

WINTERING RAPTORS and WATERFOWL
on the MAURICE RIVER

CUMBERLAND COUNTY, NEW JERSEY

The THIRTY-FIRST FIELD SEASON
of a Long-term Avian Use Study

Findings for the WINTER PERIOD: December 2017 through March 2018

Research sponsored by
CU Maurice River



Northern Harrier continues to be impacted due to sea-level rise on the Maurice River.
Here is an adult male Northern Harrier on the lower Maurice River, photographed by Clay Sutton on 9 January, 2018.

Clay Sutton and James Dowdell
April 2018

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Following the thirty years of in-depth, long-term winter raptor and waterfowl status and distribution studies on the Delaware Bay's Maurice River tributary, and the landmark report in March of 2018 of these thirty years of data and findings in regard to the significant trends of the tidal river's substantial avian resources, this report presents the results of a continuation of these unique studies: the results of the 31st consecutive winter season of study of the birds of prey and duck and geese populations that spend the winter on the Maurice River.

A comprehensive 30 year report was finalized and presented to CU Maurice River in March of 2018 detailing the findings, and particularly the observed long-term trends, of the annual winter raptor and waterfowl population studies on the tidal Maurice River. This report is available on the CU Maurice River website at www.cumauriceriver.org/raptor-and-waterfowl-surveysstudies/ . Summary reports have also been completed at the five year intervals throughout these studies and over the years, and are also available at this website.

Because these reports, as well as *all* of the thirty years of *individual* reports are available on-line, little discussion of methodology or techniques is offered in this short-form yearly summary. The basic methodology of the core winter raptor and waterfowl studies has remained the same since 1987: nine established sites (point counts) on the tidal Maurice River between Millville and East Point were sampled by Sutton and Dowdell for a period of 45 minutes each during each survey. Consistent monitoring has been conducted approximately every ten days between 1 December and 31 March each season. Visit the CU website for in-depth review of all methodologies and sampling locations, as well as the important goals and objectives of this long-term project.

Because the recent 30 year report detailed highly alarming downward trends in the winter numbers of both raptors and waterfowl on the Maurice River, it was decided by CU Maurice River to continue these long-term studies (and highly significant data set) into the 31st winter season. Without reiterating the extensive findings and reporting found in the recent March 2018 summary report on this long-term study, suffice it to say that there are well-documented declines in both raptors and waterfowl on the river, with strong evidence suggesting that these downward trends are linked to sea level rise on the Maurice River and in the greater Delaware Bay region. It was this disturbing and compelling evidence – the hard facts of observed major declines in many key species – that prompted CU Maurice River to continue these studies and the highly important documentation of the local adverse impacts from the international phenomenon of climate on our hallmark avian resources. Changes on the Maurice have been rapid, significant, and insidious.

Core winter raptor and waterfowl studies continued for the 31st consecutive winter season. The Maurice River was sampled on seven dates between 20 December 2017 and 23 March 2018. These findings are presented in **Table 1**. Table 1 also shows winter 2017-2018 average counts for key species. In addition, four fall season counts were conducted between 1 August and 15 November 2017. These findings are also presented in Table 1, although are not included in the winter averages shown. Fall migration period counts offer considerable insight (cause and effect) into the eventual winter bird populations on the Maurice River.

As in past seasons, Cumberland County's other major Delaware Bay tidal tributary, the Cohansey River, was sampled on two occasions during this winter period. For 28 years the Cohansey has been monitored as a "comparison river" or "control" to ascertain whether findings on the Maurice are representative; that is, whether they are either localized or more widespread on the Delaware Bayshore. Cohansey River results for winter 2017-2018 are shown in **Table 2**. (Note that the Cohansey River surveys as well as the autumn season surveys on the Maurice were conducted on a volunteer basis at no cost to CU Maurice River. Also note that two additional volunteer days were donated in the preparation of this short-form summary report on the winter 2017-2018 effort).

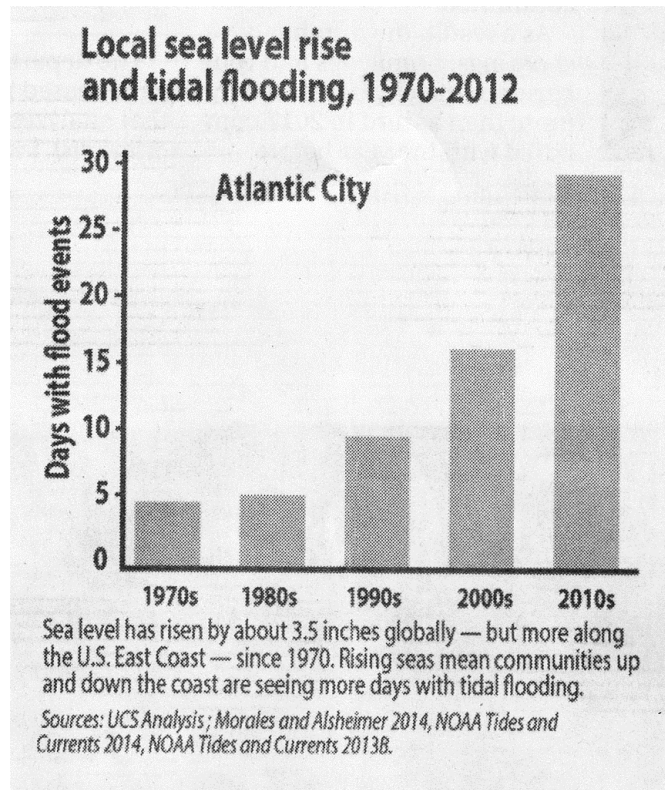
As with every winter season, the relative abundance and phenology of wintering raptors and waterfowl found on the Maurice River was in large part dictated by the weather. Simply put, the winter of 2017-2018 was lasting and deep. While December began somewhat mild, 7 December began a stretch of below average temperatures that lasted through most of the month. A major blast of arctic air began the New Year, with 5 January representing the coldest 24 hour period since 1984, and concluding the coldest three day period since 1977. On 3-4 January, a major blizzard dropped up to 17 inches of snow in parts of South Jersey. The period 27 December to 7 January was the 4th longest streak below 32 degrees in recorded meteorological history. (Source: National Weather Service via The Press of Atlantic City).

February was actually a bit above average in temperature, but the second wettest February ever recorded. March was well below average, and was characterized by an amazing four major "northeaster" coastal storms that brought up to 70 mph winds and severe tidal flooding with each event. It seemed as if the tides never receded for most of March. (And of note, as we write in mid-April, we are seeing yet another coastal storm/flooding event, and another storm predicted for the end of the month. Suffice it to say, this didn't used to happen).

The impacts to birds from this winter season were many and varied. The December-January freeze-up locked up most of our coastal waters with thick ice. On the Maurice River, the only open water was a few tidal leads in the river and in Maurice River Cove near East Point. During March, the flooding from the nor'easters resulted in virtually no high ground (exposed marsh) for the entire tidal length of the river. While the extent is unknown or as yet unreported, it is anecdotally agreed by many that there was considerable mortality of waterfowl during January's bitter freeze up. And while also an unknown, it is highly likely that there was considerably mortality of marsh rodents, and probably many other birds, during the intense tidal flooding of the endless March nor'easters. In short, coastal birds experienced some of the severest impacts that they had seen in many years.

The impacts of sea level rise on both raptors and waterfowl were discussed at length in the recent March 2018 report and will not be reiterated here. However, the following graphic from The Press of Atlantic City dated 8 April 2018 offers a clear picture regarding the premise that marsh rodents, the principal prey items for many species of Maurice River raptors, are continuing to be heavily impacted by frequent and severe high water (tidal flooding). Not only

are major coastal storms and hurricanes flooding the tidal wetlands, but lunar high tides and/or even relatively minor storms are increasingly doing so as well. Simply put, marsh rodents no longer have the time or opportunity to recover.



After 30 years of study (now 31), we believe that the findings on the Maurice for winter 2017-2018 were about what we have come to expect for a severe winter with a lengthy, deep freeze-up and numerous storms (flooding events). Snow Geese were present, yet itinerant as usual, with most regional geese remaining west of the Maurice River region. Canada Goose numbers were modest as well, as they were pushed out by snow cover and frozen conditions early in the winter. American Black Duck, Mallard, and Northern Pintail numbers were once again low compared to long-term averages. For all three species, their absence didn't seem to be associated with temperature or flooding (there was ample time for them to "show up" in early spring), but once again due to the presumed long-term and on-going lack of quality brackish wild rice habitat. This rice acreage was once a staple on the upper river, and supported large numbers of ducks, but has rapidly diminishing due to sea level rise. (See 30 Year report).

Table 3 shows peak and average numbers of winter raptors and key waterfowl species on the Maurice River during winter 2017-2018. Numbers are shown in relation to Segment V (2007-2012) of this long-term study, as well as the 5 individual season results from Year 26 to Year 30. The findings are graphic and self-explanatory, particularly when viewed with and against the findings and extensive discussion in the 30 Year report written in March 2018.

Northern Harrier and Red-tailed Hawk numbers continued to be well below long-term peaks and averages. In Year 31 the downward trend continued for these two Maurice River and Delaware Bay signature raptors. With an average of 15.57 birds, Northern Harrier posted the second-lowest average in 31 years, and this barely bested the lowest-ever (15.25 in 2013-2014) by a mere 0.32. The Year 31 Red-tailed Hawk average of 23.14 was the lowest-ever in 31 years,

considerably lower than the 26 bird average count in 2015-2016 by 2.86. This is significant and substantial.

As extensively reviewed and discussed in the 30 year report, we strongly believe that the cause for these distressing trends is the lack of marsh rodent prey availability. Beyond the findings depicted in The Press of Atlantic City graphic shown above, the frequent and persistent flooding of winter 2017-2018 (the four northeaster coastal storms of March alone) has no doubt particularly severely impacted (eliminated?) marsh rodents from much of the Maurice River marshes.

Note that the limited Cohansey River data for winter 2017-2018 (Table 2) shows the same picture: Northern Harrier and Red-tail Hawk numbers continue very low and well below-average on the Cohansey River. The Cohansey River peak count for Harriers of 10 was the lowest in 28 years of study, notably lower than the previous lowest of 14 in winter 2013-2014. The Cohansey Red-tail peak count of 27 tied the third lowest in 28 years (27 in 2015-2016). We have used Cohansey peak counts rather than average counts due to the fact that the sampling frequency is reduced on the Cohansey; peak counts are more representative. See discussion in 30 year report).

To end on a brighter note, Bald Eagle numbers continue to soar on the Maurice River. The winter of 2017-2018 saw the highest average ever achieved in our 30 years of monitoring. The average of 44.14 eagles per day well bests the 34.88 eagles per day of 2016-2017, and the 59 individual Bald Eagles carefully counted on 19 January 2018 is our all-time high peak daily count. Eagles were abundant on the Cohansey River too; an excellent peak daily count of 51 was achieved there on 25 January 2018. There is still a lot of good news and much to celebrate on our Delaware Bayshore rivers!

The results of our 31st winter season of raptor and waterfowl studies on the Maurice River have confirmed and corroborated not only many of our long-term findings and observed trends over the years, but also the surprising and alarming results from the past 5 seasons, as the cumulative effects of sea level rise and climate change continue to accelerate and negatively impact the raptor and waterfowl populations of the river and the region.

To continue to document these disturbing changes and unsettling downward trends is today an important goal of this long-term project, even though it was not something even remotely considered at the outset of these studies 31 years ago, way back in 1987. Such documentation is why long-term studies are highly important as we monitor raptor and waterfowl populations in these times of great and rapid change. Much of what we have reported in recent years is not good news, but it is critical news that needs to be reported. We commend and thank CU Maurice River for sharing these concerns and continuing to support this important work. We thank the officers and members of CU Maurice River for their continuing vision and belief in the innate and deep values of this long-term research effort. We continue to be proud to represent CU Maurice River as we all learn together.

TABLE 1
Maurice River: Raptor and Waterbird Survey
August 2017 through March 2018

DATE	FALL 2017					CORE WINTER PERIOD 2017-2018							AVG.
	8/1	8/27	9/17	9/26	11/15	12/20	1/3	1/19	2/18	2/27	3/9	3/23	
	**	**	**	**	**								N=7
LOONS to CORMORANTS													
Red-throated Loon						2				2		1	
Common Loon													
Pied-billed Grebe				1			1						
Horned Grebe									2	1	3		
Northern Gannet													
Great Cormorant						1							
DbI-cr Cormorant	200	40	70	325	192	2				36	5	38	
BITTERNS to VULTURES													
Great Blue Heron	4	2	10	24	5	18	13	9	13	2	2	9	
Great Egret	40	12	50	54	6	2			1			9	
Snowy Egret	25	40	55	53									
Little Blue Heron													
Tricolored Heron													
Green Heron													
Black-cr Night-Heron				10		1	1						
Glossy Ibis	1												
White Ibis													
Roseate Spoonbill			1	1									
Black Vulture	4	8	4	2	12	17	24	57	32	40	43	9	31.71
Turkey Vulture	15	30	30	37	57	104	117	140	120	196	145	122	134.9
WATERFOWL													
Ross's Goose													
Snow Goose						0	1	0	3800	1350	1421	800	1053
Canada Goose	25	2	10	37	62	138	994	1256	297	216	318	270	498
Brant								35*					
Mute Swan	6		2	2	2			5	6	5	6	8	
Wood Duck								2	4		21	6	
Gadwall								1	44	124	34	114	
American Wigeon										18		3	
Am Black Duck			1	32	137	238	303	533	559	219	593	635	440
Mallard			2	2	14	355	253	380	509	77	172	113	266
Blue-winged Teal		18	7	30									
Northern Shoveler						1			2	2	4	13	
Northern Pintail						35	20	6	300	76	116	74	90
N.Pintail x Mallard hybrid-male													
Green-winged Teal			160	340	335	240	26	3	52	1418	2173	2317	890
Common Teal											2		
Gr-wg x C.Teal hybrid-male													
Redhead													
Ring-necked Duck					1			20	10	7		6	
Greater Scaup								38					

Peak counts shown in **Bold Face**

** Lower River Survey only
* Seen on date other than official survey date or by other observers

TABLE 1
Maurice River: Raptor and Waterbird Survey
August 2017 through March 2018

WATERFOWL (continued)													
Lesser Scaup										12	5	19	
Scaup (sp.)				10	34				203	160			
Surf Scoter					3					1			
Black Scoter				1									
Scoter (sp.)					8								
Long-tailed Duck					5	4	5						
Bufflehead				74	137	139	265	199	144	108	229	174	
Com. Goldeneye					12	43	160	125	9	10	1		
Hooded Merganser					2	16	7	106	8		13		
Com. Merganser						17	43	3					
Red-br Merganser				5	58	90	36	154	29	30	65	66	
Ruddy Duck				75	14				8		2		
DIURNAL RAPTORS													
Osprey	60	60	5	15								10	
Bald Eagle	3	5	35	40	13	37	42	59	41	41	44	45	44.14
Northern Harrier		1	2	3	9	21	16	19	16	14	14	9	15.57
Sharp-shinned Hawk				9		2	1	2	6	3	2	3	2.714
Cooper's Hawk		1	1	5	1	0	3	3	1	7	2	3	2.71
Northern Goshawk													
Red-shouldered Hawk					1	1	7	1	2	2	0	1	2.00
Broad-winged Hawk													
Red-tailed Hawk	4	2	1	2	4	9	22	24	21	40	18	28	23.14
Rough-legged Hawk							1d*						
Golden Eagle								1					
American Kestrel		1		2	1	0	1	1	1	1	1	0	0.714
Merlin				1									
Peregrine Falcon	1			1	1	1	0	1	2	2	2	0	1.14
GROUSE to CRANES													
Ring-neck Pheasant													
Chukar													
Wild Turkey			2								3	39	
Clapper Rail	12	12	1	8	1								
Virginia Rail							4						
Sandhill Crane													
SHOREBIRDS													
Black-bellied Plover	1	1	55	320	2								
Semipalmated Plover	30	600	35	32									
Killdeer	3	5		14			3	1			3	7	
Am. Oystercatcher													
American Avocet												1	
Greater Yellowlegs	4	20	35	54	36	25	7		2		1	7	

Peak counts shown in **Bold Face**

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TABLE 1
Maurice River: Raptor and Waterbird Survey
August 2017 through March 2018

SHOREBIRDS (continued)												
Lesser Yellowlegs	1	2	10	8	1							
Solitary Sandpiper												
Willet												
Spotted Sandpiper				1								
Ruddy Turnstone												
Red Knot												
Sanderling				8	10							
Semipalmated Sdp	3000	1500	220	230								
Western Sandpiper												
Least Sandpiper	2	3	10	8								
Wh-rump. Sandpiper				1								
Dunlin					1260	36	82					
Stilt Sandpiper												
Ruff												
Sh-billed Dowitcher	200	70	30	51								
Lg-billed Dowitcher												
Wilson's Snipe							2				9	
Am. Woodcock							1					
Red-necked Phalarope												
unid. shorebirds												
TOTAL SHOREBIRDS	3241	2201	395	727	1309							
JAEGERS to ALCIDS												
Laughing Gull	√	√	√	√								
Bonaparte's Gull								16		4		
Ring-billed Gull	√		√	√	√	√	√	√	√	√	√	√
Herring Gull	√	√	√	√	√	√	√	√	√	√	√	√
Lesser Bl-backed Gull												
Gt Bl-backed Gull	√	√	√	√	√	√	√	√	√	√	√	√
Caspian Tern			3	4								
Royal Tern												
Forster's Tern	40	40	60	40	6							
Least Tern	2											
Black Tern												
Black Skimmer												
PIGEONS to WOODPECKERS												
E. Screech Owl												
Great Horned Owl								3*				
Short-eared Owl								3*	2*			
Snowy Owl						1*						
Belted Kingfisher			4	5	3	2	1		1	3	1	3

Peak counts shown in **Bold Face**

** Lower River Survey only

* Seen on date other than official survey date or by other observers

TABLE 2
Cohansey River: Winter Raptor and Waterfowl Survey
2017–2018

DATE	COHANSEY RIVER		
	1/25/18	3/5/18	AVG.
			n = 2
BITTERNs to VULTURES			
Great Blue Heron	3	3	
Black Vulture	40	18	
Turkey Vulture	129	106	
WATERFOWL			
Snow Goose	2531	0	
Canada Goose	2160	642	
Am Black Duck	177	36	
Mallard	55	12	
Northern Pintail		4	
Green-winged Teal		325	
Bufflehead		12	
Common Goldeneye	1		
Hooded Merganser	3	2	
Common Merganser	10	22	
Red-breasted Merganser		5	
DIURNAL RAPTORS			
Osprey			
Bald Eagle	51	46	48.50
Northern Harrier	10	9	9.50
Sharp-sh Hawk	1		
Cooper's Hawk	1	1	
N. Goshawk			
Red-sh Hawk	2		
Red-tailed Hawk	13	27	20
Rough-legged Hawk	1*		
Golden Eagle		1	
American Kestrel	2		
Merlin			
Peregrine Falcon			
GROUSE to CRANES			
Ring-necked Pheasant	3		
Sandhill Crane	10		
SHOREBIRDS			
Killdeer		2	
JAEGERS to ALCIDS			
Ring-billed Gull	√	√	
Herring Gull	√	√	
Great Black-backed Gull	√	√	
PIGEONS to WOODPECKERS			
Short-eared Owl	2*		

* Seen on a date other than official survey date or seen by other observer

Prepared for:

CU Maurice River

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

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