that is: normally, the average is brought down by one or two days of tough conditions, either cloud cover, very high winds, or bitter cold, that keep raptors from soaring (when fewer raptors are soaring, fewer are seen and counts are therefore lower). In 2002-2003 we had exceptional weather (and soaring conditions) on every single survey date. In short, no "bad days" lowered the average. This should be taken into account for Bald Eagle and Northern Harrier as well; all are species counted best under good conditions. Conversely, forest-dwelling and "furtive" species such as Sharp-shinned Hawk and Cooper's Hawk are more "the luck of the draw." Some sightings are by chance, and some birds present are easily missed. For example, note that Cooper's was missed entirely on our last survey (8-plus hours duration on 19 March), but in the following week, on three visits to the Maurice River which were approximately 2.5 hours, 2 hours, and 5 minutes in duration, 1 Cooper's, 2 Cooper's, and 1 Cooper's were seen respectively. All in all, this is why we do 8-12 surveys per season -- to eliminate the the variables of weather and "luck." Always remember that for raptor (and waterfowl) populations, peak counts better reflect the true Maurice River wintering numbers than do averages.

Rough-legged Hawk

Continuing the (low) recent numbers and trend, only one Rough-legged was recorded - on 11 January at East Point. Few were present regionally this winter past.

Golden Eagle

True to recent expectations and trends, only one Golden Eagle was seen - an immature hunting at Heislerville and East Point on 12 February. This may have been the same individual that was known to roost at Bear Swamp for much of the winter.

American Kestrel

Another dismal and disturbing "average." Only .73 American Kestrel were seen per survey, continuing the recent downward trend. Only two individuals were known to winter - one at East Point and one at Bivalve. Wintering kestrel are rapidly disappearing from the Delaware Bayshore region, a cause for serious concern.

Merlin

Merlin were recorded twice this season, average or a little better for this wide-ranging small falcon. Also, a non-survey date Merlin was seen on 23 March. Merlin are present, yet scarce in winter on the Delaware Bayshore.

Peregrine Falcon

Peregrines were recorded four times, peaking at two on 3 February. This duo, seen together at East Point, were undoubtedly the pair from the Thompson's Beach tower "eyrie." Like Merlin, wide-ranging Peregrines can be easily missed by survey efforts, even when present on the river. With local pairs at Thompson's and Egg Island Point, Peregrines are probably of almost daily occurrence at the Bivalve PSE&G site throughout the seasons.

Table 1

**Raptors Recorded on the Maurice River
Winter 2002-2003**

SPECIES	12/3	12/12	12/22	1/7	1/11	1/21	2/3	2/12	2/24	3/10	3/19	Avg.
Black Vulture		24	36	20	4	3	13	17	13	12	5	13.4
Turkey Vulture	72	85	117	106	92	103	62	93	104	67	75	88.8
Osprey										1	14	---
Bald Eagle	5	12	11	13	14	11	18	21	25	13	13	14.2
N. Harrier	21	29	36	21	28	28	27	25	33	15	18	25.5
Sharp-shinned Hawk	2	5	11	1	3	2	4	7	8	2	1	4.2
Cooper's Hawk	2	3	3	2	2	3	2	2	2	1		2.0
Northern Goshawk	1											---
Red-shouldered Hawk	2				1			1				---
Red-tailed Hawk	44	42	37	44	42	49	44	45	55	52	45	45.3
Rough-legged Hawk					1							---
Golden Eagle								1				---
American Kestrel			1	1		1	2	1	1		1	---
Merlin	1	1										---
Peregrine Falcon	1				1			2				---
Total Raptors	151	202	252	208	188	200	172	215	241	164	172	197

Average was 197 raptors / survey. 2,165 total raptor sightings accrued. Peak counts shown in **bold face**.

Osprey also recorded (by others) on non-survey dates of 12/28 and 12/29, at Union Lake.

Goshawk also recorded (by others) on non-survey date of 12/30 at Robbinstown Road.

Merlin also seen on 3/23.

FINDINGS - WATERFOWL:

Maurice River winter waterfowl results are shown in **Table 2**. Peak counts are **bold-faced**. Twenty-seven species were seen during the 11 surveys conducted. Despite high expectations based on the cold winter and ice conditions, waterfowl numbers, in general, were judged to be only average during winter 2002-2003. This observed average season is despite a 32 per-cent increase (from the past ten year average) in the NJ State Division of Fish and Wildlife Mid-Winter Waterfowl Survey findings (as reported in press accounts).

The curious average season started well, with December counts somewhat higher than average, but expected ice-related concentrations on the Maurice River never occurred. Finally, the expected late-winter and early spring migration "staging" build-up never occurred to any degree, at least certainly not to the extent often seen.

Snow Goose

The peak of 3,600 was the lowest peak since winter 1994-1995 (although a high count of 9,000 Snow Geese were estimated by Dowdell on the non-survey date of 4 March). The average of 2,135 was only slightly lower than the 1997-2002 five-year segment. Excepting the mere eight individuals on 7 January, at the height of the freeze-up, Snow Goose numbers were remarkably consistent on the lower Maurice in 2002-2003.

Canada Goose

Only Canada Geese bucked the "average" trend in 2002-2003. The peak of 1,081 on 24 February is the all time high for Canadas in sixteen years of counts. The average of 440 per count is also the highest average ever recorded. Canada Goose numbers continue to grow on the Maurice River. No doubt some were "real" migratory Canadas pushed to the region by snow and ice to the north, but many were "local" non-migratory geese too. As in the past, geese were counted at Bayside State Prison as an adjunct to this study. Numbers estimated are as follows:

Bayside State Prison Geese -- 2002-2003								
	12/3	12/12	1/07	1/21	2/3	2/12	2/24	3/19
Snow Geese					2			1
Canada Geese	400	300	900	500	900	300	600	325

Goose numbers at the Bayside Prison were slightly down in 2002-2003, perhaps only due to heavy snow cover at times. Snow events may well be why Maurice River numbers were elevated -- as Canadas pushed off prison fields sought the nearby Maurice River to feed.

American Black Duck

The peak of 2,578 was a bit better than last year but low when compared to the most recent five-year segment. The average of 1,116 is low by all standards. The vast majority of black ducks were found on the lower river at Heislerville and Bivalve.

Mallard

Mallard continue their significant downward trend, documented in the 2001-2002 Fifteen Year Summary Report. The peak of 302 is the lowest in all sixteen winters of study. The average of 198 is the third lowest ever. Mallard, once a hallmark of the upper Maurice River, have all but disappeared.

Northern Pintail

Pintail did a bit better than Mallard in 2002-2003, but the peak of 755 is right on the average of 752 for the recent five-year segment. The average of 350 is also identical to the recent five year average of 349. These averages though are much lower than the first two five year segments of this long-term survey. Very few pintails were seen on the upper river - virtually all pintail in 2002-2003 were counted at the Bivalve site. The absence of Mallard and Northern Pintail on the upper Maurice River is inexplicable, although possibly linked to the loss of wild rice. It is cause for serious concern.

Other Waterfowl

Good numbers of "other" waterfowl did help mitigate the loss of the key puddle duck species. Green-winged Teal peaked at a good 1,261 on 10 March. A Common Teal (Eurasian Green-winged Teal) was seen at Bivalve (by others) at the end of March. A Ross's Goose was seen on 22 December for only the third record for the Maurice River. The 410 Bufflehead recorded on 24 February are the second highest tally ever, and the 172 Red-breasted Merganser on 12 December are the second best count ever. The 376 Goldeneye concentrated by ice at East Point on 24 February are also the second best total ever counted, as are the 314 Ring-necked Ducks near Mauricetown on 22 December. It was a year for "near-peaks," and overall a good winter for diving ducks on the Maurice. These high numbers were no doubt linked to the low winter temperatures and ice conditions pushing northern waterfowl concentrations south to our region.

Table 2
Waterfowl Recorded on the Maurice River
Winter 2002-2003

SPECIES	12/03	12/12	12/22	1/7	1/11	1/21	2/3	2/12	2/24	3/10	3/19	Avg.
Mute Swan	8		3	8	8	3	3	5	1	11	37	---
Tundra Swan			5									---
Snow Goose	661	1,360	2,550	8	2,770	2,925	2,802	2,153	2,650	1,940	3,600	2,129
Ross's Goose			1									---
Canada Goose	184	358	239	496	682	235	552	175	1,081	712	122	440
Brant							4					---
Wood Duck			1	1				4	1	3		---
Green-winged Teal	355	112	106	85	91	29	16	52	453	1,261	849	310
Am. Black Duck	966	1,238	2,578	320	956	564	958	882	960	1,505	1,353	1,116
Mallard	275	278	257	205	302	136	114	108	249	208	49	198
N. Pintail	406	486	310	187	586	59	115	517	340	755	88	350
N. Shoveler	2											---
Gadwall	65	90	25	10	14	4	13	7	10	62	41	---
American Wigeon									9	12		---
Canvasback		1	5	5	7		3	11	19	42	15	---
Ring-necked Duck	50	10	314			1			95	284	140	---
Greater Scaup	1		16				1	2	24	16	30	---
Lesser Scaup		3	7	15			48	75	89	106	95	---
Scaup (spp.)		1					200		400		25	---
Surf Scoter		40	12		2	1						---
White-winged Scoter		1										---
Long-tailed Duck (Oldsquaw)		2	1						2			---
Common Goldeneye		25	30	5		81	498	22	376	33	5	---
Bufflehead	95	148	247	63	95	142	355	46	410	55	149	164
Hooded Merganser		3	6	2		2	2	2	3	6	9	---
Common Merganser				20		37	62	8	1	34	5	---
Red-breasted Merg.	6	172	67	6	44	16	119	7	82	44	44	55
Ruddy Duck		3	1	6						1		---
Total Waterfowl	3,074	4,290	6,769	1,442	5,557	4,234	5,865	4,076	7,255	7,090	6,656	

Peak counts shown in **bold face**.

(10) Brant also see (by others) on non-survey date of 12/29, at Union Lake.
(9,000) Snow Geese seen on non-survey date of 3/4.

FINDINGS - WATERBIRDS AND SHOREBIRDS:

The winter of 2002-2003 was the second season of full and systematic waterbird and shorebird counts on the Maurice River, carried out in conjunction with the targeted winter Raptor and Waterfowl Study. Waterbirds and Shorebirds on the Maurice River in 2002-2003 are shown in **Table 3**.

As promised in the 2001-2002 report, we have also compiled all waterbird and shorebird data collected to date. This data comprises: (1) waterbird/shorebird data collected as part of regular winter studies, (collected systematically for two seasons, and anecdotally since 1997-1998 -- the year Bivalve emerged as an important regional waterbird/shorebird area); (2) data collected by Sutton/Dowdell outside the regular winter sampling dates (e.g., spring and fall migration data); (3) reliable numbers reported to Sutton/Dowdell by other observers at any season.

This compilation of all waterbird and shorebird data to date is shown in **Appendix 2**. Also included here are "historical" records from the early years of this study (and earlier), shown in list form at the end of Appendix 2. Also shown are waterfowl (ducks and geese), included here (for some dates redundantly) because spring, summer, and fall duck numbers, in many cases, have not been previously reported -- since they were outside of the normal winter season time span covered by previous regular "winter" reports.

Waterbird and Shorebird use of the Maurice River, particularly the lower Maurice, is highly significant. In 2002-2003, significant numbers of Black-crowned Night Herons wintered on the river. Shorebird use of the river was substantial. Greater Yellowlegs were numerous in fall and spring. Over 4,000 Dunlin wintered at Bivalve, an excellent number, although numbers dwindled in late winter due to snow and ice coverage (and possible resultant mortality....). Ice conditions to the far north pushed unprecedented numbers of Red-necked Grebes to New Jersey in late February. An amazing 43 were seen by Dowdell at Union Lake, and 15 were recorded on the survey route on 10 March. The 43 Red-necked Grebes are by far an all-time Cumberland County maxima.

The 2002-2003 numbers confirm and corroborate previous findings. In 2001-2002, lower river waterbird use and shorebird use, particularly of the Heislerville mudflats and the Bivalve site, were highly important and of major significance regionally. The estimated 6,000 Snowy Egrets and 1,500 Great Egrets (8/24) were 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 remains the best birding site on the New Jersey Delaware Bayshore, and one of the top sites in all of New Jersey. Unusual birds such as Marbled Godwit (see cover), Hudsonian Godwit, American Avocet, and Black-necked Stilt are seen annually at Bivalve, and attract birders from all over New Jersey to the region. The Maurice River is now indelibly imprinted on the "birding map" of New Jersey, a major destination for many.

Spring and fall migrant shorebird and waterbird counts at Bivalve and Heislerville should be a part of future Maurice River studies. We will continue to systematically gather waterbird and shorebird numbers in winter, and *any* anecdotal or incidental sightings and counts, at any season, will continue to be cataloged and reported as well. We recommend however that regular and systematic waterbird/shorebird (and raptor/waterfowl) counts be carried out during peak spring and fall migration periods -- times when the Maurice is as equally important to birds as it is in winter.

OTHER RELATED STUDIES:

Peek Preserve 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 Preserve overlook. For NLT interest and use, site-specific raptor and waterfowl totals are included here as **Table 4**. 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 an important comparison to the Maurice River data. In 2002-2003 two full counts were carried out on the Cohansey. Cohansey River data for these two winter dates is shown in **Table 5**. As in the past, goose numbers were much higher on the Cohansey, duck numbers generally lower, and raptor numbers quite similar when compared to the Maurice. Of note, Bald Eagle, Northern Harrier, and Red-tailed Hawk averages are nearly identical to those reported for the Maurice River, attesting to the Cohansey's similar high value to birds of prey.

Table 3
Maurice River Waterbird and Shorebird Survey -- Winter 2002-2003

SPECIES	12/3	12/12	12/22	1/7	1/11	1/21	2/3	2/12	2/24	3/10	3/19
Red-throated Loon	1									1	
Common Loon				1							
Pied-billed Grebe										1	
Red-necked Grebe										15	11
Double-cr. Cormorant	1								1	2	5
Great Cormorant		2			2			1			
Great Blue Heron	35	22	34	19	18	15	24	21	22	18	6
Great Egret			1								2
Tricolored Heron			1								
Black-cr. Nt. Heron	10	2	4	5	2	7	3	11	7	7	
Black-bellied Plover			1					10	11		
Semipalmated Plover		1	2								
Killdeer	8	3	6	8		2	2		8	8	2
Greater Yellowlegs	28	15	77	15	10	5	3		13	54	49
Lesser Yellowlegs			1							9	25
Sanderling		1	40	3		1					
Pectoral Sandpiper										6	
Dunlin	850	512	2,628	646	4,050	17	910	109	57	3	150
Common Snipe	11	4	17	2		5	1	1			22
American Woodcock								5			
Clapper Rail		✓	27								
Virginia Rail			2								
Ring-necked Pheasant	1	1									
Wild Turkey			11								6
American Coot										1	1
Bonaparte's Gull	1			✓	✓	✓	✓	✓	✓	✓	✓
Ring-billed Gull	✓	✓	293	✓	✓	✓	✓	✓	✓	✓	✓
Herring Gull	✓	✓	1,995	✓	✓	✓	✓	✓	✓	✓	✓
Greater Black-backed Gull	✓	✓	96	✓	✓	✓	✓	✓	✓	✓	✓
Lesser Black-backed Gull			1								

(43) Red-necked Grebes were seen by Dowdell at Union Lake on the non-survey date of 4 March.

Table 4

Natural Lands Trust Peek Preserve
Raptors and Waterfowl
Winter 2002-2003

RAPTORS	12/03	12/12	1/07	1/11	1/21	2/03	2/12	2/24	3/10	3/19
Turkey Vulture	1	2	8		6	1	8	2	2	11
Osprey										3
Bald Eagle			3			5	6		1	1
N. Harrier	1	1			2			2		
Sharp-shinned Hawk		1								
Cooper's Hawk			1				1			
Red-tailed Hawk		1	1		1		3	2	1	
WATERFOWL										
Snow Goose						100	10			10
Canada Goose	10	14	100		30	87	2	100	170	
Wood Duck									33	49
Green-winged Teal							12			2
Am. Black Duck	2		8	20	6		40	4	80	8
Mallard	20	27	120	40	20	9	75		5	
N. Pintail		2		20		8			32	2
Com. Merganser			20			1	1		2	2
Red-br. Merganser									2	2
Hooded Merganser									2	5

Table 5
Cohansey River Surveys: 12/29/02, 1/10/03
Raptors and Waterfowl

Raptors	12/29/02	1/10/03	Avg.
Black Vulture	16	25	20.5
Turkey Vulture	29	129	79
Bald Eagle	12	15	13.5
Golden Eagle	1		---
Northern Harrier	19	27	23
Sharp-shinned Hawk	9	3	6
Cooper's Hawk	3	2	2.5
Red-shouldered Hawk	1	1	---
Red-tailed Hawk	39	41	40
Rough-legged Hawk	1		---
American Kestrel	5	4	4.5
Total Raptors	135	247	

Bald Eagle: 12/29/02, 7 adults, 3 immature, 2u.; 1/10/03, 7 adults, 1 sub-adult, 7 immature

Waterfowl			
Snow Goose	8,468	3,856	6,162
Canada Goose	1,873	1,807	1,840
Mute Swan	6	15	---
American Black Duck	96	104	100
Mallard	230	506	368
Northern Pintail		1	---
Greater Scaup	3	1	---
scaup spp.	43		---
Bufflehead	2		---
Red-breasted Merganser	2		---
Ruddy Duck	4		---
Total Waterfowl	10,727	6,290	

SUMMARY:

It is difficult to make an overall and concise summary of something as broad and complex as raptor, waterfowl, waterbird and shorebird use of the Maurice River. In winter 2002-2003, raptor use was clearly above average, with the record Bald Eagle concentrations a major highlight. Excellent weather conditions on all survey dates led to above average numbers of most species of hawks.

Excepting the record numbers of Canada Geese, and weather related excellent numbers of diving ducks, the populations of key species of ducks were quite low during 2002-2003. American Black Duck and Northern Pintail numbers were below average and Mallards were almost nonexistent by previous standards. The problems of Canada Goose herbivory, the loss of wild rice, and impacts to other species were extensively discussed in the 2001-2002 Fifteen Year Summary Report and will not be revisited here. Suffice it to say that continued study and concern are needed and called for.

Even with known declines of puddle ducks, the Maurice River continues to host highly significant regional populations of raptors and waterfowl in winter, and the migratory movements of raptors and other birds 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 reveal that the area is of inestimable importance to these groups of birds during spring and fall migrations. We have learned that the Maurice is a place for all seasons, and important open space for all birds.

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 focused ornithological studies continue to show that the entire Maurice River watershed warrants and deserves continued strong protection, and conservation efforts and measures that will be protective for the long-term.

ACKNOWLEDGEMENTS:

We sincerely thank the officers, trustees, and members of Citizens United for enabling us to continue this ongoing and long-term study, which in 2003-2004 will enter its 17th season. Thank you for the privilege and opportunity to work with CU on this highly important project on the incomparable Wild and Scenic "Mighty Maurice." As the attached Appendix 1 will attest, at times it hardly seems like work, for the rewards are so great.

DEDICATION

In closing, in January 2003, I noted with great sadness the recent death of CU member Dr. Ed Nemore. Beyond his exemplary dedication as a physician, Ed was very well known for his devotion and support of environmental causes, and for his love of Cumberland County and the Maurice River and its tributaries. I did not know Ed well, but did have the privilege of meeting him a number of times. Particularly, I had the honor and pleasure of sitting with Ed several times on the banks of the lovely Manumuskin River, and discussing arts, politics, and environmental issues, along with, mostly, the wonders of the rivers. Ed Nemore was a superb keeper of the flame, and one of those people who by their very passion and commitment both inspire and set a splendid example. I remember those Manumuskin encounters well, and with fond recollections which bring a smile. We will all miss Ed greatly, but his memory, energy, and good works will endure.

I dedicate this year's study and report to the memory, and the gifts, of Dr. Ed Nemore.

-- Clay Sutton

APPENDIX 1

SOME DAYS ARE DIAMONDS

A Record Eagle Day on Cumberland County's Maurice River

By Clay Sutton

and

NOTHING SHORT OF A MIRACLE

The Return of Bald Eagles to the Delaware Bayshore

By Clay and Pat Sutton

-- both will be published in an upcoming issue of *New Jersey Audubon*

SOME DAYS ARE DIAMONDS

A Record Eagle Day on Cumberland County's Maurice River

Clay Sutton

Some days are diamonds, and some days are rocks. It may not have been rocker Tom Petty who said it first, but he said it, or rather sang it, well. Just once in a while, all the key factors will come together, at just the right time, to create a truly magical moment. In birding, in rare instances, the wind, the weather, the tides, and maybe, for all I know, biorythems and the planetary alignment, will combine to create a red-letter day, and a time when our environmental cup is indeed even more than half-full. February 12, 2003 was just such a day -- one for the record books, a true diamond of a day.

It might be science but who says science can't be fun? Maybe it isn't science at its most complex, we're not, say, medical researchers, but from a conservation standpoint it is mighty, mighty important. We, Jim Dowdell and I, were involved in the 16th year of our ongoing wintering raptor and waterfowl survey of the Maurice River. The "Mighty Maurice" is Cumberland County's jewel, and the largest tributary, save the Delaware River itself, to the Delaware Estuary and Bay.

Begun in 1987 with funding from Citizens United to Protect the Maurice River and its Tributaries, Inc. (CU), the study was initially part of an effort to protect the river from the possible adverse impacts of a major sand mining, barging, and dredging proposal. However, after the barge ports were soundly defeated, the survey evolved into a true long-term research effort, and has been funded continuously by CU since 1987. This long-term monitoring effort on the status and distribution of hawks, eagles, waterfowl, and other waterbirds is one of very few true long-term research efforts on the entire Delaware bayshore on *any* group of animals or plants.

The study was the hope and vision of the stalwart conservationists of CU, led by one of CU's founders and President (and current New Jersey Audubon Board of Directors member) Jane Morton Galetto. With incredible foresight and emphasis on long-term goals, and knowing that documentation is a key to protection, the many able directors, members, and supporters of Citizens United have been both the benefactors, and in the end the beneficiaries, of a much heralded and oft-quoted study.

The 16 years of data to date have documented so much: massive waterfowl numbers -- some of the highest reported on the Delaware Bayshore, the highest density of raptors, primarily Red-tailed Hawks and Northern Harriers, reported in New Jersey or the mid-Atlantic region, and in an offshoot of the primary study effort, regionally significant shorebird numbers at every season. There have been some disquieting notes too -- a dramatic increase in Canada Geese and a resultant major

negative impact to wild rice-dependent Northern Pintails and Mallards, and an observed long-term severe downhill slide of American Kestrel. But one of the major findings and highlights of the 16 year study is the dramatic return of the Bald Eagle (see accompanying sidebar), with a clear and definite yearly increase in both the average and peak counts recorded.

And that's where the fun comes in. For over 150 times now in 16 years (we usually do about 8-12 surveys per year, from the third week of November to the third week of March), Jim Dowdell and I have "suited-up" for the surveys. Yes, suiting up is necessary -- it can be cold, very cold, on the Maurice River in mid winter. We choose a day of good weather. Nine stops, forty minutes per stop. Count all raptors, waterfowl, and waterbirds. Move on to the next site. No, even after 16 years, it's never gotten boring. Every survey is eagerly anticipated, full of promise. "Maybe we'll see a Goshawk today, we're overdue" or, "Gee, I hope that Robbinstown Road Rough-legged enters our airspace this time so we can count it!" or, "There's just gotta be a Ross's Goose in that Heislerville Snow Goose flock!" are the types of comments that punctuate every early morning ride to the first stop on our survey route.

It hardly seems like work and is almost always fun. Almost always....yes, some days are admittedly better than others, and sometimes much better. We try to pick the weather, the tides, but maybe once or twice a winter, due to periods of bad weather or scheduling conflicts, we sometimes hit a clunker, with everything working against us. Not often, but once in awhile, some days are rocks, far from the hoped-for diamonds. We've noted too that on the slow days the winter winds are bitter, chilling us to the bone. But on the good days, when everything comes together, we never even notice the cold. I guess it is the rocks which, by comparison, make the diamonds shine so brightly.

We met at 7:30 am with anticipation. With the "old-fashioned winter", and the river partially frozen, we had been having a good winter with Bald Eagles. The previous survey, ten days before, we had recorded 17, our best yet for the season, although still short of our record daily high count of 20 -- achieved twice over recent previous years. Our anticipation was in part based on the predicted weather: a cold front passing with brisk (or better) westerly winds behind it. We well knew that eagles love wind (and indeed, later that morning, while watching two eagles cavorting high over the river, a 62 mph gust was recorded on a weather station on a roof next to the dock on which we stood. Or almost didn't stand -- the gust nearly blew us over -- but the two young eagles, intent on their adolescent chase, seemingly never noticed the gale-force gust).

At our first stop, the northern-most survey point, at the Natural Lands Trust Inc.'s Peek Preserve, we got off to a very good start - two immature Bald Eagles and an adult at point blank range - harassing a Great Cormorant on the river. Whether they were trying to eat the Cormorant or steal his catch we didn't know. Scanning down-river, we quickly added 3 new birds, and we commented that this stellar start was our best-ever beginning for a daily survey.

At our next stop, a dock further down-river, we added, amazingly, another six Bald Eagles, two adults on their nest and another adult and three immatures working their way up the river. (We take great care not to double count, and birds are counted, or not counted, based on age, plumage,

molt, timing, and multiple and concurrent sightings). We worked our way down-river, and at each site added new birds almost like clockwork. Several times, interestingly, we sighted a new bird as we were literally getting in the car to leave. For once, it seemed as if the eagles wanted to be counted.

By the half-way mark, at the Maurice River Bridge, we had already tallied 17 Bald Eagles, tying our best seasonal effort to date, and for the first time we mentioned quietly that maybe a record was in sight. Yes, it might be science but it was pure fun, and the competitive aspect of bird-finding raised its friendly head. We wanted to beat our own record, needed to, and we scanned all the harder, the challenging quest for the "record" foremost in our minds.

With so much to look at, the day went quickly, with many wonders. Despite the early date (February 12) and the harsh weather, there were signs of spring. Red-tailed Hawks, up in the gale, were courting, their feet down, up-curved wing soaring flight and roller-coaster dives signifying a coming end to the long snowy winter. Pintails were in too, new arrivals, our count easily doubling the previous one. Northern Pintail are one of the first Spring migrants, surging back north in late January if ice conditions allow. The first in two months, several snipe darted by in zig-zagging flight. A single male Red-winged Blackbird, no longer in its winter flock, sang lustily from a high shrub out on the meadow.

Naturally though, predictably, things slowed down. It was getting late in the day, mid-afternoon, and raptors were no longer hunting. A couple of eagles sighted were almost certainly duplicates, based on plumage, and therefore uncountable. One adult Bald at the Leesburg nest, viewed from over a mile away by spotting scope, gave us 18. After a wait, the second adult *finally* appeared, again just as we were leaving, for Number 19, but we began to think that although we were close, maybe realistically it was impossible to break our all-time record.

But there was still hope. From Heislerville, at a distance of maybe two miles, we watched one of the Leesburg adults give chase to a really dark immature Bald Eagle, the adult eagle defending its nest and determinedly driving the interloping youngster off. But it came just close enough that we could determine that we hadn't seen it previously. A new bird! Wow -- that made 20! A tie, cause for excitement, yes, (but, as a tongue-in-cheek aside, ties for high counts really make tables in reports difficult - and this was the third time in 16 years we'd reached twenty). Terrific, a good count, a great survey, even good fun -- but not what we wanted. As the day waned, we started to feel like maybe we had come up short.

Just as we departed Heislerville, an eagle popped up over the trees to the east. A new bird? We jumped out of the van, and raced to get our scopes on it, ever so briefly, before it dropped below the trees. Golden Eagle? We had wanted a golden bad. One was around we knew, but we kept missing it on our official surveys. We bolted to the end of the treeline to get a better view - and there it was, a Golden Eagle, soaring high, and bathed in the glorious low afternoon sunlight. The young bird's head gleamed gold, the tail and fighter-plane-like wing patches bold brilliant white. We enjoyed the soaring, hunting golden for about five minutes, then went back to work.

Work yes, but we hooted out loud. Awesome! Our first golden of the year for the Maurice, and a good record, as we average only about one or two per season. Of interest, on one of our previous two record 20 Bald days we had recorded a Golden Eagle also, for 21 "total eagles." So we were *still* all tied with our best-ever eagle day.

It was getting late, much too late, we were afraid. The sun was nearing the horizon. As the evening chill descended, all the raptors, even the Turkey Vultures, were gone from the sky. At East Point, overlooking Maurice River Cove, we recorded two last harriers heading to roost and dutifully counted the last diving ducks on Delaware Bay. We were at the very last count site, the very last overlook, at the east end of East Point. For the first time, we really began to feel the bitter wind. The sun was setting time to go. It had been a great day, a good survey, but ..., well..., oh well. Then, suddenly a big bird was flapping across the marsh, coming from right to left, pumping hard. With naked eye, I actually thought it was a tardy Turkey Vulture, but put my binoculars on it anyway.

Adult Bald Eagle! Coming by close, on its way to roost. It had to be a new bird, based on where we were, and the direction from which it came. Number 21! We had the record. No more cumbersome double or triple tie in the data column of yearly reports! We laughed out loud, an "eleventh hour and 55 minutes" bird. We high-fived, filled out the data sheet totals, and headed home. The orange-red setting sun dropped from behind a cloud and momentarily washed all of East Point, turning bay ice and meadow alike a glowing, rusty red, then dipped below Egg Island Point. Pink faded to purple. The cold winter night was beginning, with Great Horned Owls now taking the commanding perches the red-tails had occupied earlier. The ride home was warm.

A record 21 Bald Eagles and 1 Golden Eagle, 22 total eagles on the Maurice River in one day (not to mention a seasonal high 55 red-tails and 33 harriers). Wow! I can't wait for the next survey. Yes, science can be fun. In science, or in birding, and especially like on this blustery day on the "Mighty Maurice" when the lines blurred, some days are indeed diamonds, jewels shining brightly in the glowing winter sun.

Author's Note:

I guess all records are made to be broken. Just ten days after the above piece was written, and twelve days after the previous survey, Jim Dowdell and I counted an astounding 25 Bald Eagles on the Maurice River. At one point nine eagles were in sight at once, another time seven. The cold winter of 2002--2003 sent unprecedented numbers of eagles south to the Delaware Bayshore in late winter. The record described above was short-lived! With the return of Bald Eagles throughout the continent, and in New Jersey, today most days are diamonds for eagle-watchers.

SIDEBAR

(to "Some Days Are Diamonds")

NOTHING SHORT OF A MIRACLE

The Return of Bald Eagles to the Delaware Bayshore

Clay and Pat Sutton

It required an early start, predawn, lots of warm clothes and a thermos filled with hot coffee to ward off the winter chill. We would set out hoping fervently, yet not letting our hopes get too high, because we knew the realities, realities driven home by many unsuccessful searches.

If we were really lucky, we might spot one high overhead or hunting the vast Fortescue salt marshes, heralded by white clouds of rising Snow Geese. But more often it took lots of walking, hip-boot hiking deep into the wet interior of Bear Swamp. There, along an old railroad right-of-way, if we climbed just the right tree and balanced in the old deer stand, we could get just the right angle through more distant trees and see the nest -- the great nest of the last lonely pair of Bald Eagles left in New Jersey. To see them perched on the edge of their huge nest, well over a mile away (we would go no closer), in what was actually the state record Pond Pine, made for a true red letter day in 1975.

Our celebration was always muted by melancholy. Each time we saw the eagles, we wondered if it would be the last time. Every time we didn't see them we wondered if they were finally gone -- old age catching up to the birds, with no young coming along to replace them.

Historically, at the turn of the previous century, before draining of wetlands and shooting would take their toll, Bald Eagles were abundant in New Jersey. At least 60 nesting pairs were known, with most found along the Delaware Bay. At the top of the bayshore food chain, Bald Eagles were a significant part of the landscape. Many of their giant nests dotted marsh edges, others were deep in pristine swamps.

It was during the 1950s and 1960s that the ravages of DDT finally caught up to Bald Eagles (and Osprey), the accumulated chemicals not allowing them to breed due to eggshell thinning and breakage. With few or no young birds to replace aging adults, Bald Eagle numbers began to dwindle, and by 1968, only a single nesting pair was left in all of New Jersey, clinging to their sentinel nest deep in Bear Swamp in the heart of Cumberland County. For over five years they raised no young, defeated by DDT. Eagles were that perilously close to being lost, extirpated, from the state, possibly forever.

In the early 1980s the newly organized Endangered and Nongame Species Program (ENSP) of the New Jersey Department of Environmental Protection's Division of Fish and Wildlife began an ambitious and arduous program to restore the Bald Eagle to New Jersey. Using an ancient falconry technique known as "hacking," both captive raised and foster chicks from other regions were placed in artificial nests and gradually acclimated to the wild. Contaminated eggs were also removed from the sole Bear Swamp nest and replaced with newly hatched foster chicks, which the parent eagles readily accepted. To make a very long and complex story short, the program was wildly successful, beyond even the ENSP biologists' expectations. The dozens of ENSP staff who have participated in the eagle restoration project deserve our highest praise.

The nationwide ban on the use of DDT was a huge factor in eagle recovery as well. By the late 1980s, the levels of DDT in the environment had decreased to a level which allowed Bald Eagles and Osprey to once again breed successfully. "Hacked" young birds returned to New Jersey to breed, supplemented by wandering eagles from the Chesapeake Bay region and elsewhere, and the population began to slowly grow, first eagle by precious eagle, and then pair by pair.

In 2003, an amazing 37 pairs of Bald Eagles were resident in New Jersey, including over 17 pairs along the Delaware Bayshore (and 10 plus pairs in Cumberland County alone). In 2001, 19 of the 31 pairs successfully raised 34 young, a testament to the recovery of our waters from the many abuses of so many years. There is however still work to be done, as productivity has not reached historical or expected levels.

How common are Bald Eagles today? Just yesterday (late March as this is written), Pat saw six Bald Eagles on the Maurice River while leading a Cape May Bird Observatory field trip, and ten more near Turkey Point. Perhaps an even better testament, Clay saw two adult Bald Eagles, white heads and tails gleaming, circling low over, of all places, the shopping center in Rio Grande, in Cape May County. The eagles are back.

Where can you see eagles? There are many great places in New Jersey to spot eagles. Along the Delaware Bayshore, they can be found just about anywhere if you have the patience. In recent years we haven't ever spent a day along the Cohansey River without seeing multiple eagles. The Maurice River is also an excellent place to view them. The boardwalks and overlooks of the PSE&G Commercial Township Salt Marsh Restoration Site at Bivalve produce sightings daily. And the next time you are visiting the Cape May Bird Observatory's Center for Research and Education, look up! Bald Eagles are frequently seen soaring right over the office as they trade up and down tidal Sluice Creek between Jake's Landing and Timber-Beaver Swamp.

Bald Eagles are our second earliest nesting bird (Great Horned Owl is the earliest). Last year some pairs began incubating eggs as early as February 8, and most by the end of February. If you should see nesting activity -- adults sitting side-by-side in a tree, courtship (locking talons and tumbling through the sky), carrying sticks for the nest, or if you should find a giant stick nest that is larger than an Osprey nest -- be sure to report it to Larissa Smith at the ENSP (609-628-2103). The population continues to grow and each year a few new nests are found.

Bald Eagles have returned to their rightful place on the Delaware Bayshore, but it will take constant vigilance to keep them there. We almost lost them, and we must learn this important lesson from history and not let it happen again (over-development and sprawl are as insidious as DDT, and will last far longer). Next time you see a Bald Eagle, enjoy it fully, watch it until it goes out of sight. Enjoy, but remember the past as you celebrate the present. The return of the Bald Eagle is a testament to a lot of gritty hard work by many dedicated people. It is nothing short of a miracle.

At least once every winter, we try to take that same walk from long ago, that same route through Bear Swamp, starting predawn. There have been some changes -- with modern technology, warm clothes have gotten warmer. Ground and perked shade-grown coffee has replaced yesteryear's hurried instant. But the wonder of Bear Swamp is still there, and Bald Eagles still call it home. The ancient Pond Pine is gone -- it succumbed to age and the weight of an eagle's nest that was half a century old. The eagles are nearby, a new pair with a new nest in an adjacent huge pine. We no longer climb the key tree to view the distant nest, and in fact only a single board from the old deer stand remains, hanging askew, a memory to but a few. We are a bit past tree-climbing age now and besides, there are several nests easily viewed from the roadside on the bayshore these days.

No, today we are content to wait, and hope, and maybe, no....*probably* see the inspiring plank-winged shape of a Bald Eagle high in the crystal winter sky. The drive and the urgency to see the birds is maybe not so great as it was thirty years ago, if only because they are no longer the last. But when we do see them, we remember....and just as we used to, we marvel.

NOTE: *Each spring, the Cape May Bird Observatory offers "Maurice River Bald Eagle Cruises." The Maurice River, a federally designated "Wild and Scenic River," attracts one of the largest concentrations of wintering Bald Eagles in the state and hosts three nesting pairs. These trips sail right by one of the nests and by late March their nesting season is well along, with eggs due to hatch. Expect lots of waterfowl and abundant Osprey as well. Join CMBO Naturalists and Captain Bob Carlough aboard the "SKIMMER", a very stable 40-foot catamaran with a spacious enclosed viewing deck. Boat tours begin and end near Millville in Cumberland County. A number of trips are scheduled in 2004 (in late March and early April). Call 609-861-0600 for dates and details.*

ABOUT THE AUTHORS:

Clay is a writer and naturalist, and Pat is Program Director for New Jersey Audubon's Cape May Bird Observatory. Among a number of other books, they authored the popular *How to Spot Hawks and Eagles*, published in 1996 by Houghton Mifflin Company. In 2003, Clay completed a revised, updated and expanded Second Edition of *"Birding Cumberland -- A Birders Guide to Cumberland County, NJ."* It offers detailed itineraries and directions to many fine eagle-viewing opportunities on the Delaware Bayshore. It is available through the Cape May Bird Observatory bookstores.

Appendix 2

Maurice River Waterbirds and Shorebirds 1998-2002

DATE	12/18/98	12/27/98	1/5/99	1/19/99	1/29/99	2/10/99	2/22/99	3/5/99	3/17/99	12/17/99
Red-throated Loon										
Pied-billed Grebe		2	1	4						
Horned Grebe										
Red-necked Grebe										
Double-cr Cormorant				2						
Great Cormorant										
Great Blue Heron	3	9	17	15	10	28	19	23	15	27
Great Egret					1	2	2		5	
Snowy Egret										
Green Heron										
Black-cr Nt-Heron						36	62			10
Yellow-cr Nt-Heron										
Glossy Ibis										
Mute Swan	13	31	32	10	25	49	76	68	69	11
Snow Goose	1391	3050	3000	1950	1750	4300	1050	1100	1495	
Canada Goose	75	275	650	86	470	130	75	151	442	15
Green-winged Teal	354	116	392	756	235	71	153	950	917	733
Blue-winged Teal										
Am. Black Duck	1075	8060	2210	3255	1696	1806	823	1345	1834	1542
Mallard	508	567	2619	3325	1413	664	393	374	835	126
N. Pintail	50	416	312	569	560	489	299	385	243	291
N. Shoveler	6	10	1			53	111	154	108	60
Gadwall		6	27		4	135	110	325	400	225
Am Wigeon			1	2		60	77	47	160	6
Canvasback		9		15	27	27	15	27	26	1
Bufflehead	81	259	95	130	113	120	99	95	98	52
Hooded Merganser		25	1	7		8	12	3	5	6
Common Merganser							9		4	
Red-br Merganser	14	89	164	21	25	72	46	84	25	12
Ruddy Duck	1	2		4				3		52
Common Goldeneye	1	47	6	6		4	12	16	8	
Lesser Scaup		1				24	24	53	39	
Greater Scaup		50								14
scaup sp.		5100		250	100			10		
Ring-necked Duck		22								1
Wild Turkey						7				
Clapper Rail										
Black-bellied Plover										
Semipalmated Plover										
Killdeer										
Greater Yellowlegs										500
Lesser Yellowlegs										50
Solitary Sandpiper										
Willet										
Wilson's Snipe										
Am Woodcock										
Ruddy Turnstone										

Appendix 2

Maurice River Waterbirds and Shorebirds 1998-2002

DATE	12/18/98	12/27/98	1/5/99	1/19/99	1/29/99	2/10/99	2/22/99	3/5/99	3/17/99	12/17/99
Red Knot										
Sanderling										
Semipalmated Sandpiper										
Western Sandpiper										
Least Sandpiper										
Dunlin										
Short-billed Dowitcher										1
Long-billed Dowitcher										1
Black Skimmer										
Laughing Gull										
Bonaparte's Gull					29					
Ring-billed Gull										
Herring Gull										
Great Black-backed Gull										
Forster's Tern										
Royal Tern										
Caspian Tern										

Appendix 2

Maurice River Waterbirds and Shorebirds 1998-2002

DATE	12/26/99	1/6/00	1/8/00	1/19/00	2/2/00	2/25/00	3/6/00	3/17/00	3/27/00	4/6/00
Red-throated Loon			1			2		1	3	
Pied-billed Grebe				2	4			1		
Horned Grebe										
Red-necked Grebe										
Double-cr Cormorant						2		6		
Great Cormorant										
Great Blue Heron	46	28	12	21	11	4	1	3	3	
Great Egret										
Snowy Egret										
Green Heron										
Black-cr Nt-Heron		21	11							
Yellow-cr Nt-Heron										
Glossy Ibis									16	
Mute Swan	6	4	7	8		10	8	11	8	14
Snow Goose	3502	3900	4050	126	6	7910	3150	1475	205	
Canada Goose	742	537	56	775	292	122	265	275	185	110
Green-winged Teal	360	534	630	90		1589	1872	3587	3914	2680
Blue-winged Teal								2	12	26
Am. Black Duck	1194	1576	761	1195	286	3310	769	1249	963	360
Mallard	312	234	307	370	72	72	83	18	9	2
N. Pintail	60	166	10	14	25	160	65	300	132	6
N. Shoveler	3	30	1			20	26	105	24	150
Gadwall	8	226		14		60	85	565	275	200
Am Wigeon	5					40	20	260	55	75
Canvasback				13	10	15	19	6		
Bufflehead	180	60	100	18	15	103	100	40	29	20
Hooded Merganser	14		3	3	7	10		4	5	3
Common Merganser				2	51					
Red-br Merganser	31	20	35	11	32	2	27	5	24	2
Ruddy Duck	26	6	40	2	9		2			
Common Goldeneye	4	1			30	2			1	
Lesser Scaup	2			1	3			1		
Greater Scaup	126	25			10	45				
scaup sp.	100		50		30	50	2		35	
Ring-necked Duck		3						1	2	
Wild Turkey										1
Clapper Rail										
Black-bellied Plover										8
Semipalmated Plover										
Killdeer										4
Greater Yellowlegs		300				53				200
Lesser Yellowlegs		80								75
Solitary Sandpiper										
Willet										
Wilson's Snipe								22		
Am Woodcock					3					
Ruddy Turnstone										

Appendix 2

Maurice River Waterbirds and Shorebirds 1998-2002

DATE	12/26/99	1/6/00	1/8/00	1/19/00	2/2/00	2/25/00	3/6/00	3/17/00	3/27/00	4/6/00
Red Knot										
Sanderling										
Semipalmated Sandpiper										
Western Sandpiper										
Least Sandpiper										
Dunlin										2500
Short-billed Dowitcher										
Long-billed Dowitcher										
Black Skimmer										
Laughing Gull										
Bonaparte's Gull						17				
Ring-billed Gull										
Herring Gull										
Great Black-backed Gull										
Forster's Tern										
Royal Tern										
Caspian Tern										

Appendix 2

Maurice River Waterbirds and Shorebirds 1998-2002

DATE	4/20/00	8/4/00	8/10/00	8/25/00	9/14/00	10/15/00	11/18/00	12/6/00	12/15/00	12/28/00
Red-throated Loon										
Pied-billed Grebe										
Horned Grebe										
Red-necked Grebe										
Double-cr Cormorant		100	200	1000	100	300				
Great Cormorant										
Great Blue Heron		2	4	4	50	20	10	11	21	18
Great Egret		750	1000	1500	500	200	1			
Snowy Egret		750	1000	2500	500	50				
Green Heron										
Black-cr Nt-Heron			4	2	45	50		23	25	12
Yellow-cr Nt-Heron					1					
Glossy Ibis		200	100	60	1					
Mute Swan	12	50	75	125	100	60		8	7	2
Snow Goose									450	13
Canada Goose	50							180	543	113
Green-winged Teal	635				30	50	1120	170	462	1
Blue-winged Teal	6		10							
Am. Black Duck	140		250	3	800	150	300	600	1382	3027
Mallard	3	2	4		4	2		9	533	242
N. Pintail	4					200		5	89	2
N. Shoveler	20					20	2			
Gadwall	205		2		10	20		8	67	
Am Wigeon	8								1	
Canvasback										
Bufflehead								116	106	20
Hooded Merganser									6	5
Common Merganser										5
Red-br Merganser								2	308	39
Ruddy Duck	4					8				
Common Goldeneye									9	44
Lesser Scaup										
Greater Scaup									160	35
scaup sp.										
Ring-necked Duck									1	
Wild Turkey				6						14
Clapper Rail			4		25					
Black-bellied Plover	50	2	1	20	35	500	200	50	35	
Semipalmated Plover		250	250	250	150					
Killdeer	5	4	3	1	2		25	1	17	2
Greater Yellowlegs	25	400	200	100	50		5		21	
Lesser Yellowlegs	250	200	150	100	25			2		
Solitary Sandpiper		2	1							
Willet	10	2	2	2	1					
Wilson's Snipe									1	1
Am Woodcock										14
Ruddy Turnstone		4			20					

Appendix 2

Maurice River Waterbirds and Shorebirds 1998-2002

DATE	4/20/00	8/4/00	8/10/00	8/25/00	9/14/00	10/15/00	11/18/00	12/6/00	12/15/00	12/28/00
Red Knot					15					
Sanderling									20	1
Semipalmated Sandpiper		10000	10000	5000	1000					
Western Sandpiper		20	20	4	2	2		1		
Least Sandpiper										
Dunlin	10000					12000	3000	2000	450	35
Short-billed Dowitcher		1000	2000	150	50					
Long-billed Dowitcher			3					2		
Black Skimmer		3	4	4	2					
Laughing Gull		1000	1000	3500	1000	50				
Bonaparte's Gull									2	
Ring-billed Gull							X	X		
Herring Gull		400	300	500	500	500	X	X		
Great Black-backed Gull		50	25	50	500	100	X	X		
Forster's Tern		150	250	500	250					
Royal Tern					2					
Caspian Tern				2	3					

Appendix 2

Maurice River Waterbirds and Shorebirds 1998-2002

DATE	1/7/01	1/25/01	2/1/01	2/13/01	2/26/01	3/8/01	3/23/01	3/29/01	4/27/01	5/2/01
Red-throated Loon	2									
Pied-billed Grebe										
Horned Grebe										
Red-necked Grebe										
Double-cr Cormorant							9	1	56	15
Great Cormorant										
Great Blue Heron	12	3	15	13	5	5	3	4		
Great Egret								5	42	8
Snowy Egret									38	4
Green Heron										
Black-cr Nt-Heron					3					
Yellow-cr Nt-Heron										
Glossy Ibis									326	100
Mute Swan	2	6	16	16	13	15	26	21	224	2
Snow Goose	350	4300	3500	1500	3425	1500	600	700		
Canada Goose	145	1038	465	515	437	431	241	106	69	4
Green-winged Teal	15	51	106	582	665	870	4071	2050	1140	50
Blue-winged Teal							2	16	10	
Am. Black Duck	938	1634	879	1156	1276	875	1265	1373	210	175
Mallard	698	610	958	286	480	196	216	34	5	
N. Pintail	24	273	342	306	629	810	465	242	5	
N. Shoveler			3		2	2	20	25	7	
Gadwall	2	8	65	64	81	15	270	261	60	
Am Wigeon			1		8	1	2	10	2	
Canvasback		2	17	22	23	19	10	5		
Bufflehead	482	16	70	128	80	109	95	100		
Hooded Merganser	2		1	9	5	10	2	2		
Common Merganser	31	47			3		1	2		
Red-br Merganser	161	91	110	172	78	75	42	13	1	
Ruddy Duck										
Common Goldeneye	160	30	2	33	35	23	4			
Lesser Scaup							1			
Greater Scaup	119			13						
scaup sp		15	135		1					
Ring-necked Duck										
Wild Turkey				6	20		40			
Clapper Rail									3	2
Black-bellied Plover			80					4	40	300
Semipalmated Plover									3	2
Killdeer					2	4	22	3	9	
Greater Yellowlegs			6	1	10	28	365	72	815	3
Lesser Yellowlegs			2				29	63	125	
Solitary Sandpiper										
Willet									8	25
Wilson's Snipe			3		22		1			
Am Woodcock										
Ruddy Turnstone										

Appendix 2
Maurice River Waterbirds and Shorebirds
1998-2002

DATE	1/7/01	1/25/01	2/1/01	2/13/01	2/26/01	3/8/01	3/23/01	3/29/01	4/27/01	5/2/01
Red Knot					4					
Sanderling			30		50	2	50			
Semipalmated Sandpiper									15	20
Western Sandpiper										
Least Sandpiper										
Dunlin			43	400	250	90	100	950	6300	1000
Short-billed Dowitcher									241	1500
Long-billed Dowitcher										1
Black Skimmer									139	26
Laughing Gull								2	39	100
Bonaparte's Gull					24	39	125	40		
Ring-billed Gull								X	237	50
Herring Gull								X	115	30
Great Black-backed Gull								X	20	4
Forster's Tern									116	40
Royal Tern										
Caspian Tern										

Appendix 2

Maurice River Waterbirds and Shorebirds 1998-2002

DATE	6/21/01	7/16/01	7/28/01	8/8/01	8/24/01	9/21/01	9/26/01	10/23/01	10/29/01	12/10/01
Red-throated Loon										4
Pied-billed Grebe										4
Horned Grebe										
Red-necked Grebe										
Double-cr Cormorant	75				200	350	400	100		3
Great Cormorant										3
Great Blue Heron	2				1	4	4	12	4	24
Great Egret	15				1500	200	500	25		
Snowy Egret	65	300			6000	750	500	20		
Green Heron	2									
Black-cr Nt-Heron	7						1			
Yellow-cr Nt-Heron										
Glossy Ibis	20	225	100	40	250	1				
Mute Swan	50				3	15	15	30	2	
Snow Goose								100	50	
Canada Goose	35				30	30	10	50	10	
Green-winged Teal						250	1020	20	100	
Blue-winged Teal						20	15			
Am. Black Duck	50				1	200	110	40	250	
Mallard						20	10	10	6	
N. Pintail								100		
N. Shoveler								20		
Gadwall		2				4	10	30		
Am Wigeon										
Canvasback										
Bufflehead									3	
Hooded Merganser										
Common Merganser										
Red-br Merganser									1	
Ruddy Duck										
Common Goldeneye										
Lesser Scaup										
Greater Scaup										
scaup sp.										
Ring-necked Duck										
Wild Turkey										
Clapper Rail	1				1	2	2			2
Black-bellied Plover	6		1	5	150	200	1	500	150	37
Semipalmated Plover			50	300	10	5	5			17
Killdeer	2				6		10			13
Greater Yellowlegs				15	300	20	20	200	100	63
Lesser Yellowlegs				50	100	200	20	20	20	10
Solitary Sandpiper										
Willet	60							6		
Wilson's Snipe										4
Am Woodcock										
Ruddy Turnstone				25	35					

Appendix 2

Maurice River Waterbirds and Shorebirds 1998-2002

DATE	6/21/01	7/16/01	7/28/01	8/8/01	8/24/01	9/21/01	9/26/01	10/23/01	10/29/01	12/10/01
Red Knot								1		
Sanderling										
Semipalmated Sandpiper		1500	3000	8000	8500	750	500	1		
Western Sandpiper			5	2		1				
Least Sandpiper	2			10	35	30		50		78
Dunlin								10000	1000	3280
Short-billed Dowitcher	1	1500	3000	3000	150	25		1		1
Long-billed Dowitcher										
Black Skimmer	5									
Laughing Gull	250	X	X	X	10000	1000	5000			
Bonaparte's Gull										
Ring-billed Gull					200	100	100	X		X
Herring Gull	400	X	X	X	2500	800	750	X		X
Great Black-backed Gull	20	X	X	X	400	400	400	X		X
Forster's Tern	75	X	X	125	1000	750	750			6
Royal Tern					2	50	1			
Caspian Tern				2		50	4			

Appendix 2

Maurice River Waterbirds and Shorebirds 1998-2002

DATE	12/23/01	1/2/02	1/15/02	2/1/02	2/12/02	2/21/02	3/5/02	3/14/02	3/19/02	3/22/02	4/26/02
Red-throated Loon	2					8					
Pied-billed Grebe		1	2							2	
Horned Grebe	1										
Red-necked Grebe											
Double-cr Cormorant	1			1							100
Great Cormorant	3	1	3	1	2	2	1	2		1	
Great Blue Heron	37	17	14	10	22	16	16	5		8	
Great Egret	1										2
Snowy Egret											
Green Heron											
Black-cr Nt-Heron	2	11	2	2	2		3				
Yellow-cr Nt-Heron											
Glossy Ibis											
Mute Swan											6
Snow Goose											
Canada Goose											30
Green-winged Teal									3200		50
Blue-winged Teal									1		
Am. Black Duck									400		65
Mallard									20		1
N. Pintail									450		
N. Shoveler											
Gadwall									75		10
Am Wigeon									15		
Canvasback											
Bufflehead											
Hooded Merganser											
Common Merganser											
Red-br Merganser											
Ruddy Duck											
Common Goldeneye											
Lesser Scaup											
Greater Scaup											
scaup sp.											
Ring-necked Duck											
Wild Turkey							5				
Clapper Rail	28				2		1				1
Black-bellied Plover	89	2	25		6	126	29	206	200	215	150
Semipalmated Plover	1										
Killdeer	16	10		20	56	10	9	20		3	1
Greater Yellowlegs	91	80	30	4	36	64	26	123	60	155	1
Lesser Yellowlegs	5	1				49	10	72	10	15	
Solitary Sandpiper											
Willet											12
Wilson's Snipe		9		4	24	30		75		9	
Am Woodcock	1				1						
Ruddy Turnstone											

Appendix 2
Maurice River Waterbirds and Shorebirds
1998-2002

DATE	12/23/01	1/2/02	1/15/02	2/1/02	2/12/02	2/21/02	3/5/02	3/14/02	3/19/02	3/22/02	4/26/02
Red Knot											
Sanderling				30	20			30			
Semipalmated Sandpiper											
Western Sandpiper	1										
Least Sandpiper	50										
Dunlin	4340	500	1008	20	315	1756	390	570		1520	400
Short-billed Dowitcher	1										50
Long-billed Dowitcher											
Black Skimmer											
Laughing Gull											250
Bonaparte's Gull	1			11	4		35	50		252	
Ring-billed Gull	X	X	X	X	X	X	X	X		X	10
Herring Gull	X	X	X	X	X	X	X	X		X	X
Great Black-backed Gull	X	X	X	X	X	X	X	X		X	X
Forster's Tern										1	200
Royal Tern											
Caspian Tern											

APPENDIX 2 (continued)

MAURICE RIVER WATERBIRDS AND SHOREBIRDS

Historical Records and Recent Records of Less Common Species Not Included in Main Tables

Common Loon	(1) 1/7/03
Pied-billed Grebe	(7) winter 1999 Maurice River; (4) 2/2/00 various spots
Northern Gannet	(1 imm) 11/18/99 East Point-Maurice River Cove; (1 adult) 2/17/00 East Point; (1 adult) 2/27/00 East Point; many spring and fall records
Brown Pelican	(21) 8/4/00; (56) 8/10/00; (1) 9/14/00
White Pelican	(2) 10/8/00 fide Karen Johnson
American Bittern	(1) 1/19/99 East Point; (1) 12/23/01
Least Bittern	(1) 1/2/02
Little Blue Heron	(1) 10/6/87; (1) 8/10/00; (1) 8/25/00; (5) 8/8/01; (1) 8/24/01
Tricolored Heron	(1) 8/24/01; (1) 12/22/02
Wood Stork	(1) 11/13/00 & 11/14/00 Bob Barber and Jim Dowdell
Ross's Goose	(1) 12/22/02; one previous record
Brant	(15) 10/15/99 Heislerville
Tundra Swan	(5) 12/22/02
Wood Duck	(1) 12/22/02; 1/07/03; (4) 2/12/03; (1) 2/24/03; (3) 3/10/03
Eurasian Wigeon	(1) 3/16/74 Heislerville; (1) 2/18/75 Heislerville; (1) 4/6/00; (1) 4/25/01 Maurice River
Common Teal	(2) 3/28/01; (1) 4/6/00
Surf Scoter	(40) 12/12/02; (12) 12/22/02; (1) 1/21/03
White-winged Scoter	(1) 12/12/02
Long-tailed Duck	(2) 12/12/02; (1) 12/22/02; (2) 2/24/03

Barrow's Goldeneye	(1) 2/26/01 East Point
Ruddy Duck	(80) 11/30/99 Heislerville
Ring-necked Pheasant	(1) 12/10/01; (2) 12/23/01; (2) 3/14/01
Ruffed Grouse	(1) 2/24/88
Wild Turkey	(7) 2/10/99 Peek Preserve; many records since
Northern Bobwhite	(15) 1/28/88; (2) 8/10/00; (22) 12/23/01; (1) 2/12/02
Virginia Rail	(1) 12/23/01; (2) 12/22/02
Black Rail	2 shot by Sora Rail hunters on Maurice River (@ 1986), fide Paul Guris
Sora	(1) 10/6/87
American Coot	(1) 2/12/03; (1) 2/24/03
Sandhill Crane	(1) 4/20/00 Bivalve
Am. Golden Plover	(1) 4/20/00 Bivalve
Am. Oystercatcher	(4) 9/21/01
Black-necked Stilt	several recent records at Bivalve and Heislerville
American Avocet	(1) 12/7/99 Bivalve; (2) 10/29/01
Spotted Redshank	(1) 3/27/77 Heislerville
Spotted Sandpiper	(1) 8/24/01; many other records
Upland Sandpiper	(1) 8/10/00
Hudsonian Godwit	(3) 10/23/01
Marbled Godwit	(2) 10/23/01; several other records by others
Red Knot	(4) 2/26/02 Bivalve, Jim Dowdell and Clay Sutton
White-rumped Sandpiper	(4) 8/4/00; (1) 8/10/00; (3) 9/14/00; (2) 10/23/01
Pectoral Sandpiper	(1) 1/11/81 upper river; (2) 9/21/01
Stilt Sandpiper	(2) 4/6/00 Bivalve; several fall records

Ruff	(2 adults) 4/15/76 Mauricetown Causeway; (1 Reeve) 5/1/83 Mauricetown Causeway; (1 Reeve) 4/28/01 Peek Preserve; (1 Reeve) 4/6/00 Bivalve; (1 Reeve) 4/28/01 Maurice River fide Pete Dunne
Wilson's Snipe	(50) 2/8/75 Heislerville
Black-headed Gull	(1 adult in breeding plumage) 3/17/81; (1 adult) 2/25/00 East Point; (1) 4/25/01 Maurice River
Iceland Gull	A number of records over the years at Bivalve and Shellpile
Glaucous Gull	(1) 2/10/99 Bivalve; also seen at Shellpile
Lesser Black-bk Gull	(1) 12/23/03 Bivalve and Shellpile; also a number of other records
Gull-billed Tern	(8) 8/5/00 Maurice River fide David Mizrahi; (2) 4/27/01; (1) 6/21/00; (3) 8/8/01

NOTE: Records shown here are those derived from the sixteen years of Maurice River Winter Raptor and Waterfowl Reports. Also included are some historical records from Sutton's files / field notes. This list does *not* contain many additional records that would result from a full literature search, and is therefore not an exhaustive reporting of all existing Maurice River waterbird and shorebird records.
