

**RAPTORS AND WATERBIRDS
ON THE MAURICE RIVER
CUMBERLAND COUNTY, NJ**

*The TWENTIETH YEAR
of an Ongoing and Long-term Study*

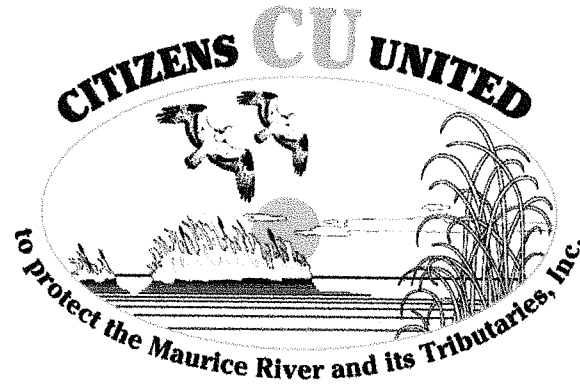
**Seasonal Summary: July 2006 through June 2007
including WINTER, 2006-2007**

**Research sponsored by
Citizens United to Protect the Maurice River and its Tributaries, Inc.**

By Clay Sutton and James Dowdell

August 1, 2007

Sponsored by:



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RAPTORS AND WATERBIRDS ON THE MAURICE RIVER

The TWENTIETH YEAR of an Ongoing and Long-term Study

Introduction and Overview:

The 2006-2007 season marked the twentieth consecutive season for the Citizens United sponsored Raptor and Waterfowl Monitoring Project on the Maurice River. The project continues to gather important long-term data on the Maurice River's highly significant regional concentrations of diurnal raptors, waterfowl, waterbirds (such as herons, egrets, ibis), and migratory shorebirds. Even after 20 years, discoveries are still being made along the Maurice River and its tributaries.

Because 2006-2007 represented the twentieth year of Maurice River studies, this milestone will be commemorated in a full 20-year summary report. This in-depth review of status and trends over time will not only be presented to Citizens United but will also be intended for both popular and perhaps scientific publication. This will be in a format / venue to be decided upon by the authors in concert with the officers and members of Citizens United. It is intended that this 20-year summary will be written and finalized in the fall of 2007, and will be available as soon as possible in both an electronic and hard copy format.

Meanwhile, in order to make the twentieth season of data readily available to all interested parties, this current report represents a short-form summary overview of the 2006-2007 season findings. This report details the past season's findings only, and the 20-year comparisons and evaluations will be included in the upcoming twenty-year milestone report.

Because all 19 previous reports are now on-line on the Citizens United to Protect the Maurice River (CU) website (www.cumauriceriver.org) there is little need to present an in-depth review here regarding methodology techniques and count locations. The 2006-2007 studies were carried out with the same methods as the previous 19 years. This adherence to a standardized methodology allows for comparability of data over time that will lead to a true understanding of Maurice River status and trends. See the previous seasonal reports available on CU's website for a full presentation of methods and past findings.

A core study of nine full winter surveys was carried out between December 5, 2006 and March 20, 2007 – a rate of approximately one sampling every twelve days. These dates span the full winter season as it relates to winter bird-use of the Maurice River. As in the past three years, full waterbird and shorebird counts were carried out in conjunction with the targeted winter raptor and waterfowl studies. In addition to the core winter surveys, this report details additional survey work carried out in autumn 2006 and spring 2007. Thus for the fourth project cycle, winter studies were expanded to include the all-important “shoulder seasons” of peak waterfowl and raptor-use. Beginning in 2003-2004, the Maurice River avian surveys became a true year-round effort. This was continued in 2006-2007.

For a number of significant reasons (including declining winter duck populations, the recent emergence of Bivalve as a major waterbird/shorebird-use area, and both known findings and suspected wildlife values in the pre and post seasons of the core winter survey, i.e. spring and fall), CU again felt there was real value in stretching the survey efforts over the entire year. A more protracted study allowed better assessment of fall shorebird use of the Maurice (July through October), fall raptor migration, early spring duck numbers (teal, Northern Shoveler, etc.), spring/early summer shorebirds, and nesting raptors such as Cooper’s Hawk, Northern Harrier, Bald Eagle and American Kestrel.

As in the past three project cycles, spring and fall studies greatly complemented the core winter effort. The seasons greatly overlap in the avian world, and the core study period (December through March) encompasses late fall migration, nesting season for Bald Eagle and extensive spring migration and migration staging. By expanding studies to a year-round effort, this study allows for a full understanding of fall migration, winter use, spring migration, and the full breeding season for all species.

More importantly, expanded studies have continued to prove that the Maurice River is important in all seasons to high numbers and a wide variety of birds.

Findings:

Maurice River raptor and waterbird use was studied on an average of once monthly throughout spring, summer, and fall, and about once every ten days in the core winter season (December through late March). Raptor and waterbird numbers from July 20, 2006 through June 1, 2007 are shown in **Table 1**. Winter season peaks are **boldfaced**, and averages for key species for the core winter season are shown as well.

As in the past, comparative studies were conducted on the Cohansey River and on the Salem River as an adjunct to the Maurice River studies. Both the Cohansey River and the Salem River were sampled three times in winter 2006-2007. Cohansey River and Salem River winter raptor and waterbird surveys are shown in **Table 2**. These “comparison rivers” will be fully explored and analyzed in the coming 20-year in-depth report.

Canada Goose numbers on the Bayside State Prison grounds (birds were counted from Route 47) were again estimated (as in past seasons). Most if not all Bayside geese use the Maurice River for roosting and feeding, and these counts offer insight to regional goose populations and the potential for herbivory on Maurice River Wild Rice marshes. The numbers are shown below:

**2006-2007
Canada Geese Populations
Bayside State Prison Grounds**

Date	Number
07/20/06	100
08/11/06	263
09/19/06	95
10/05/06	400
11/10/06	675
12/05/06	975
12/19/06	725
01/24/07	850
02/15/07	550 (+ 10 Snow Geese)
03/01/07	600
03/08/07	530
03/20/07	375
05/09/07	35
06/01/07	0

Discussion – Fall Migration:

Fall migration, important in its own right because migration (with its attendant issues of flight strategies and stopover requirements) is a particularly perilous and stressful period of a bird's life cycle, is also a major factor in subsequent winter bird populations. For raptors and waterfowl migration often ends at some point during the migratory timetable and route. Fall migration following the Delaware Bayshore west is a significant causal factor in the large numbers of birds that remain to overwinter along the Delaware Bayshore.

Nine counts were conducted during the fall migration period, from late July through November. Significant numbers of herons, egrets, and Glossy Ibis were found along the river, primarily at (but not limited to) the Heislerville WMA and Bivalve EEP site.

Particularly noteworthy again were the numbers of fall waterfowl encountered. Up to 409 American Black Ducks, 62 Mallards, 13 Blue-winged Teal, and 1,073 Green-winged Teal were counted in fall surveys – numbers more expected during spring staging. An excellent (for fall) 546 Northern Pintails were counted on October 5, a total second only to the 910 counted later on a more-expected core study (early spring migration) date of March 1.

On seven dates from September 7 to November 19, autumn hawk migration along the Delaware Bayshore was monitored at East Point, Heislerville WMA, and Bivalve. In 23 hours of targeted hawk counting, 1,887 raptors of 12 species were tallied, for an excellent average of 82 hawks per hour. On September 19, a total of 31 Bald Eagles were counted (a mixture of both "locals" and migrants), an all-time high for the Maurice River.

Fall 2006 studies also again documented very large numbers of shorebirds using the lower river in early autumn. 19 species of shorebirds were found during the period July through November, including 4 American Golden Plover – uncommon on Delaware Bay. Large numbers of Black-bellied Plover, Semipalmated Plover, and yellowlegs were found. Fall migration numbers of Semipalmated Sandpiper and Short-billed Dowitcher rival those found in spring on the Maurice River – a significant finding of these migration season studies.

Late summer and fall surveys on the Maurice River in 2006 confirmed and corroborated previous season findings, adding additional proof that the Maurice is a major fall migration staging area for raptors, waterfowl, waterbirds, and shorebirds.

Discussion – Core Winter Studies

Nine winter surveys were conducted between December 5, 2006 and March 20, 2007. For the second winter in a row, both Snow Goose and Canada Goose numbers were below average. Although Canada Goose numbers were down on the river from the previous season's record count, goose numbers at Bayside State Prison continue to be high. So although daytime river numbers were down somewhat, regional numbers remain very high.

Certainly due to the mild winter, puddle duck numbers were well down. The Black Duck population on the Maurice River was considerably lower than the previous season, and Mallard numbers were almost identical and abysmal when compared to previous years and five-year segment averages. Winter Northern Pintail numbers were well below the long-term average as well.

It continues to appear that Mallards are the prime victims of the combined forces of sea level rise and loss of Wild Rice to Canada Goose herbivory. Pintail populations on the Maurice River are also affected, but seemingly mainly in a spatial manner. Pintails have "relocated" to the Bivalve EEP marshes where Mallards clearly have not. Green-winged Teal numbers were again good in winter 2006-2007, although lower than those observed in 2005-2006. For only the third time in 20 years, a Redhead was seen, a single bird near Mauricetown on March 8, 2007.

Winter raptors, in general, showed better numbers than waterfowl. Black Vultures and Turkey Vultures were found in average numbers, although "average" for the Maurice River represents some of the highest numbers in New Jersey.

Bald Eagle numbers were above recent averages. An exceptional winter peak of 31 were seen on February 15, the highest winter count in all 20 years of study. The average of a more modest 18.6 was excellent as well. Winter 2006-2007 was quite mild, but the harsh February weather and resultant freeze-up sent many eagles south to the Maurice River. (27 Bald Eagles were recorded on March 8 as well.) By far the best eagle winters are the coldest, when freeze-ups push northern birds south to the Delaware Bayshore.

Northern Harrier numbers were average, yet "average" on the Maurice River is exceptional regionally. Cooper's Hawk numbers remained high – a combination of wintering birds and local breeders, yet Sharp-shinned Hawks were judged to be well below average. Red-tailed Hawk numbers were also average, but again average on the Maurice is very good for anywhere in the Mid-Atlantic.

American Kestrel rebounded a tiny bit from the previous season's record low average of 1.0 to 1.2. For the second season in a row only one individual American Kestrel truly wintered on the river, a sad situation indeed. No Merlin were recorded in winter 2006-2007, but Peregrines averaged an excellent .89 with a peak of three counted on January 31, 2007.

For winter raptors, 2006-2007 core studies confirmed and bolstered previous findings, and Maurice River numbers remain exceptional. As mentioned above, a full analysis of raptor and waterbird status and trends is planned in the forthcoming 20-year analysis.

Avian numbers on the Maurice River were clearly affected by weather patterns during the winter of 2006-2007. Unseasonably warm weather in December and January were a major factor in low waterfowl and raptor numbers. Simply put, many of our expected winter birds remained north of New Jersey for the winter. December 2006 was one of the warmest on record for New Jersey, following a November that was the warmest for the Garden State in 112 years of weather record-keeping. These led 2006 to be the second warmest year ever in New Jersey. January 2007 was mild as well, and in late January the ocean water temperature off Atlantic City was 41.5 degrees, 4.5 degrees above normal. Also, while precipitation was near average, there was virtually no snow recorded.

February 2007 did bring true winter conditions to the region, but for birds this came at a time when wintering patterns and sites were already well established. Most waterfowl and many key raptor species never migrated into the South Jersey region in winter 2006-2007, and Maurice River survey results reflect this expected mild winter situation. Several February surveys however did encounter considerable ice in the area, with impoundments frozen and the Maurice River partially blocked with ice – a time when local waterfowl are concentrated in open water areas, although some birds will temporarily relocate farther south to escape frozen conditions.

We believe that the Maurice River region avian populations are truly being impacted by climate change. Recent years of the Maurice River winter surveys have mostly been characterized by winter weather that is far warmer than normal, with only winter 2004-2005 partially reversing that trend. Thankfully, with 20 years of data on the Maurice River, we do have a historical baseline of what constitutes normal avian-use patterns during an “old-fashioned winter,” one with lingering frigid conditions. Few if any areas of New Jersey can boast such a long-term data set, and the forethought and vision of all CU officers, dating back to 1987, is why we have this inestimably valuable long-term data today. We look forward to producing the upcoming 20-year report of winter raptor and waterfowl status and trends on the Maurice River.

Discussion – Spring Migration

With the Maurice River avian studies having become a true year-round look at the region's birds, five spring migration counts were carried out. These can also be seen in Table 1. The April counts clearly show that spring staging for Green-winged Teal continues well past the endpoint for core winter studies. Black Duck numbers remained high as well. Bald Eagles, both breeding birds and lingering immatures, continue well into spring in good numbers.

Spring studies attempted to hit the peak of shorebird migration and use, and we were not disappointed. The Maurice River – particularly the lower river areas of Heislerville WMA, Bivalve EEP, and East Point beaches – continues to host regionally highly significant (and spectacular) numbers of shorebirds in spring. The high counts shown in Table 1 speak for themselves; the Maurice River region is one of New Jersey's most important shorebird-use areas.

An amazing 40,954 shorebirds were carefully counted on May 17, by far a new record for “total shorebirds” on the Maurice River. On that day the Heislerville WMA impoundments held over 17,000 shorebirds. We immediately went to Bivalve, where the EEP held 22,000 additional shorebirds (due to distance, haze, and heat waves, 20,000 of these were recorded as “unidentified shorebirds”). For the record, we then immediately went back to Heislerville where 17,000 shorebirds were still present – eliminating the issue of possible double-counting due to shorebird movements in relation to the stage of the tide. These astounding numbers occurred on a day that we were truly able to “hit the peak” of shorebird spring migration staging. It is important to note that the now annual spring drawdown of one of Heislerville WMA's impoundments is highly beneficial to shorebirds. The Division of Fish and Wildlife, NJDEP, should be highly commended for this enlightened management strategy.

Two Curlew Sandpipers (regional rarities) were at Heislerville WMA in May for the second year in a row. One was seen on the May 9 count and one on May 17. Two Black-necked Stilt were recorded at the Bivalve EEP site on the May 9 survey date (not seen by us, but seen by excellent observer Tom Reed).

Finally, the lower Maurice River also supported significant concentrations of terns and skimmers in 2006-2007. Sixty-two Black Simmers were counted on May 1 and 91 on the non-survey date of May 12. Seven Least Terns were seen on June 1. The lower Maurice River remains a major New Jersey spring staging area for Black Skimmers.

Greater analysis of the Maurice River's role in spring migration staging and use is planned during the preparation of the 20-year in-depth summary report, yet spring 2007 clearly confirmed that the Maurice River region is of huge importance to a variety of avian migrants, including very high numbers of migratory shorebirds.

Additional Seasonal Highlights:

While “rare birds” are not the major resource value of the Maurice River, the attraction of rare and unusual species to the river highlights the exceptional quantity, quality, and diversity of habitats found there. Rare birds nicely compliment the great variety and large numbers of birds found on the Maurice River, and play a role in the ecotourism attraction for birders and naturalists. Following are some of the avian highlights of the 2006-2007 season not enumerated above:

July 20, 2006 2 Roseate Terns

East Point. The first Cumberland County record for this endangered species.

September 7, 2006 250+ Monarch butterflies and 250 Cloudless Sulphurs

On lower river. All seen migrating.

October 5, 2006 3 “Western” Willet

Bivalve. One (or another) still remained on December 5, 2006.

October 5, 2006 Parasitic Jaeger, dark morph juvenile

Leesburg. One of the absolute birding highlights of twenty years of study. We watched this bird migrate down the Maurice River at Leesburg, probably having come “over land” from the Great Lakes. We relocated it at Heislerville WMA and watched it harassing terns until it disappeared to the south out over Delaware Bay. Parasitic Jaeger is normally an offshore migrant virtually never seen inland in New Jersey.

November 19, 2006 1,000+ American Robins

East Point. Seen migrating along with numbers of Yellow-bellied Sapsuckers.

December 27, 2006 Golden Eagle, immature

Bivalve. This bird stooped on a Great Blue Heron, narrowly missing.

October 26, 2006 3 Golden Eagles

Near Bivalve. Two birds together and a third later observed migrating west.

February 18, 2007 Greater White-fronted Goose

Bayside State Prison. Seen and photographed by Steve Glynn – the first truly confirmed record for the Maurice River region. (Unfortunately, it was never seen on an official survey date.)

March 1, 2007 Common Teal

Bivalve. The Common Teal is the Eurasian race of the Green-winged Teal. Same or different individual also seen March 20.

- March 1, 2007 Bald Eagle on eggs
Fowser Road nest.
- March 1, 2007 2 Cooper's Hawks in courtship display flight
Seen along the west bank of the Maurice River south of the Mauricetown Bridge.
- March 8, 2007 Bald Eagle on eggs
"Galetto Nest." One young would subsequently fledge from this nest.
- March 8, 2007 Cooper's Hawk in courtship display flight
Seen along the west bank of the Maurice River north of the Mauricetown Bridge (2nd pair?).
- March 9, 2007 First Osprey arrival
Seen by CU member, Diane Jones.
- March 20, 2007 4 American Kestrel
Of 4 American Kestrel seen, 3 were spring migrants seen in flight heading north.
- March 20, 2007 2 Horned Lark
Bivalve
- April 10, 2007 Northern Harrier, adult male
Bivalve. Seen hunting Dunlin for some time. No successful catches seen.
- April 10, 2007 Iceland Gull
Bivalve. A late date for this rare winter vagrant
- May 9, 2007 White-faced Ibis
Heislerville WMA. Seen by Paul Lehman.
- May 12, 2007 Cooper's Hawk nest
Maurice River, near Galetto dock in pine stand.
- May 17, 2007 Northern Harrier carrying prey
Bivalve. This observation confirms nesting in the immediate area by this endangered species.

Summary

In summary, the 2006-2007 season was the twentieth year of long-term ornithological studies on the Maurice River. Findings continue to cement the Maurice River's importance to regional bird populations throughout the seasons. Fall and spring findings complemented core winter studies, and all combine to document significant bird use throughout the yearly seasonal cycle. The 2006-2007 findings offer proof that Maurice River habitats and open space areas are some of the most important in both New Jersey and the Mid-Atlantic states.

We look forward to producing the 20-year in-depth summary report on avian status and trends on the Maurice River that will soon follow this 2006-2007 report. We thank Citizens United for the continuing opportunity to work with its dedicated members and supporters in the documentation of the avian wonders of the Maurice River. It remains a privilege and an honor to represent Citizens United in carrying out such landmark long-term studies on such an important natural area. Even after twenty years, the Maurice River continues to amaze us.

It is important to again note that the drawdown of one of Heislerville WMA's impoundments attracts and benefits many thousands of shorebirds. It should be encouraged, supported, and hopefully continued, and we thank the NJDEP DFW for this effort.

Finally, we also thank the U.S. Department of the Interior's National Park Service, Wild and Scenic Rivers Program, for continuing assistance to Citizens United. The award of a Wild and Scenic Rivers Partnership Grant to CU supported this project and enabled these surveys to be conducted. We recognize and thank the NPS for their continuing keen interest in these studies and in the wildlife resources of the Maurice River.

Clay Sutton
Jim Dowdell

August 1, 2007

TABLE 1
Maurice River
Raptor and Waterbird Survey
July 2006 through June 2007

[illegible]

* Survey on lower river only (East Pt, Heislerville WMA, Bivalve EEP)
10/24: East Pt / Heislerville only to Bridge
10/26: Raptor Count only

Peak winter and yearly counts boldfaced
Avg shown for core winter
season (12/5/06-3/20/07)

TABLE 1

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* Survey on lower river only (East Pt, Heislerville WMA, Bivalve EEP)
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				FALL PERIOD										WINTER PERIOD										SPRING PERIOD				
DATE	7/20	8/11	9/7	9/19	10/5	10/24	10/26	11/10	11/19	12/5	12/19	12/27	1/13	1/24	2/15	3/1	3/8	3/20	AVG	4/7	4/10	5/9	5/17	6/1				
			*			*	*	*	*												*		*	*				
SHOREBIRDS																												
Black-bellied Plover	1	80	279	146	216			25		9	8			17	2						15	18	271	525	100			
Am. Golden Plover			1	2	1																							
Semipalmated Plover	55	1145	169	102	1																	415	5075	222				
Killdeer	5		2	1	4	6				4					5	8	23	13		2	6	13	7	3				
Am Oystercatcher	4																	1			2							
Black-necked Stilt																						2						
Greater Yellowlegs	28	33	27	29	65	24		150	25	6	1	2	9	7	4	16	14	43		40	106	58	42	1				
Lesser Yellowlegs	15	13	101	72	13	5		25	20					3	1	2	1	92		150	58	3	3					
Willet	2	2			3					1												22	24	21				
Spotted Sandpiper	2	2																				1	6					
Ruddy Turnstone	2	12																				13	50	1				
Red Knot																							25					
Sanderling	106	2			6																	10	320	1				
Semipalmated Sdp	2162	4351	265	110																		270	7700	3240				
Western Sandpiper	5																	1										
Least Sandpiper	205	24	13	55																		20	18					
Wh-rump. Sandpiper																						2	3					
Pectoral Sandpiper			1		1																							
Dunlin				56	295	7	x	250	400	520	1058		61	20	78	45		755		13000	13300	5600	1120	20				
Curlew Sandpiper																						1	1					
Stilt Sandpiper	1			7	2																	2						
Sh-billed Dowitcher	1355	1130	62	52	23																5	4	8900	6035	36			
Lg-billed Dowitcher																		1										
Wilson's Snipe					1								1	8	3		4	51		1								
Am. Woodcock															2		3	2				1						
unid. Shorebird				250																				20000				
TOTAL SHOREBIRDS	3948	6794	920	882	631	nc	nc	450	445											13213	13495	15602	40954	3645				

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July 2006 through June 2007

					FALL PERIOD								WINTER PERIOD									SPRING PERIOD				
DATE		7/20	8/11	9/7		9/19	10/5	10/24	10/26	11/10	11/19	12/5	12/19	12/27	1/13	1/24	2/15	3/1	3/8	3/20	AVG	4/7	4/10	5/9	5/17	6/1
				*				*	*	*	*											*		*		
JAEGERS to ALCIDS																										
Parasitic Jaeger							1																			
Laughing Gull	x	x	x	x	x	x	x	x	x	x												1	99	x	x	x
Bonaparte's Gull														7	2	1		2		22		75	36	3	1	
Ring-billed Gull	x	x	x	x	x	x	x	x	x	x	x	x	x	106	x	x	x	x	x	x		x	x	30	25	25
Herring Gull	x	x	x	x	x	x	x	x	x	x	x	x	x	60	x	x	x	x	x	x		x	x	x	x	x
Iceland Gull																							1			
Lesser Bl-bkd Gull			1																							
Gt Bl-backed Gull	x	x	x	x	x	x	x	x	x	x	x	x	x	24	x	x	x	x	x	x		x	x	x	x	x
Caspian Tern		7	4	2	3																					
Royal Tern				12	1																					
Roseate Tern	2																									
Forster's Tern	129	340	162	199	83	45	x	x	10	1												12	40	60	160	96
Least Tern	6	2																						3	7	7
Black Skimmer	2		1																					36	62	7
PIGEONS to WOODPECKERS																										
Belted Kingfisher			3	5	6					3	2	7	5	1	7	4	3	4	3			1	1			
Short-eared Owl															1											

* Survey on lower river only (East Pt, Heislerville WMA, Bivalve EEP)
10/24: East Pt / Heislerville only to Bridge
10/26: Raptor Count only

Peak winter and yearly counts boldfaced
Avg shown for core winter
season (12/5/06-3/20/07)

TABLE 2
Cohansey River and Salem River
Winter Raptor and Waterbird Survey
2006 -- 2007

	COHANSEY R.					SALEM R.			
DATE	12/31	1/14	2/11	AVG.		1/21	2/17	3/4	AVG.
LOONS to CORMORANTS									
Common Loon	1								
Pied-billed Grebe						1			
Double-cr Cormorant	3					1	1		
BITTERNS to VULTURES									
Great Blue Heron	11	7	8			6	7	6	
Great Egret		1							
Black-cr Nt-Heron	1								
Black Vulture	10		15	8.3		10	23	35	23
Turkey Vulture	29	39	109	59		107	97	170	125
WATERFOWL									
Gr Wh-fr Goose			1						
Ross's Goose						1			
Snow Goose	16089	15100	2671	11287		11153	7502	7009	8555
Canada Goose	1071	2000	1230	1434		3750	5050	4485	4428
Cackling Goose							1		
Mute Swan	5	6	2			40	62	158	
Tundra Swan						2	1	55	
Wood Duck								16	
Gadwall						120	52	26	
American Wigeon			1			12	36	563	
Am Black Duck	402	310	620	444		139	297	136	191
Mallard	41	214	314	190		130	229	84	148
Northern Shoveler								8	
Northern Pintail			6			32	72	1052	385
Green-winged Teal	75			25		1	1	1125	376
Canvasback		30	150						
Ring-necked Duck								2	
Greater Scaup			2						
Lesser Scaup			2						
Scaup (sp.)	6	4	6						
Bufflehead						1			
Com. Goldeneye	3		1						
Hooded Merganser		13						4	
Com. Merganser	6	7	8			9	58	15	
Red-br Merganser			6						
Ruddy Duck								1	

TABLE 2
Cohansey River and Salem River
Winter Raptor and Waterbird Survey
2006 -- 2007

	COHANSEY R.					SALEM R.			
DATE	12/31	1/14	2/11	AVG.		1/21	2/17	3/4	AVG.
DIURNAL RAPTORS									
Bald Eagle	20	20	27	22.3		18	20	13	17
Northern Harrier	22	31	34	29		24	18	14	19
Sharp-sh Hawk	1	1	2	1.33		5	2	2	3
Cooper's Hawk	3	3	1	2.33		1	2		1
Red-sh Hawk	1	1		0.67			1	1	0.67
Red-tailed Hawk	23	23	65	37		28	40	32	33
Rough-legged Hawk		2	1	1			1		0.33
American Kestrel	3	3	1	2.3		1		1	0.67
Merlin		2	1	1		2	1		1
Peregrine Falcon							1	3	1.3
GROUSE to CRANES									
Ring-nk Pheasant	2	1							
Wild Turkey	167	10	115			27	5	100	
Clapper Rail	1	1							
American Coot						230	8	2	
Sandhill Crane	14	14							
SHOREBIRDS									
Killdeer			5			3		15	
Greater Yellowlegs	1	7						23	
Lesser Yellowlegs						11			
Dunlin	15	5	11						
Wilson's Snipe		1				28	1	10	
JAEGERS to ALCIDS									
Ring-billed Gull	22	x	x			x	x	x	
Herring Gull	75	x	x			x	x	x	
Gt Bl-backed Gull	11	x	x			x	x	x	
PIGEONS to WOODPECKERS									
Belted Kingfisher	5	9	1					2	
E. Screech-Owl	5								
Great Horned Owl	3	4				1	2	1	
Short-eared Owl	2								

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