New York State Bald Eagle Report 2009

Lou Buscher, NYSDEC.

P. Nye
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-4754

DEDICATION :

Mike “EagleMan” Allen, w/ Y89: NYSDEC (retired)
NY#04, 10 June 2004. Photo: P. Nye DEC

This year’s annual New York State bald eagle report is dedicated to Mike Allen, long-time DEC Region 8 Wildlife Technician and key person in our bald eagle restoration program since its inception in 1975: retired as of October 2009.

Contents:

DEDICATION: 2

I. Wintering Bald Eagles 5
A. Surveys 5
1. Statewide 5
2. Southeast NY 8
3. Upper Delaware River 9
4. Mongaup River System 11
5. Hudson River (Lower) 11
6. Hudson River (Upper) 14
7. St. Lawrence River 15
8. Lake Champlain 15

II. Breeding Bald Eagles 17
A. Surveys 17
1. Statewide 17
a. Contaminant Sampling 19
b. Nesting Failures & Other Misc. Breeding Info 19
2. DEC Regional Area Productivity Information 22
a. Hudson River 25
b. Delaware River 26
B. Nestling Movement/Survival Study 29
C. Observations of Banded Eagles 30
D. Recoveries 30

The Future 32

Acknowledgements 33

Additional Eagle Information Links 34

List of Tables:

Table 1. Numbers of eagles observed in NYS during the annual national mid-winter Bald eagle surveys. 7
Table 2. Combined (aerial and ground) January winter eagle surveys, Southeast Region, NYS 8
Table 3. Number of wintering bald eagles counted annually along the main-stem of the Delaware River, NY-PA 10
Table 4. Numbers of Bald Eagles Observed During Annual Mid-Winter (January) Counts (aerial and ground combined) Along the Lower Hudson River, NY. 12
Table 5. Number of bald eagles observed during simultaneous night roost surveys along the lower Hudson River, New York, 2009 13
Table 6. Annual Summary of Lower Hudson River Coordinated Bald Eagle Roost Counts, 2004 – 2009. 13
Table 7. Number of bald eagles observed during late-afternoon/evening roost

Surveys within the Lower Hudson River area of New York, winter 2009. 14
Table 8. Annual Regional Summary: Number of bald eagles observed within major NYS wintering areas 16
Table 9. NYS Bald Eagle Breeding Summary 1999 – 2009 20
Table 10. Bald eagle productivity by NYSDEC Region, 2002-2009 23
Table 11. Annual bald eagle breeding success: Hudson River, NY 25
Table 12. Bald eagle productivity along the Delaware River (main-stem), NY 27

List of Figures:

Figure 1. Numbers of Bald Eagles Observed During Annual National Mid-Winter Bald Eagle Survey in NYS 6
Figure 2. Numbers of bald eagles observed during the mid-winter survey, Southeast NY 9
Figure 3. Numbers of bald eagles observed during January aerial surveys - main-stem of the Upper Delaware River, NY-PA 10
Figure 4. Winter (January) bald eagle surveys – Mongaup River system, NY 11
Figure 5. Numbers of bald eagles observed during January mid-winter survey, Lower Hudson River, NY 12
Figure 6. St. Lawrence River NY winter bald eagle surveys 15
Figure 7. Lake Champlain NY winter bald eagle surveys 15
Figure 8. Statewide NYS Annual Bald Eagle Productivity 21
Figure 9. NYS Baea Productivity: Percent of annual breeding pairs successful 21
Figure 10. Annual percent of 1,2, or 3-young NYS bald eagle nests 22
Figure 11. NYS baea productivity: young per occupied and successful pair 22
Figure 12. Number of occupied pairs of bald eagles and young fledged by DEC region, 2009 23
Figure 12a. Number of new baea breeding pairs by DEC region, 2009 24
Figure 13. Location of new NYS bald eagle pairs/nests; 2009 24
Figure 14. Hudson River, NY Annual bald eagle productivity 26
Figure 15. Upper Delaware River, NY, Annual bald eagle productivity 28
Figure 16. Overall percent nest success: NYS breeding bald eagles, 2005-2009 28
Figure 17. Young per occupied nest: NYS bald eagles, 2005-2009 29

Lou Buscher, NYSDEC

I. Wintering Bald Eagles

A. Surveys:

1. Statewide:

Surveys for wintering bald eagles continued throughout New York State during the winter of 2008-2009 with our participation in the National Midwinter Bald Eagle Survey during January 2009 for the 31st consecutive year. As usual, our surveys were conducted by both DEC staff and numerous volunteers, both on the ground and in the air. Our National survey effort, conducted this year throughout the lower 48 United States between 31 December 2008 to 14 January 2009, involved approximately 75 survey routes and about 100 DEC and public cooperators. Five separate helicopter surveys were again conducted over our major winter eagle-concentration areas this year, covering areas in southwestern NY (Allegheny Reservoir and River area, Lake Erie shorelines and tributaries), all of Lake Champlain, the St. Lawrence River, and most of the lower Hudson River and Upper Delaware River watershed.

While the weather going into and including the 2008 winter survey found mild conditions and extensive open water, continuing the mild trend begun in 2006, this was not the case in 2009. As we entered the winter of 2008-9, mid-late December presented us with ice storms, several snow events, and sub-freezing temperatures. By Christmas time, however, temperatures rose above freezing until the end of the month, even hitting 50° F in Albany on 28 December. By 31 December though, temperatures had dropped and snow returned. Throughout the first two weeks of January, sub-freezing temperatures, ice and snow were again prevalent. The day before our aerial surveys, on 11 January, the Albany area received 6" of new snow with a temperature of 12° F. Our southeast New York heli-survey on 12

January found more ice than usual throughout the route, as did the heli-survey of the St. Lawrence River area two days later.

Statewide survey results appear to be going back and forth over the past few winters, with our January 2007 statewide count the lowest in seven years but our 2008 statewide count jumping right back up into the record books, shattering the 500 mark for the first time ever.
Statewide in January 2009 we slid back again by more than 25% from 2008, tallying just over 400 bald eagles, 241 adults and 160 immatures (Table 1, Figure 1).
As usual, no attempt has been made to exclude suspected "resident" NY eagles from the overall winter-count; knowing that our resident eagle population continues to expand significantly (see "Breeding" section later in this report). Certainly our resident eagles continue to make up a considerable and growing percentage of this "wintering" number each year. The ratio of adults in the overall winter count this year, 60%, remains near the 10-year average of 55% and mirrors the 2008 ratio of 59%.

Figure 1.

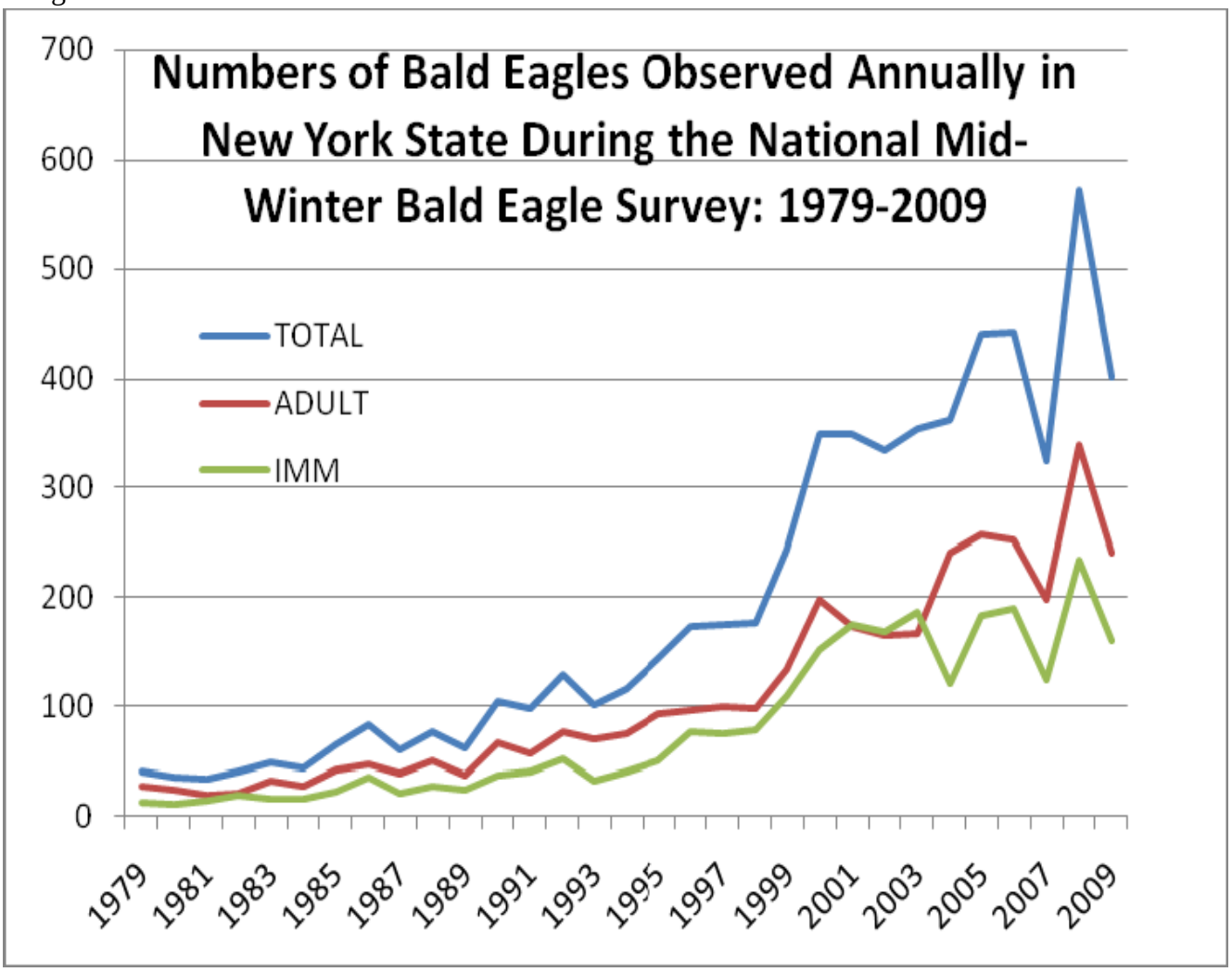


Table 1. Numbers of eagles observed in New York State during annual national mid-winter bald eagle surveys.

		NUMBER OF INDIVIDUAL EAGLES OBSERVED					
		BALD EAGLES			GOLDEN EAGLES		
Year	Survey Period	Total	Adult	Immature	Total	Adult	Immature
1979	January 13-27	41	28	13	0	0	0
1980	January 2-20	36	25	11	0	0	0
1981	January 2-16	35	20	15	0	0	0
1982	January 2-16	40	21	19	0	0	0
1983	January 2-16	49	32	17	0	0	0
1984	January 2-16	44	27	17	1	1	0
1985	January 2-16	65	42	23	0	0	0
1986	January 2-16	84	48	36	2	1	1
1987	January 1-15[1]	60	39	21	0	0	0
1988	January 1-15	77	50	27	1	0	1
1989	January 5-19	62	38	24	1	1	0
1990	January 4-18	105	67	38	1	0	1
1991	January 3-17	98	57	41	0	0	0
1992	January 1-15	130	77	53	0	0	0
1993	January 1-15	102	70	32	0	0	0
1994	January 1-15	116	75	41	1	0	1
1995	January 4-18	144	94	50	1	0	1
1996	January 3-17	174	97	77	1	0	1
1997	January 1-15*	175	100	75	0	0	0
1998	January 2-16	177	99	78	1	1	0
1999	January 1-15	244	135	109	0	0	0
2000	January 1-15	350	198	152	2	1	1
2001	January 3-17	349	173	176	5	1	4
2002	January 2-16	335	166	169	4	0	4
2003	January 1-15	354	167	187	4	2	2
2004	January 1-15	363	241	122	2	2	0
2005	January 1-15	441	257	184	1	0	1
2006	January 4-18	442	252	190	2 (unk age)	0	0
2007	January 3-17	324	199	125	1	1	0
2008	January 2-16	573	339	234	0	0	0
2009	Dec 31-Jan 14	401	241	160	3	0	3

Regional Wintering Eagle Survey results making up our statewide total are discussed further below.

2. Southeast NY (Overall):
This southeast survey route covers the Hudson River south from Albany to Croton Point, the Upper Delaware River from Port Jervis to Hancock NY, and major tributaries, reservoirs and lakes within this watershed, primarily in Sullivan and Delaware Counties. Ground-counters cover additional areas within this zone (such as the East and West Branches of the Delaware River), in a non-overlapping count fashion.

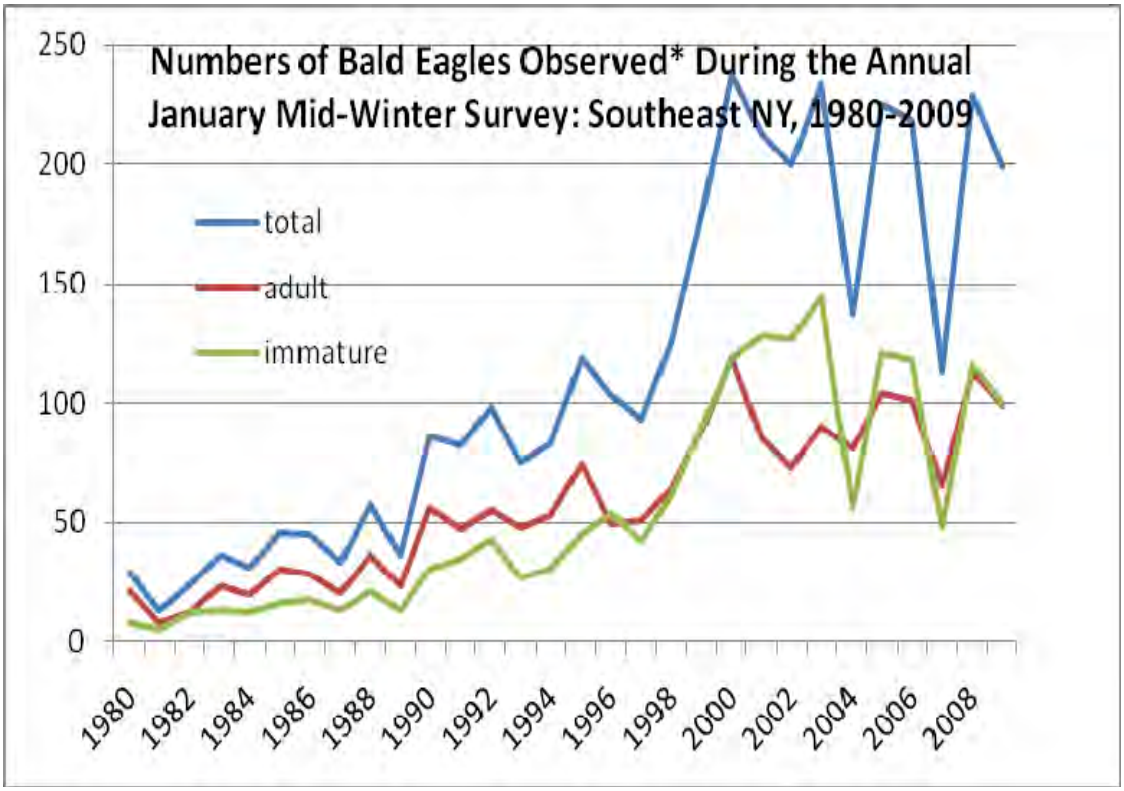
As with our statewide numbers, our 2009 survey totals for this area fell short of our 2008 count of 229 eagles. In 2009 we tallied 199 total bald eagles, 99 adults and 100 immatures (table 2, figure 2). Our record count for this region in 2000 recorded 238 total eagles (119 adults, 119 immatures). As in recent years, we continue to believe that more and more each year, a significant number of the birds observed along this winter route are NY resident eagles, as many continue to be adults associated with known nests, perched on or near their nests during the flyover.

Table 2. Combined (aerial and ground) January winter eagle survey results, Southeast Region of NYS.

SE NY Winter Bald Eagle Surveys

	total	adult	immature
1980	29	21	8
1981	13	8	5
1982	24	12	12
1983	36	23	13
1984	31	19	12
1985	46	30	16
1986	45	28	17
1987	33	20	13
1988	57	36	21
1989	36	23	13
1990	86	56	30
1991	82	47	35
1992	98	55	43
1993	75	48	27
1994	83	53	30
1995	119	74	45
1996	103	49	54
1997	93	51	42
1998	125	64	61
1999	179	89	90
2000	238	119	119
2001	213	85	128
2002	200	73	127
2003	234	90	144
2004	137	81	56
2005	225	104	121
2006	219	101	118
2007	113	65	48
2008	229	113	116
2009	199	99	100

Figure 2.



*****results include both aerial and non-overlapping ground counts.

3. Upper Delaware River:

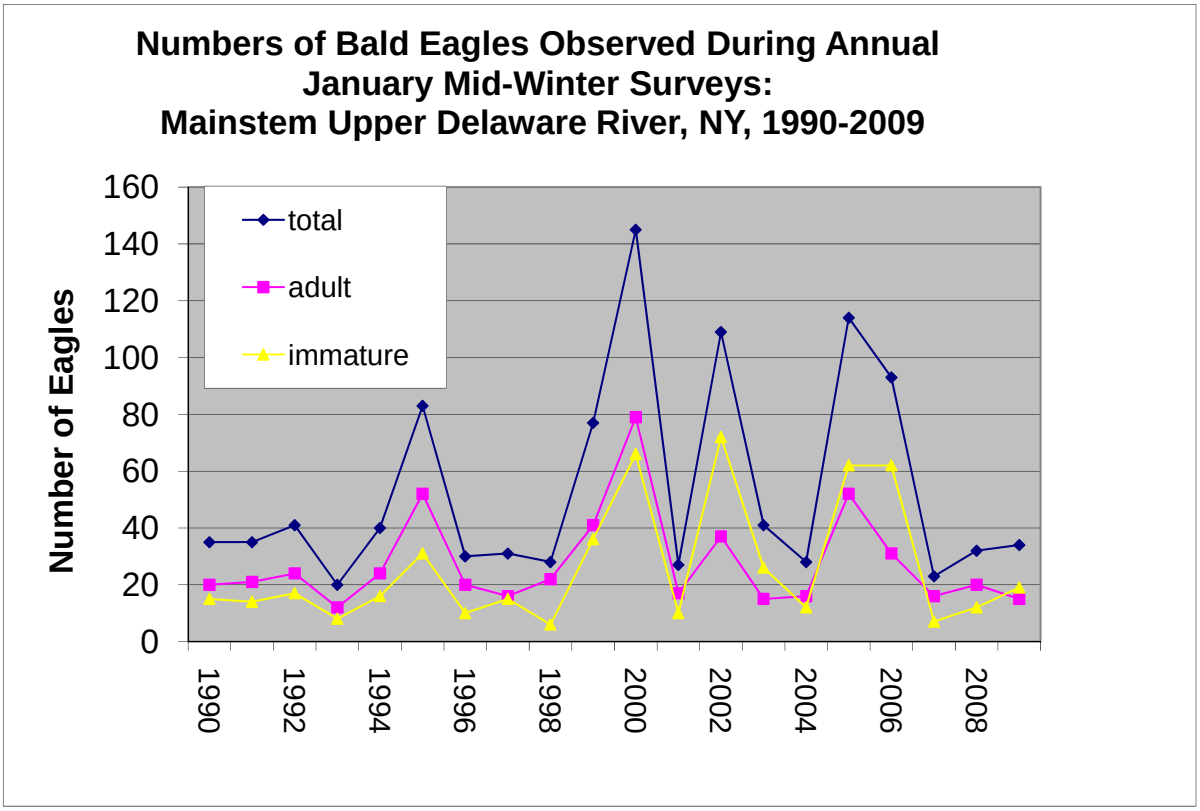
Over the length of the main-stem of the Upper Delaware River from Port Jervis to Hancock, we recorded 34 eagles this year, 15 adults and 19 immatures, nearly the same as the 32 eagles (20 adults, 12 immatures) counted here last year, but still significantly lower than the long-term average along the River of over 50 eagles. As usual, we also annually report on numbers of eagles observed along the Lackawaxen River, a major tributary to the Delaware (in PA), and often a significant source of alewives provided by an upstream reservoir/hydro-plant (Wallenpaupak) which can attract eagles from the Delaware, thereby reducing the count along the main-stem. During 2009, one day after NY's aerial survey of the Delaware, long-time surveyors Voni and Joe Strasser counted only 8 eagles on the Lackawaxen, 4 adults and 4 immatures.

As usual, the numbers presented in table 3 and figure 3 below represent non-overlapping ground and aerial counts combined. In addition to our usual winter surveys in this area, field work for the study of essential habitats for bald eagles along the Delaware River wrapped up in 2009, and the final report is in preparation and will be completed in 2010.

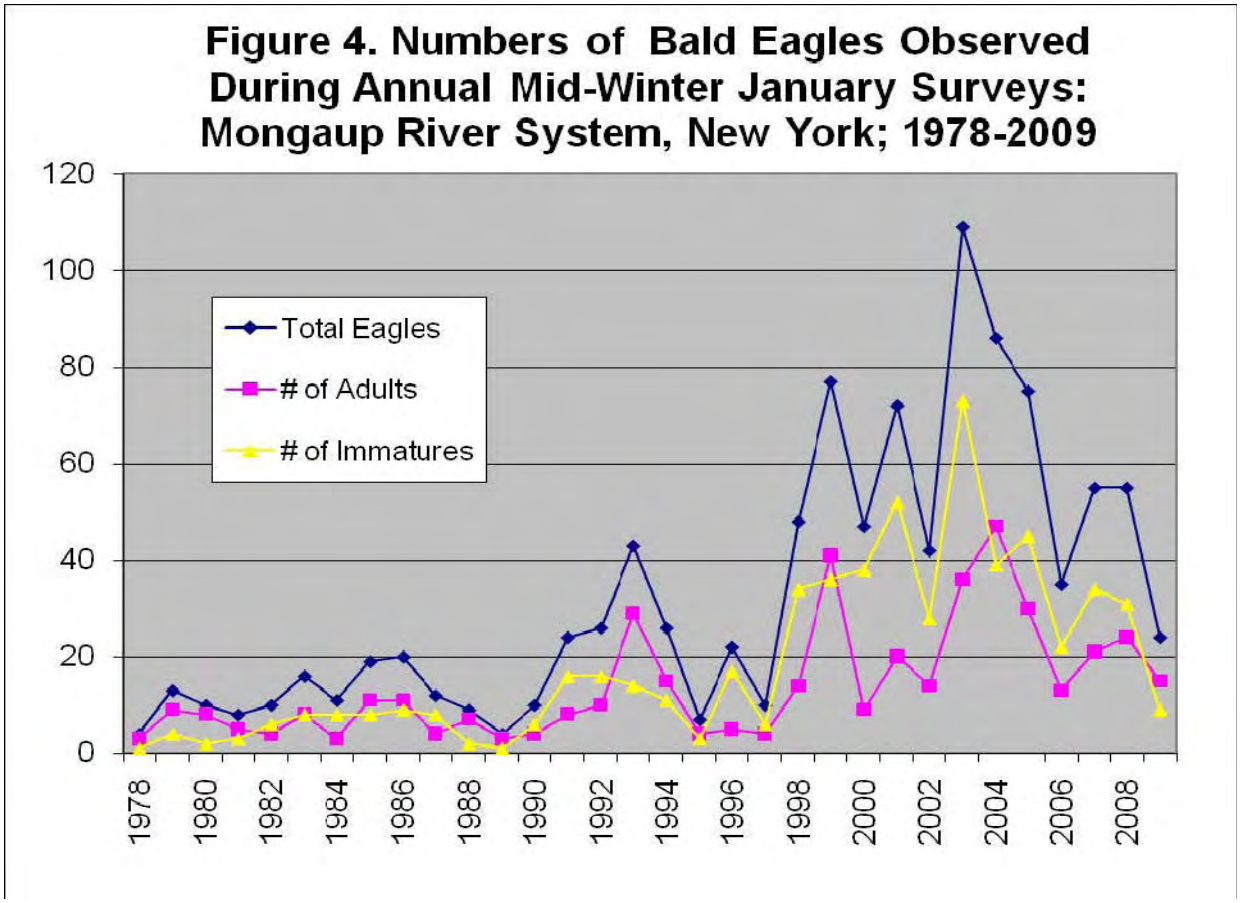
Table 3. Number of wintering bald eagles counted annually during January along the main-stem of the Delaware River, NY-PA.

Year	total	adult	immature
1990	35	20	15
1991	35	21	14
1992	41	24	17
1993	20	12	8
1994	40	24	16
1995	83	52	31
1996	30	20	10
1997	31	16	15
1998	28	22	6
1999	77	41	36
2000	145	79	66
2001	27	17	10
2002	109	37	72
2003	41	15	26
2004	28	16	12
2005	114	52	62
2006	93	31	62
2007	23	16	7
2008	32	20	12
2009	34	15	19

Figure 3.



4. Mongaup River System:
Following years of repairs to the Swinging Bridge Dam and attendant de-watering throughout this hydraulic system, these Sullivan County reservoirs were finally refilled during 2007 and hydro-electric operations resumed. Resident fish populations within these reservoirs were undoubtedly harmed, and could take many years to recover. It remains to be seen if and when this area will ever return to its former status as a major wintering eagle stronghold. During the 2009 survey, only 24 eagles were observed within the Mongaup system (15 ad, 9 imm), far less than the 55 individuals recorded in this area during the 2008 survey (24 ad, 31 imm) (figure 4). It appears that the Mongaup system is yet to fully recover from this de-watering event.



5. Hudson River (lower):
Our aerial survey of the lower Hudson River on 12 January this year recorded the second highest numbers of eagles yet along the river, and the highest count since 2001. Forty-three eagles were spotted from our helicopter, and when combined with non-overlapping ground counts conducted at the same time, our daily tally jumped to 79 total eagles (41 adults, 38 immatures) (figure 5).

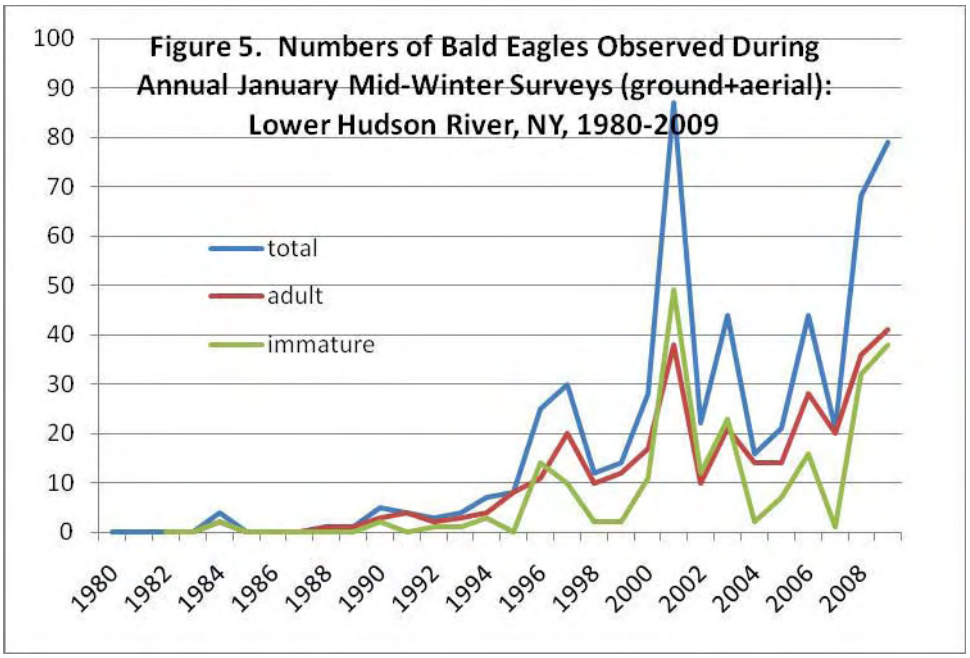


Table 4. Numbers of Bald Eagles Observed During Annual Mid-Winter (January) Counts (aerial and ground combined) Along the Lower Hudson River, NY.

Hudson River Winter Eagle Surveys

	total	**adult**	**immature**
1980	0	0	0
1981	n/f		
1982	0	0	0
1983	0	0	0
1984	4	2	2
1985	0	0	0
1986	0	0	0
1987	0	0	0
1988	1	1	0
1989	1	1	0
1990	5	3	2
1991	4	4	0
1992	3	2	1
1993	4	3	1
1994	7	4	3
1995	8	8	0
1996	25	11	14
1997	30	20	10
1998	12	10	2
1999	14	12	2
2000	28	17	11
2001	87	38	49
2002	22	10	12
2003	44	21	23
2004	16	14	2
2005	21	14	7
2006	44	28	16
2007	21	20	1
2008	68	36	32
2009	79	41	38

More significantly, however, may be the number of eagles counted during evening roost counts within a much smaller area of the lower Hudson, centered within a 20-25 mile stretch of River between Fishkill and Croton Point. Annually since 2004, Dr. Edwin McGowan of the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) has organized coordinated, simultaneous roost surveys along the Lower Hudson at our major, known winter eagle roosts in this area. The reason we have come to expect the greatest numbers of wintering eagles in this area, is that during a "typical" (i.e. cold and iced-over) winter, the most open water is to be found here. In addition, and not insignificantly, five major power plants are also found in this zone, which provide considerable amounts of forage for eagles in the form of entrained fish, making it a highly attractive wintering habitat for eagles. However, it should be noted that even well before any of these power-plants existed, large numbers of eagles were recorded in this same zone as far back as the late 1800's and early 1900's, indicating it has served as prime bald eagle wintering habitat for a long time.

Three separate roost surveys were coordinated again this winter by Dr. McGowan and Mellisa Gillmer of OPRHP and their volunteer crew, revealing significant and record numbers of eagles using the area in 2009 (Tables 5,6).

Table 5. Number of bald eagles observed during simultaneous night roost surveys along the lower Hudson River, New York, 2009 (numbers in parentheses are numbers of eagles observed around these same dates during the same roost surveys in 2008):

Survey Date	# of Sites	Total	Adults	Immatures	Unk. Age*
04 Jan 2009	7 (7)	65 (72)	30 (34)	24 (34)	11 (4)
25 Jan 2009	7 (7)	136 (106)	61 (48)	67 (46)	8 (12)
08 Feb 2009	5 (6)	257 (118)	122 (61)	101 (55)	34 (2)

*counts are conducted near dusk as eagles enter their night roosts, and while clearly distinguishable as eagles, due to light conditions, age often cannot be determined.

Table 6. Annual Summary of Lower Hudson River Coordinated Bald Eagle Roost Counts, 2004 – 2009.

		2004	2005	2006	2007	2008	2009
Early January		-	33	42	8	72	65
Late January		100	-	-	36	106	136
February		134	148	17	82	118	257
March		-	65	-	-	-	-

We have found that these periodic night-roost surveys are perhaps the most accurate indicator of the number of eagles in the lower Hudson area during the winter, and strongly recommend they continue.

Members of the New Bedford Audubon Society also monitored wintering eagles from January-March

during 2009 at three primary roosts in the Lower Hudson River area; at Stony Point, at Montrose Point/George's Island, and at the New Croton Reservoir. Some significant observations from this effort follow:

Table 7. Number of bald eagles observed during late-afternoon/evening roost Surveys within the Lower Hudson River area of New York, winter 2009.

	Number of Bald Eagles Observed*			
			Hudson River	Inland
Date		**Total**	**Montrose Point / George's Island**	**Stony Point**	**New Croton Reservoir**
1/5/09		32	9	3	20
1/12/09		43	26	2	15
1/15/09		55	43	5	7
1/19/09		58	45	6	7
1/22/09		105	69	0	36
1/26/09		87	53	12	22
1/29/09		80	27	0	53
2/2/09		97	24	2	71
2/5/09		139	50	13	76
2/9/09		68	25	1	42
2/12/09		56	1	1	54
2/16/09		86	47	8	31
2/19/09		48	6	0	42
2/23/09		42	2	1	39
2/26/09		27	24	3	?
3/5/09		39	16	0	23
3/9/09		20	11	0	9
3/12/09		10	3	0	7
3/16/09		9	1	0	8

*data provided by the Bedford Audubon Society; courtesy Tait Johansson

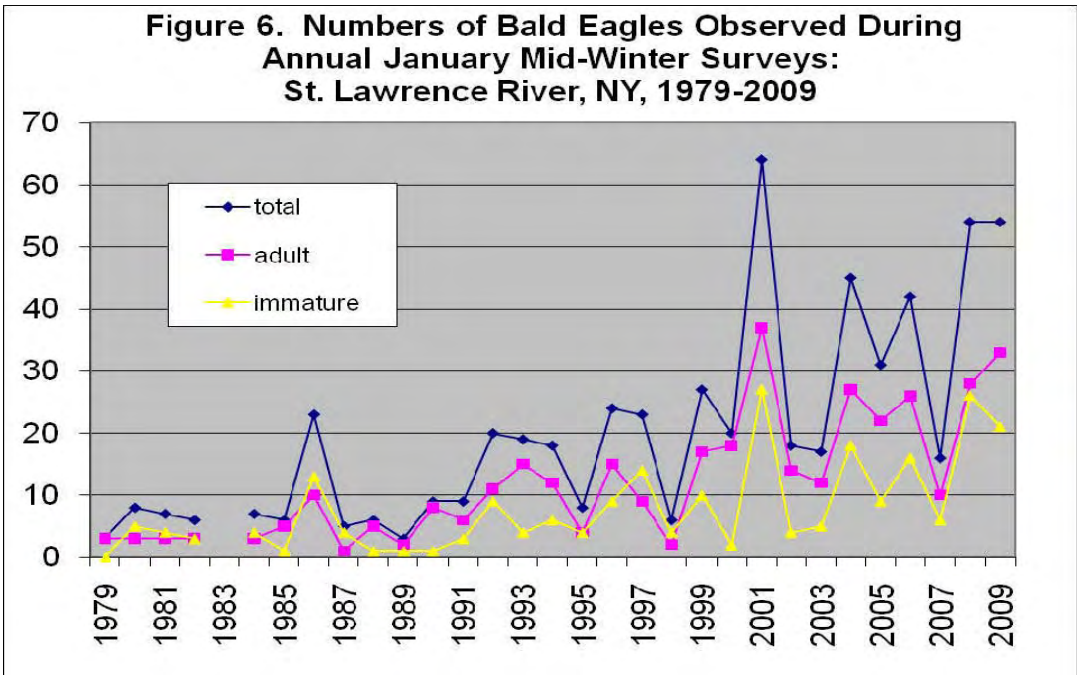
6. Hudson River (Upper):

As reported here in past years, the Upper Hudson River and associated tributaries (Hoosic, Battenkill, Sacandaga Rivers), from Albany, NY to Lake Luzerne, NY, also host eagles each winter. During the 2009 mid-winter survey, 12 bald eagles were recorded (8 ad, 4 imm) in this stretch, well down from the record 22 eagles observed in this area in 2008, but more in line with the 10 eagles spotted there in 2007 (8 ad, 2 imm), 10 in 2006 and 11 in 2005.

The eastern-most section of the Mohawk River might also be considered part of this Upper Hudson survey area, as it empties into the Hudson about nine miles north of Albany. Cohoes Falls, located along the Mohawk River approximately one-mile west of the Hudson, annually attracts a few eagles, likely due to a power-plant located there, and during our 2009 survey, 4 of the 12 "Upper Hudson" eagles reported here were seen at Cohoes Falls (2 ad, 2 imm).

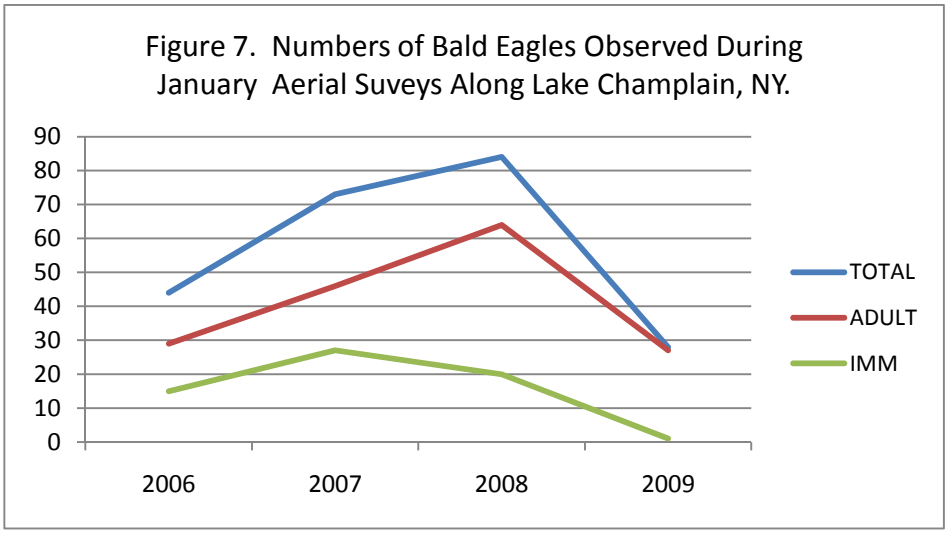
7. St. Lawrence River:

The St. Lawrence River aerial count was conducted as usual by Blanche Town of our Region 6 office on 14 January 2009. Despite aircraft issues, the helicopter crew tallied 54 eagles, 33 adults and 21 immatures, the same number as counted in 2008 (figure 6), with the majority of the birds seen around the 1000 Islands area, as usual.



8. Lake Champlain:

As mentioned in last year's report, over the past 10-15 years, we have regularly received reports of eagles wintering along Lake Champlain, but in low numbers, usually well less than a dozen. These reports and numbers began to change just a few years ago, prompting us in 2006 to initiate helicopter surveys over the length of this 100 mile-long lake separating Vermont and New York (table 8). During this year's fourth annual aerial survey, only 28 eagles were observed along the lake (27 adults, 1 immature), compared with a record 84 bald eagles counted in 2008 in this area (figure 7). The lower counts this year could have been due to the extensive ice-cover witnessed during the survey, estimated to cover 90% of the lake.



The table below indicates how numbers within our major wintering areas have changed over the past few

years. It remains clear that New York State provides consistent over-wintering habitat for one of the largest wintering bald eagle populations in the northeast United States.

Table 8. Annual Regional Summary:
Number of bald eagles observed* within major NYS wintering areas.

	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Upper Delaware River (mainstem)	109	41	28	114	93	23	32	34
Mongaup River	42	109	86	75	25	55	55	24
Hudson River (lower)	22	44	16	21	32	21	68	79
Hudson River (upper)				11	10	10	22	12
Mohawk River	-	-	-	-	-	-	23	-
St. Lawrence River	19	17	45	31	42	16	54	54
Lake Champlain	-	-	-	-	44[1]	73	84	28
Allegheny River/Reservoir	-	-	-	-	36[1]	11[2]	19	35
All other areas*	143	143	188	200	170	131	238	135
Statewide Totals	335	354	363	441	442	324	573	401

*numbers combine both aerial and non-duplicated counts from ground observers.
[1]first time aerial survey conducted here (helicopter).
[2]six of these eagles not included in the total since observed outside the survey period.

Conesus Lake, NY; NY nest #119, 8 May 2009. P. Nye NYSDEC

II. Breeding Bald Eagles

A. Surveys:

1. Statewide:

New York has been enjoying a long-term, consistent annual increase in our breeding bald eagle population of 10-15% per year, a trend which continued in 2009. Although spring and summer 2009 were on the wet side again, and despite a few nest losses due to storms, we had another solid, record year. In 2009 we added 26 new pairs, and increased our total number of occupied pairs by 19%, from 145 pairs in 2008 to 173 pairs statewide (table 9, figure 8).
Our total number of breeding pairs (egg-layers) increased 17%, from 135 to 158 pairs, as did the number of successful pairs (those fledging young), also up 17% from 105 pairs to 123 pairs. The total number of young also rose a solid 17%, breaking the 200-barrier for the first time ever, from 190 young in 2008 to 223 young fledging in New York in 2009. Our productivity values remain excellent as well, with 1.3 young fledged per occupied pair (same as in 2008) and 71% of all pairs successful (figure 9).

Annual determination of the status of New York's breeding bald eagle population involves monitoring of existing pairs and follow-up observations on reported adults or new nests. This annual determination takes hundreds of hours of observation, in many cases by dedicated volunteers as well as DEC staff. The New York State Police Aviation Unit provides essential aerial survey support for this

effort, often the only way to confirm exactly what is going on in remote areas or up in the nests, short of actually climbing to the nests. While we have tried to visit each and every nest in the past, given the shear numbers of nests we now have and the limited staff and time, our approach to monitoring in 2009 continued to focus on visitations to new or extremely remote nests where information on nest-status was otherwise difficult to obtain. In addition, due to the confirmed threat of Type E botulism to eagles in and around Lake Erie, Region 9 staff have indicated a desire to attempt to band eaglets produced in that area. Monitoring via volunteers, staff and aerial surveys were conducted as usual to determine early nesting activity (ie incubation), but final chick-counts (productivity) was determined by a combination of aerial survey, nest visits, and more often again this year, late nesting period distant ground observations when young were approaching fledging age and hence large enough to be easily visible on the nest. Actual nest visits and climbing were restricted to new or remote territories or areas of concern as described above. This resulted in fewer young actually being banded this year, but still provided accurate chick-counts. If anything, increased reliance on late-season ground counts under-counts the actual number of young present, as, even at advanced ages, chicks can be "hidden" in the nest and not visible from below. We believe this was certainly the case in New York again in 2009, and that our total young-count under-represents the actual number of young eagles fledged in New York this year.

On-the-ground visits to new nests are extremely important to assess the breeding territory for safety and/or potential disturbances which could affect the success of nesting attempts, as well as to meet landowners and explain eagle biology and needs, and to garner their cooperation.
Our nest visits accomplish these and other objectives each year:

- inspect the integrity of nests
- assess protection/management needs of the site
- obtain a GPS (global position system) location
- determine site conditions
- predator-proof the nest tree
- collect blood samples from select locations
- identify and collect prey items
- inspect any eaglets for disease, parasites or deformities
- band and/or radio-tag the young
- determine annual productivity
- collect addled eggs
- interact with landowners and garner their support

The effort to keep up with this ever-expanding breeding population, and to keep accurate records of each of their annual outcomes, is significant, and could not be done without a major cooperative effort involving a small, and extremely dedicated core group of volunteers and DEC staff, to whom the State of New York and it's citizens owe a huge voice of "thanks", for the time and effort expended on their behalf. As a "keystone" species representative of some of our most unique, complex and sensitive aquatic and upland ecosystems, as the eagle goes, so go a plethora of other species as well as some of what should be our most cherished habitats. Thus, conservation of the bald eagle benefits us and our children in uncountable ways.

Nest visits or surveys were made to all of the occupied sites (173), in addition to visits to numerous

other inactive and suspected breeding sites. Nest climbs (39) and/or on-site visits to trees (34) were made during the season, and 54 of the 223 young fledged were banded this year (24%). Many of the successful nests could not banded either because of chick age (chicks too young or too old), lack of landowner permission, condition of the tree (un-climbable), or due to a lack of time for a climbing/banding visit. This latter category becomes larger each year, as our nesting population continues to increase. As mentioned, nest-tree visits are now focused on new territories (ones in need of a predator guard or gps'ing) or remote territories (ones not easily covered or observed to determine their status). Established territories where productivity can be easily determined from the ground are often simply counted if time is limited. As always, prey remains were identified from all nests climbed, and 6 addled eggs were collected during nest-visits.

a. Contaminant Sampling

As usual shed adult feathers were collected from within and below nests again this year, as available, as were eggs. All feathers will be analyzed for Hg as well as additional genetic markers to garner information on parentage and gender. All collected eggs were measured and weighed, contents extracted for later analysis, and shells dried, weighed and measured for shell-thickness.

b. Nesting Failures and other Miscellaneous Breeding Information

Examining our 2009 nest failures, 14 of our 173 pairs were classified as "occupied-failed", meaning the pair built/decorated a nest, but did not lay egg(s). Another 35 of 158 pairs who actually laid eggs were classified as "active-failed", meaning they laid egg(s) or hatched young, but failed to successfully fledge young. Some of these failures were new pairs attempting to breed for their first time (14 of 26). Unknown causes accounted for most of the nest failures: weather-nest-structure failure accounted for 4 failures; death/loss of one of the breeding adults was the cause in 1 failed attempt; intraspecific aggression (another eagle) is suspected in many of the "unknown" cases; and in 1 case human disturbance is suspected as the reason for failure.

Twenty-two additional pairs were classified as "inactive", meaning eagles previously occupied these territories but no longer do, or could not be found this year, or moved out of New York State and nested elsewhere (i.e. in Pennsylvania along the "other" side of the Delaware River). In all, we tracked 195 bald eagle nesting territories throughout NY during 2009, up from 169 in 2008. Fourteen percent of our previously established pairs (21 of 145 occupied pairs in 2008) built/used new nests within their territories in 2009 (16% in 2008, 20% in 2007).

As we have witnessed the past couple of years, the trend seems to be continuing of earlier egg-laying by New York State bald eagles, an observation being shared by other eagle researchers in North America. Many of our pairs now regularly lay eggs within the last two weeks of February, however the vast majority of our nesting pairs still lay eggs during March. Concerning successful nests and productivity, half (49%) of all our successful nests this year fledged two young, 35% fledged one young, and 16% fledged three young (figure 10). Our productivity parameters of number of young per occupied pair and number of young per successful pair, were well above 1.0 yg/pair, indicative of a healthy and growing population (figure 11).

Table 9. New York State Bald Eagle Breeding Summary 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number Territorial[1] Pairs	51	65	70	75	84	92	110	124[5]	145	174
Number Occupied[2] Pairs	51	62	70	75	84	92	110	124[5]	145	173
Number Breeding[3] Pairs	43	56	60	68	79	86	101	116[5]	135	158
Number Successful[4] Pairs	35	47	56	53	66	63	84	87	105	123
Percent of Occupied Pairs Successful	69	76	80	71	79	68	76	71	72	71
Number Young Produced (Fledged)	71	83	94	87	111	112	172	153	190	223
Young/Occupied Pair	1.35	1.34	1.34	1.16	1.32	1.22	1.56	1.24	1.31	1.29
Young/Breeding Pair	1.60	1.48	1.57	1.28	1.40	1.30	1.70	1.33	1.41	1.41
Young/Successful Pair	1.97	1.77	1.68	1.64	1.68	1.78	2.05	1.76	1.81	1.81

Figure 8.

[1] A territorial pair is defined by the presence of two potential breeding birds within suitable nesting habitat during the breeding season where some sign of pair bonding or nesting is also evident (e.g. copulation, stick-carrying, attempt at nest-building, etc.).

[2] An occupied pair is defined by the presence of a recently decorated nest and two potential breeding birds during the breeding season.

[3] A breeding pair is defined by a pair of birds within a nesting territory where evidence indicates that eggs were laid (such as eggs, young, incubation, or eggshell fragments). "Breeding pair" replaces the old term "active nest."

[4] A successful pair is defined as one which produces one or more young that reach fledgling age.

[5] One additional pair is included in these totals (NY#83, Waddington), known to be active/breeding, but final outcome unknown, so all other calculations do not include this extra pair.

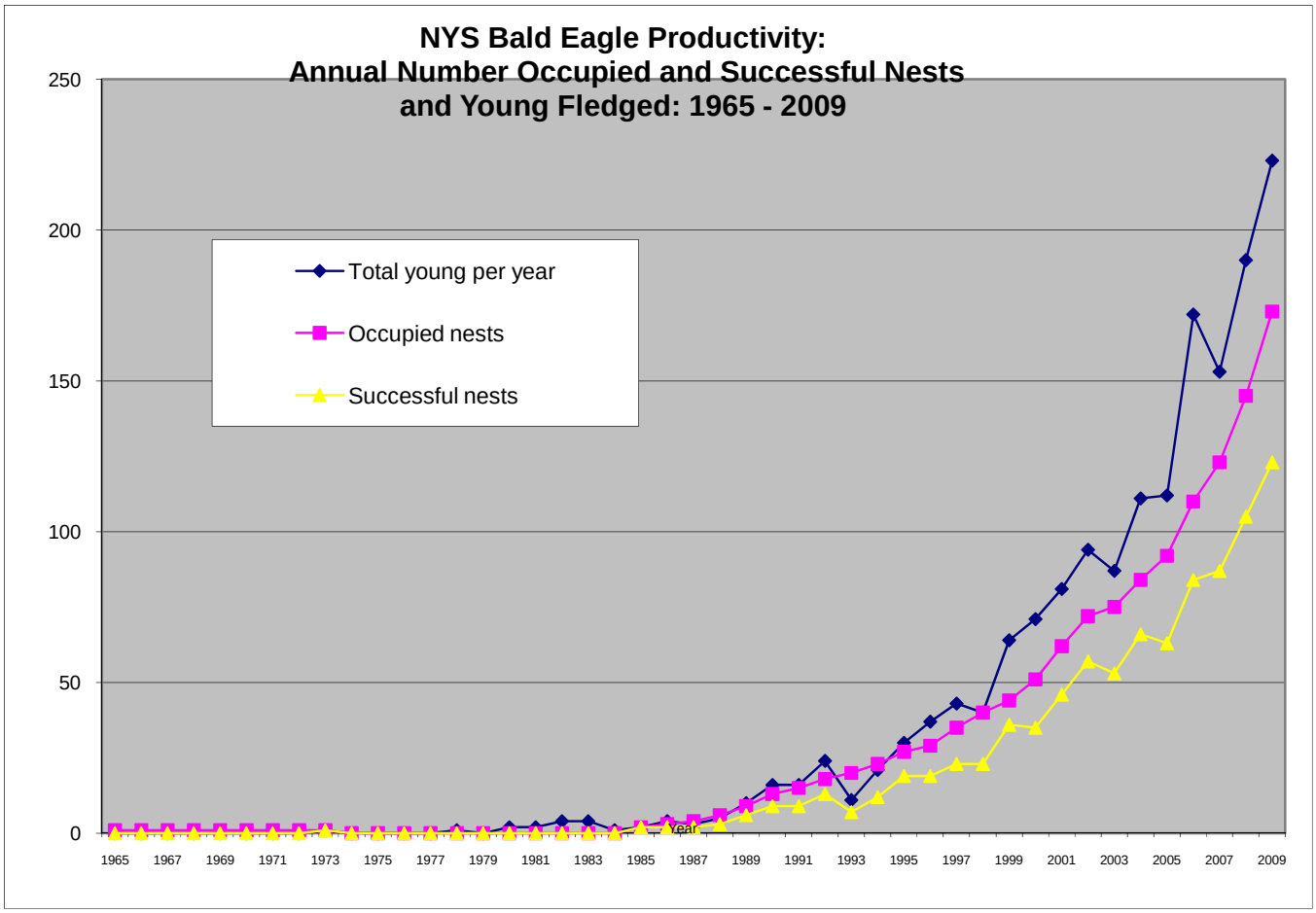

NYS Bald Eagle Productivity:
Annual Number Occupied and Successful Nests
and Young Fledged: 1965 - 2009
Total young per year
Occupied nests
Successful nests
Year
250
200
150
100
50
0
1965
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009

Figure 9.

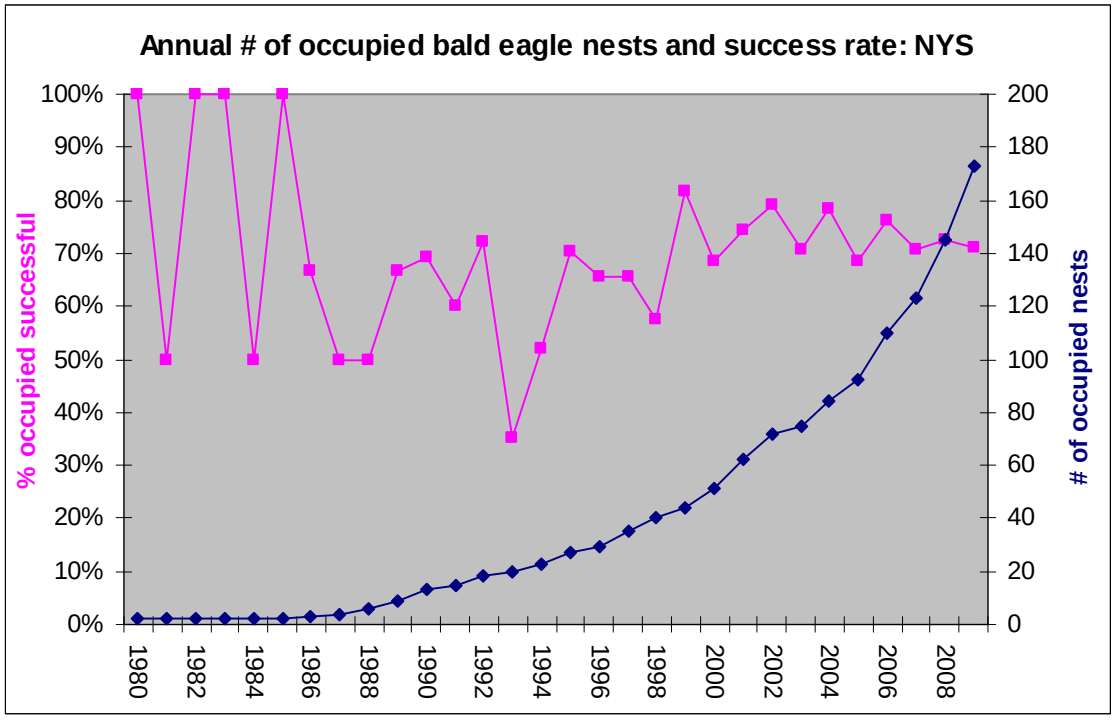

Annual # of occupied bald eagle nests and success rate: NYS
% occupied successful
# of occupied nests
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
200
180
160
140
120
100
80
60
40
20
0
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008

Figure 10.

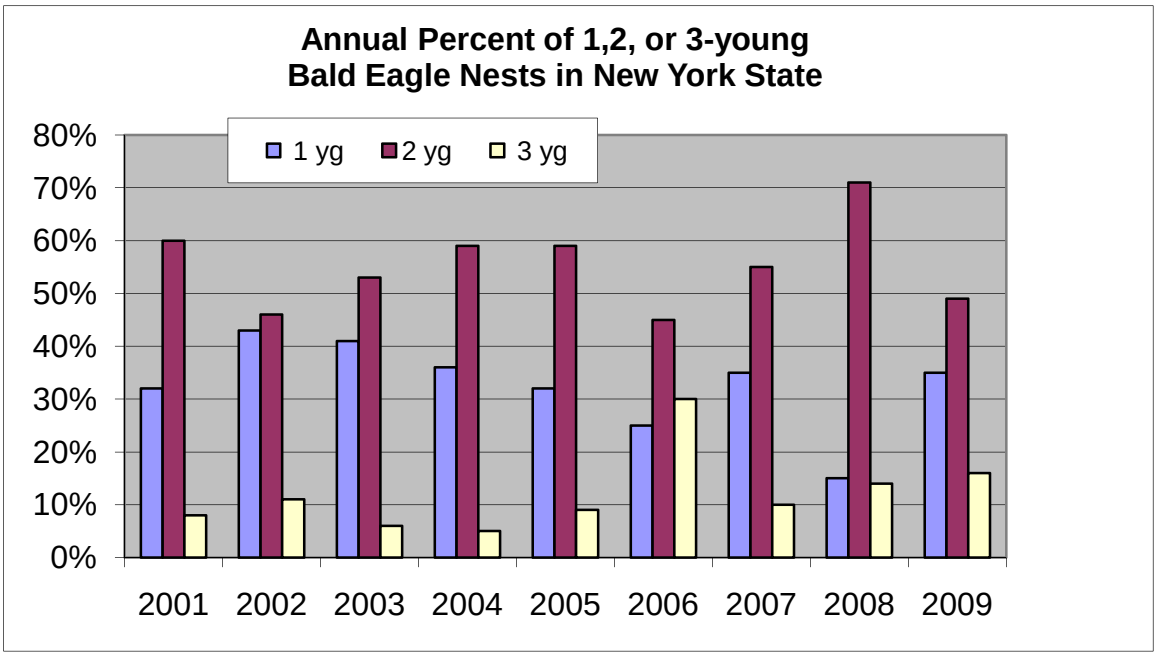
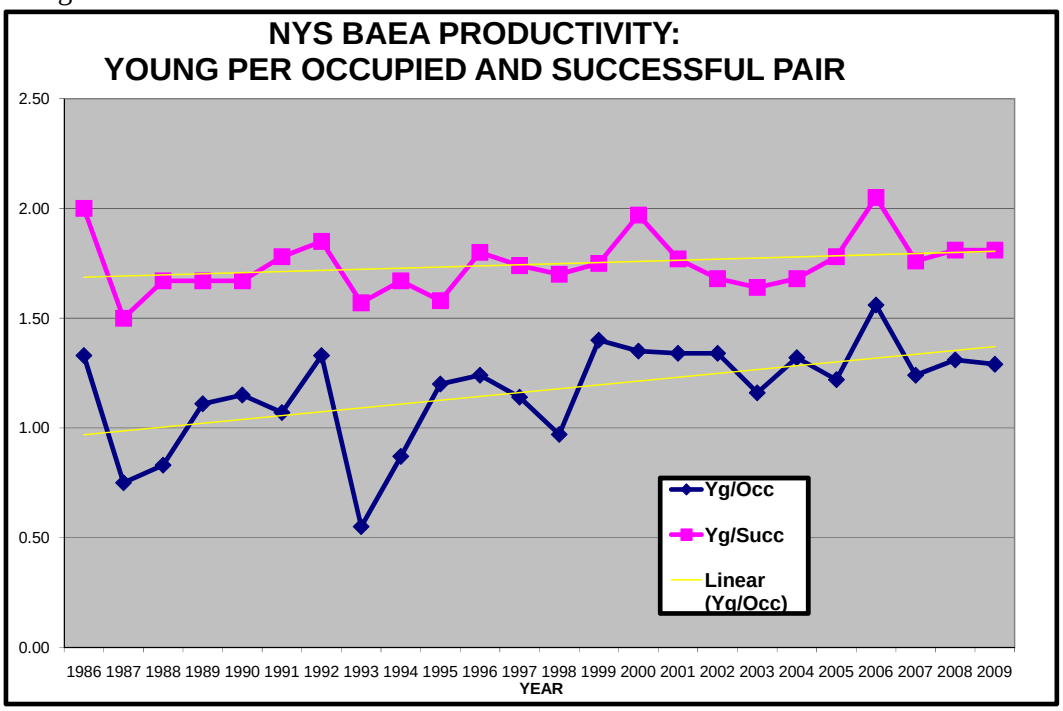


Figure 11.



2. DEC Regional Area and Other Interesting Productivity Information:

Regionally, southeastern New York (DEC Regions 3 & 4) continues to be the densest area of eagle nesting activity in the state, accounting for 51% of all the occupied territories and 52% of all the young fledged in the state in 2009 (53% and 57% in 2008; figure 12). New nesting pairs (26) were somewhat evenly distributed this year, with the Hudson River picking up three new pairs again this year (one on the upper river, two below Albany), the Delaware River picking up only a single new pair, the

Montezuma area adding another two pairs, far western New York picking up five new pairs, and the St. Lawrence River, the Hoosic River, the Chenango River, the Beaverkill, the Seneca River, and the Sacandaga River each picking up a single new nesting pair (figure 13). Region 4 took top honors for the most new pairs in 2009, with 8, followed closely by region 9 with 5 new pairs. Region 4 also had the greatest number of occupied pairs (45), but region 3 fledged the greatest number of young in the state this year with 62 eaglets (table 10). In terms of overall nesting success, regions 5 and 7 were tops with 77% of all of their occupied nests successful this year: region 9 had the lowest success rate at 64% of all pairs fledging young; our statewide average was 71%. Region 7 also had the best success rate in 2008, at 89%. It was good to see a turnaround in fortunes in northern New York (regions 5 & 6) this year. In 2008 this area suffered the greatest percentage of failures of nesting pairs, with more than half of all occupied pairs failing. In 2009, however, more than two-thirds of all pairs successfully fledged young in this often harsh region.

Noteworthy new nests this year was a second nest on the NY side of the St. Lawrence River, which was occupied but which did not produce young. Also deserving mention, one of the Hudson River's new pairs (NY#170) has now become the farthest south on the River, a mere eight miles from New York City.

Table 10. Bald Eagle Productivity by NYSDEC Region, 2002-2003-2004-2005-2006-2007-2008-2009

DEC REGION	#OCC	#SUCC	#YG
1	0-0-0-0-0-0-0-0	0-0-0-0-0-0-0-0	0-0-0-0-0-0-0-0
2	0-0-0-0-0-0-0-0	0-0-0-0-0-0-0-0	0-0-0-0-0-0-0-0
3	19-21-23-24-30-33-40-44	18-17-20-16-25-23-33-33	29-30-35-29-53-43-58-62
4	21-24-27-27-34-34-37-45	17-13-17-22-25-23-28-31	31-22-29-37-60-44-50-54
5	7-6-8-8-7-9-12-13	4-3-6-4-3-7-5-10	6-5-10-6-3-11-10-16
6	5-7-6-8-8-7-9-12	4-5-6-5-5-5-4-8	7-7-10-13-9-7-7-13
7	2-4-6-6-6-8-9-13	2-2-4-3-3-5-8-10	3-3-6-3-6-8-17-17
8	11-8-8-9-13-17-23-24	8-8-8-7-12-13-15-17	12-13-13-15-22-22-27-37
9	5-5-6-10-12-16-15-22	3-5-5-6-11-9-12-14	6-7-8-9-19-18-21-24
totals	70-75-84-92-110-124-145-173	56-53-66-63-84-105-123	94-87-111-112-172-153-190-223

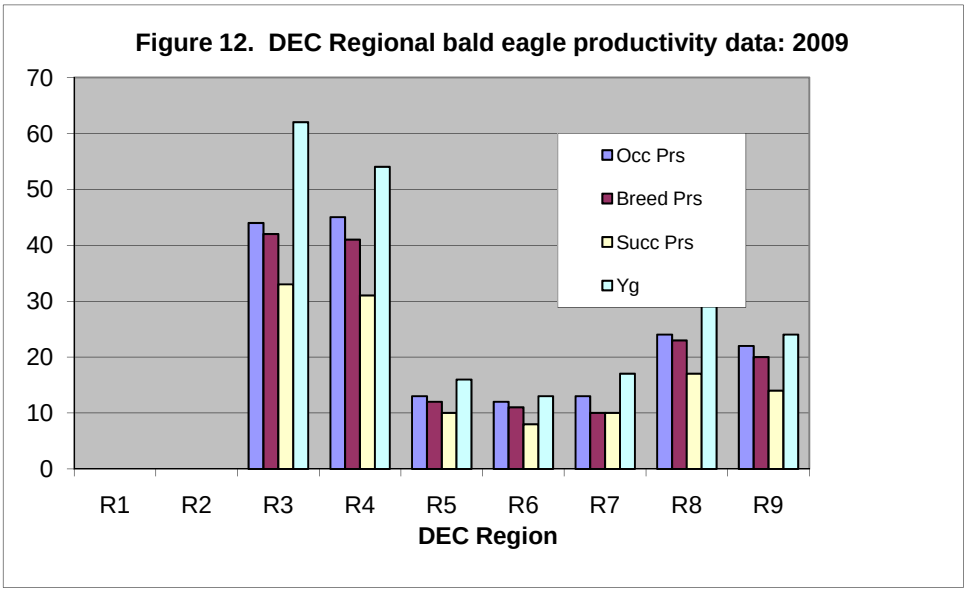


Figure 12a.

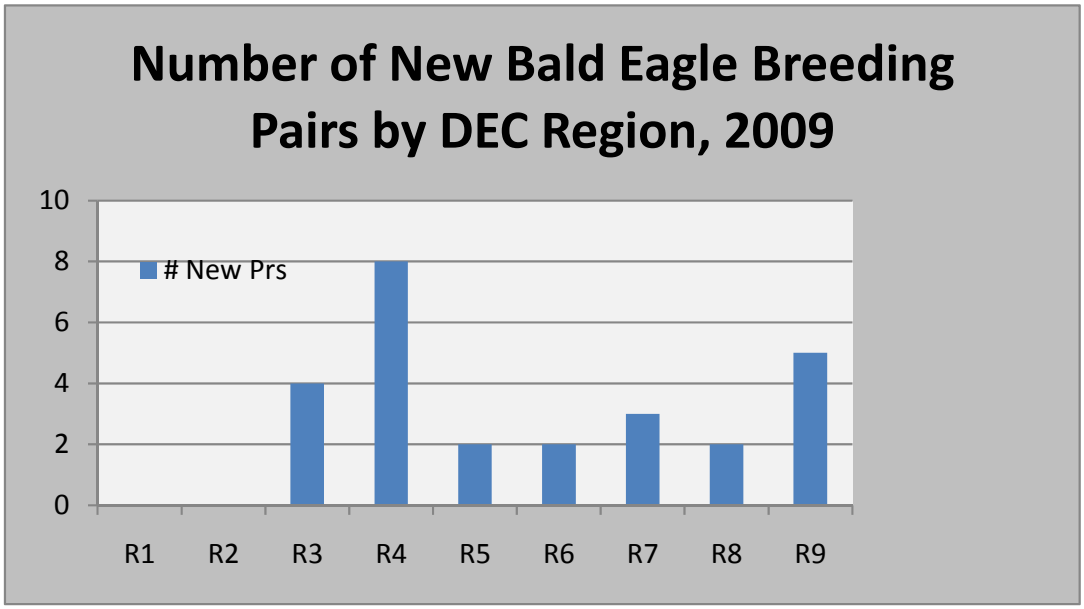


Figure 13.

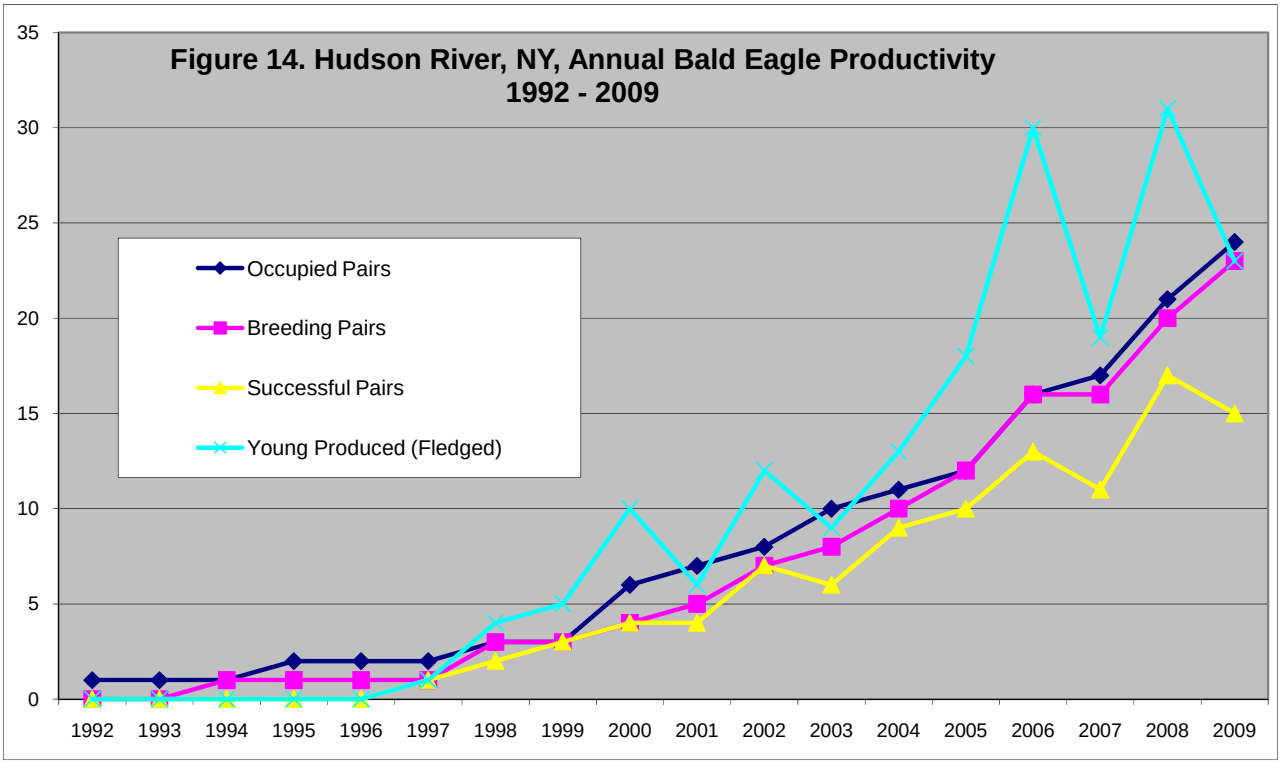
a. Hudson River

Although our Hudson River (HR) breeding bald eagle population continued to grow in 2009, adding 3

new pairs, production by the 24 occupied pairs in 2009 was poor, with only 0.96 young produced for each pair attempting to breed (statewide in 2009, this reproductive value was 1.29, and for the Delaware River 2.00). The total number of young fledged was also significantly lower along the Hudson than in 2008, dropping from 31 young in that year to only 23 fledged in 2009 (table 11, figure 14). It is largely unknown why one-third of the breeding pairs on the Hudson failed this year. We confirmed one failure due to the nest falling out of the tree (for the second consecutive year), but other reasons are elusive. We have seen considerable amounts of intraspecific interactions (eagles being affected by other eagles), which may be the cause in some of these cases. Foul weather during incubation and/or human disturbance are also suspected causes in some cases.

Table 11. Annual Bald Eagle Breeding Success: Hudson River, New York

YEAR	# Occupied Territories	# Active Territories	# Successful Territories	# Young Fledged	Yg/ Occ	% Occ Succ
1992	1	0	0	0	0.00	0
1993	1	0	0	0	0.00	0
1994	1	1	0	0	0.00	0
1995	1	0	0	0	0.00	0
1996	2	1	0	0	0.00	0
1997	2	1	1	1	0.50	50
1998	3	3	2	4	1.33	67
1999	3	3	3	5	1.67	100
2000	5	4	4	10	2.00	80
2001	6	5	4	6	1.00	100
2002	7	7	7	12	1.71	100
2003	9	8	6	9	1.00	67
2004	11	10	9	13	1.18	82
2005	12	12	10	18	1.50	83
2006	16	16	13	30	1.87	81
2007	17	16	11	19	1.12	65
2008	21	20	17	31	1.48	81
2009	24	23	15	23	0.96	63



b. Delaware River

Bald eagle breeding pairs along the NY side of the Delaware also rose again this year, increasing by two pairs to 10. Production by these pairs was good, with 80% of them successfully fledging 20 young, a record for our side of the Delaware and nearly double the production of 2008 (12 young) (table 12, figure 15). As mentioned earlier in this report, the in-field part of our cooperative study with the National Park Service monitoring both wintering and breeding eagles along the Upper Delaware River came to a conclusion with the 2009 breeding season, and data analysis and report writing have begun; we hope to have a final study report available in 2010. Although our focus has been on NYS eagles, along the main-stem of the Delaware, which provides the border between NY and Pennsylvania (PA), we again monitored all breeding eagles in 2009, regardless of which side of the river they were on. Along both sides of the main-stem of the Delaware in 2009, a total of 18 occupied pairs were recorded (15 in 2008), of which 15 were successful in fledging 34 young (26 in 2008), the highest number of fledged young yet recorded along the river. Since eagles began nesting again along the Upper Delaware (main-stem) in 1993, 213 young eagles have fledged from both sides of the River, 130 of which (61%) came from New York nests. The success rate (80% NY, 83% PA-NY) of existing pairs continues to be excellent, as does the young produced per occupied pair value at 2.0.

Three new pairs were documented along the Upper Delaware in 2009, two on the PA side and one on the NY side. Eagles continue to be pretty equally distributed on both sides of the river, with several pairs moving annually from one side/state to the other. In 2009, eight occupied nests were on the PA side of the River, while 10 were on the NY side. Separate reports on the Delaware River study are being prepared and will be on file at the NYSDEC office in Albany. All tables and graphics in this report, however, continue to present data only from the NYS side of the river.

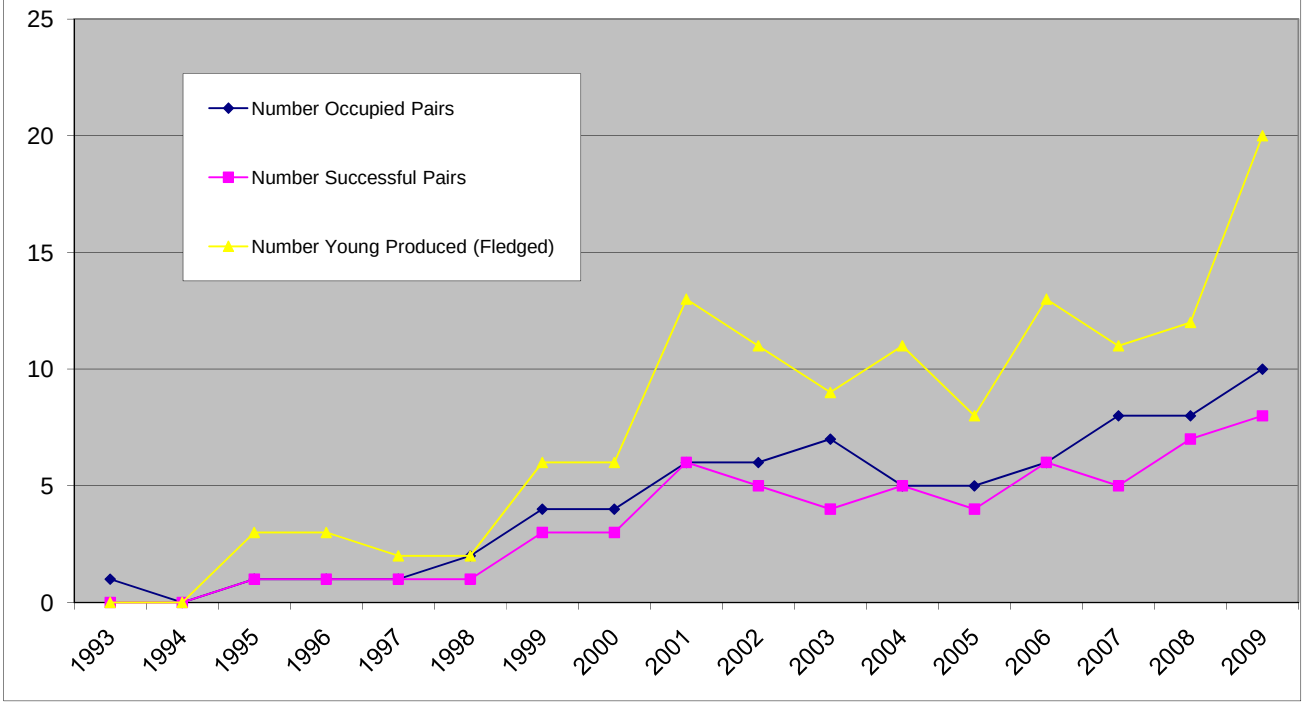
Only two of the 18 breeding pairs failed along the Delaware River in 2009, one on each side of the river, one believed due to the loss of one of the resident adults, the other suspected due to other-eagle intrusions. Remarkably, half of all the successful nests on the NY side this year fledged three young.

Development and habitat alteration (ie logging) continue to be major, long-term concerns along the Delaware River corridor, particularly in regard to loss of habitat. Our opportunities to protect and secure what remains of undisturbed shoreline and ridge-side habitats are fast disappearing. Significant, dedicated set-asides of remaining Delaware River habitats will be required to ensure perpetuation of sensitive wildlife and scenic beauty here for future generations.

Table 12. Bald Eagle Productivity along the NY side of the Delaware River (main-stem).

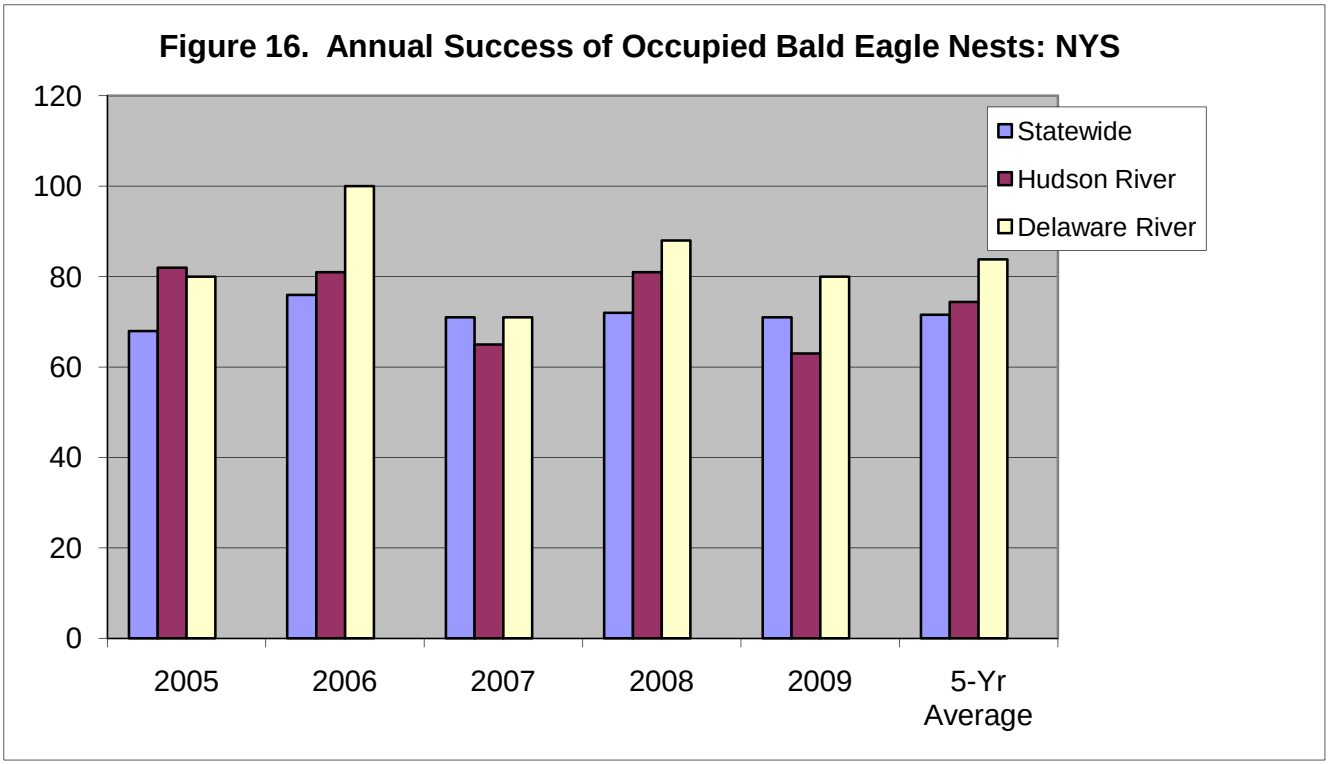
YEAR	# Occupied Territories	# Active Territories	# Productive Territories	# Young Fledged	Yg/ Occ	% Occ Succ
1993	1	0	0	0	0.00	0
1994	1	0	0	0	0.00	0
1995	1	1	1	3	3.00	100
1996	1	1	1	3	3.00	100
1997	1	1	1	2	2.00	100
1998	2	1	1	2	1.00	50
1999	4	4	4	8	2.00	100
2000	4	4	3	6	1.50	75
2001	5	5	5	12	2.40	100
2002	5	5	4	9	1.80	80
2003	6	4	4	9	1.50	67
2004	5	5	5	11	2.20	100
2005	5	4	4	8	1.60	80
2006	6	6	6	13	2.17	100
2007	7	6	5	11	1.57	71
2008	8	7	7	12	1.50	88
2009	10	9	8	20	2.00	80

Figure 15. Upper Delaware River (NY side) Annual Bald Eagle Productivity: 1993 - 2009

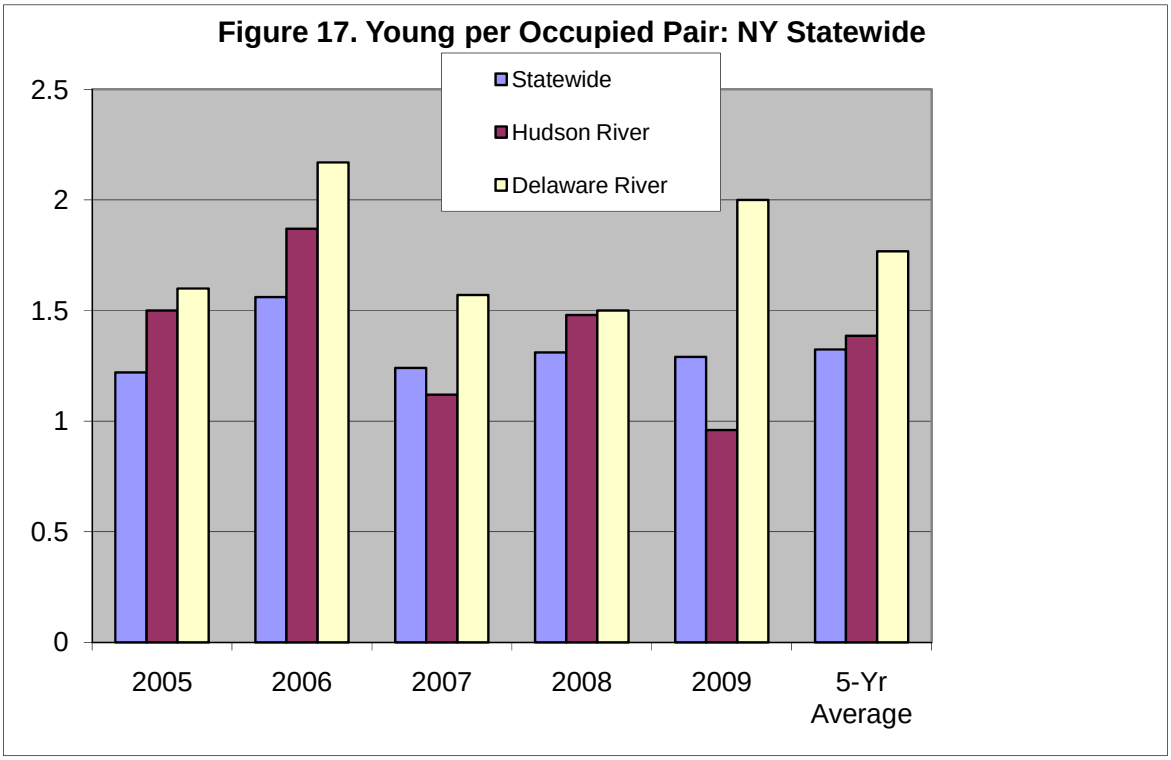


NYS Summary: Annual Bald Eagle Breeding Success:

Figure 16. Annual Success of Occupied Bald Eagle Nests: NYS



NYS Summary: Annual Bald Eagle Breeding Success:



B. Nestling Movement/Survival Study:

In 2004 we began radio-tagging fledgling bald eagles from New York State nests with solar-powered satellite transmitters (ptt's). We hope to answer many questions in this study, including survival, identification of home ranges, pattern of movements during first dispersal and beyond, over-wintering areas, differences between nest-mates and nearby nestlings from different nests in terms of their movements, gender-based differences, essential habitats used, and ultimately, information on nest site selection and establishment at sexual maturity. We are hopeful that these solar-powered units will last for up to 5-years or more.

To date, 12 nestling NYS bald eagles have been outfitted with ptt's:
2004 – 4 (nest # 4,19,20,61)
2005 – 4 (nest # 10, 55, 55, 101)
2006 – 3 (nest #20, 45, 122)
2007 – 0
2008 – 1 (nest # 10)
2009 – 0

In addition, 8 (4 in 2005, 4 in 2006) hacked, fledgling bald eagles from the Upper Manhatten/NYC project were satellite-tagged and have been monitored.
Also in addition to the above New York State work, two additional NY fledglings from 2007 nests (NY#30, NY#52) were captured in Maryland in January 2008 as part of an eagle study being conducted in the Chesapeake Bay region, and both were outfitted with satellite transmitters; both are currently being tracked. As of 31 December 2009, only three of these 12 NYS nestlings eagles are still transmitting, meaning either they have died or their radios have quit functioning. Two units from 2006

and one from 2008 continue to transmit. None of the eight NYC hacked birds continue to transmit. A joint paper on fledgling bald eagle movements as determined from satellite telemetry is currently being prepared with Bird Studies Canada.

C. Observations of banded eagles:

Continuing in his gathering of important observations of banded eagles at our usual site along the Mongaup River in Sullivan County again this year, volunteer Gene Weinstein identified 45 individual eagles during the 2008-09 winter period; 5 from MA, 1 from VA, 3 from CT, 2 from ME, 1 from NJ and 33 native New Yorkers from various years and nests. New York-banded eagles were well distributed regarding year-banded, with the oldest observation of an eagle from year 2000:

Year of banding and Number of NYS Bald Eagles Observed from that year at the Mongaup Valley WMA, Sullivan County, New York, Winter 2008-09.

Year	# of eagles observed
2000	1
2001	0
2002	0
2003	0
2004	4
2005	5
2006	7
2007	7
2008	7

D. Recoveries:

Each year, numerous eagles are recovered in NYS debilitated or dead. During the current reporting period, 1 January - 31 December 2009, 45 bald eagles were recovered in New York State, double the usual number of annual recoveries. Seven of these eagles were recovered alive, one of which was successfully rehabilitated and released with considerable help and personal attention from very caring folks such as our cooperating veterinarians Dr. William Saleen and Dr. Ed Becker, rehabilitators Bill and Stephanie Streeter, Cindy Page, Kathy Michell, and many other concerned folks who recovered, aided, and notified us, including many DEC regional staff and staff of New York City DEP, who went out of their way to recover and transport these birds. Two other eagles remain in captivity and in rehabilitation.

Thirty-eight bald eagles and one golden eagle were recovered dead during the year, from a variety of causes.

Year	2003	2004	2005	2006	2007	2008	2009
No. Recoveries	21	25	23	21	22	21	45

Total eagles recovered during 2009 = 45 bald eagles and 1 golden eagle:

NYS Bald Eagle Recovery Data 2009:

Age @ recovery:
Nestlings = 3
Juveniles = 6
Immatures = 14
Sub-adults = 3
Adults = 19 (42%)

# of NYS Banded birds = 12
# of other Banded birds = 2 (ME,VT)
no bands = 31

Condition @ recovery:
Alive/released = 1
Alive/Died = 4
Alive/Captive = 2
Found Dead = 38

Sex:
male = 17 (38%)
female = 10 (22%)
unk = 18

Month of recovery:
Jan = 1
Feb = 2
Mar = 0
Apr = 8
May = 2
June = 4
July = 9
Aug = 3
Sept = 6
Oct = 5
Nov =1
Dec = 4

2009 Causes of injury/death of NYS bald eagles were as follows: (2008, 2007 numbers in parens)

unknown = 7 (8,3)
train = 10 (3,2)
vehicle = 7 (3,8)
shot = 1 (0,1)
killed by another eagle = 5 (0,1)
electrocuted = 4 (2,0)
disease (avian pox) = 1 (0,2)
fishing tackle = 2 (1,0)
lead poisoned = 2 (1,0)
weak/emaciated = 0 (2,0)
fell from nest = 3 (2,4)
plane strike= 0 (0,1)
poisoned= 2 (0,0)
trap= 1 (0,0)

Noteworthy among these recoveries continues to be the number of eagles killed by high-speed trains and vehicles in New York, with train-kills the single greatest cause of mortality noted for New York eagles in 2009. Eagles regularly scavenge along RR tracks and roadways, often resulting in collisions. Also continuing to be noteworthy are deaths or injuries attributed to other eagles, all of which typically occur in the early part of the breeding season, March or April, as nesting is initiated for the season. Lead poisoning and type E botulism also continue to be of concern to NYS eagles.

And finally, two more eagles were recovered this year dead as a result of fishing tackle. While it is difficult to totally avoid snagging fishing line or losing tackle, the shear amount of such monofilament and tackle in our waterways continues to be astounding. Finding fishing tackle and monofilament line, often yards of it, in eagles' nests, is more the norm than the exception. To date we have lost at least three nestlings and two adult eagles to fishing gear that we know of, and many more certainly succumb but are never found.

ESU#2031; Maine bald eagle 5/A recovered east side Hudson River, NY 10/21/09,

The Future ?

The eagle-train-kill issue is under discussion with the three rail companies involved in the Hudson River line (Amtrak, CSX, MetroNorth) in hopes adequate avoidance and mitigation steps can be identified. In addition to lead, botulism, and fishing tackle concerns, alteration of the landscape required by bald eagles, including human disturbances within these habitats, continues to be the biggest single threat to this species. Logging, developments of all kinds, and increasing demands for public use of all kinds (ie boating, canoe/kayak trails, personal watercraft, ATV's, hiking trails, etc) are increasing at a tremendous rate, not at all commensurate with protection of the landscape. If we are to maintain cherished resources such as bald eagles for future generations, we must aggressively identify and protect in perpetuity those areas most critical to them. Although overall numbers of eagles seem to be continuing to rise, we must assess where our eagles' most essential habitats are, document the protective status of those habitats (are they currently protected?), and proceed to ensure that the most critical habitats are protected, in perpetuity, so that we can be assured we will have these all-important habitats for our eagle population to sustain itself into the future.

Upper Delaware River, NY, NY#20: P. Nye NYSDEC

Acknowledgements

Sincere thanks again are due the many, extremely dedicated regional DEC staff and volunteers who help keep track of New York's eagles, both summer and winter, each year. Without these folks tireless dedication and countless hours, most of this data-gathering would not be possible.

Special recognition again this year goes to DEC staff Glenn Hewitt (CO), Steve Joule (R3), Scott VanArsdale (R4), Joe Racette (R5), Blanche Town (R6), Bonnie Parton (R7), Mike Allen (R8), Ken Roblee and staff Gary Klock, Bob Lichorat, and Greg Ecker (R9), and John Brennan (Delaware River) for their role in leg work, banding, monitoring and landowner contacts. Without their very capable help this year and vital ground observations, complete nest monitoring and information would not have been possible.

A very special thank you is also extended to many members of the New York State Police Aviation Division, especially Sgt. Rich Wagner, for helicopter time, maintenance, and high-quality piloting, which is absolutely essential to our full understanding of where and what is going on with NYS eagles. If we are to continue to gauge the health and status of our eagle population into the future, increased participation by these and more folks will be essential.

Recognition and special thanks are also due the following folks on our New York State Eagle Team, without whose enthusiasm, dedication, and time, all of these great results would not be possible!

HUGE thank-you's to our 2009 "crew":

-Don Hamilton, National Park Service, Upper Delaware River
-Jeff Holbrook
-Seneca Nation of Indians
-Tom Lake, Chris Letts NYSDEC
-Linda "stick" LaPan
-Dave Lindemann
-Kathy Maloney
-Kathy Michell
-Ed McGowan and Melissa Gillmer, OPRHP
-Lori McKean and The Eagle Institute gang
-Bill Moore
-Chris Nadareski, Mike Reid and Paul Oehrlein, NYC Dept. of Environmental Protection.
-Scott Rando
-Don Root, City of Rochester
-Stephanie and Bill Streeter and Jan !
-Doug Traudt and Kate Zvokel, Biological Survey
-Vicki Vosburgh
-Marybeth Warburton
-Gene Weinstein

Much more information on bald eagles and any updates to this report can be found on DEC's web site at: http://www.dec.ny.gov/animals/9381.html
Other web sites of interest, including United States Bald Eagle Management Guidelines, at:
http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf
More information on bald eagles is also available at:
http://www.fws.gov/migratorybirds/baldeagle.htm