

New Jersey Department of Environmental Protection

Division of Fish and Wildlife

Dave Chanda, Director

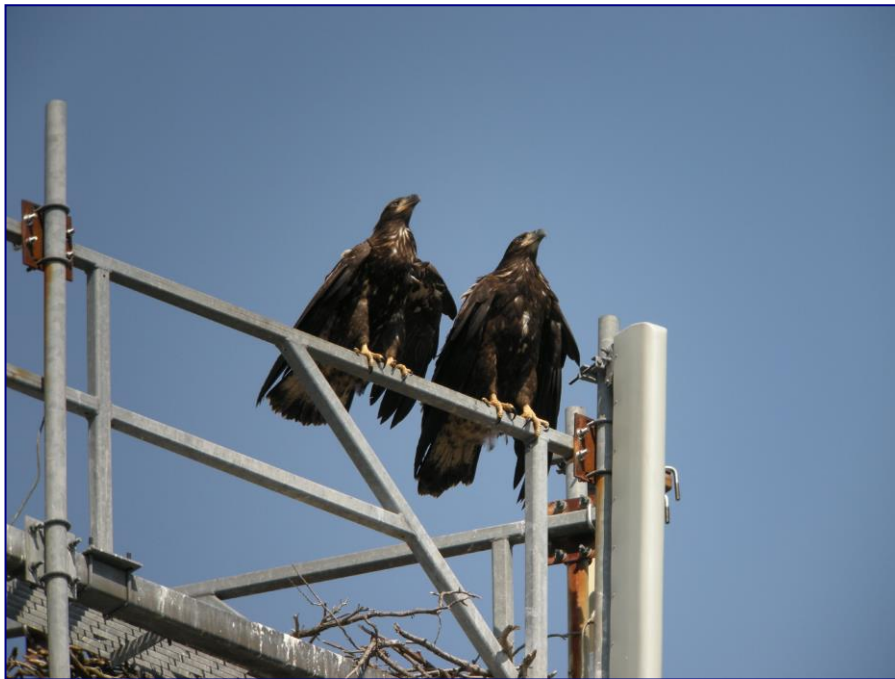
Dave Jenkins, Chief
Endangered and Nongame Species Program

New Jersey Bald Eagle Project, 2013

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Cover photo: Kettle Creek nest on cell tower 7/7/2013, by Alex Tongas

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Summary

The Division of Fish and Wildlife's Endangered and Nongame Species Program (ENSP) biologists, Conserve Wildlife Foundation staff and volunteer observers located and monitored bald eagle nests and territories. One hundred forty-eight nest sites were checked during the nesting season, of which 119 were documented to be active (with eggs), nine were territorial or housekeeping pairs, and 20 were unknown or the pair could not be found. Fourteen new eagle pairs were found this season, seven in the south, one in central and six in northern NJ. Ninety-six nests (81%) of the 119 known-outcome nests produced 177 young, for a productivity rate of 1.49 young per active nest. The outcome of six active nests was unknown. Seventeen (14%) nests failed to fledge young. New Jersey's Delaware Bay region remained the state's eagle stronghold, with 41% of all nests located in Cumberland and Salem counties.

In January's annual Midwinter Eagle Survey, ENSP staff, regional coordinators and volunteers reported a total of 297 bald eagles. Thirty-three eagles were recorded in northern NJ and 264 in the south.

The state's eagle population would not be thriving without the efforts of the dedicated eagle volunteers who observe nests, report sightings, and help protect critical habitat.

Introduction

Historic records are incomplete, but one study indicated New Jersey hosted more than 20 pairs of nesting bald eagles in the Delaware Bay region of the state (Holstrom 1985). As a result of the use of the pesticide dichloro-diphenyl-trichloroethane, commonly known as DDT, the number of nesting pairs of bald eagles in the state declined to only one by 1970 and remained there into the early 1980s. Use of DDT was banned in the United States in 1972. That ban, combined with restoration and management efforts by biologists within the Division of Fish and Wildlife's Endangered and Nongame Species Program (ENSP), resulted in population increases to 23 pairs by 2000, 48 pairs by 2005, and 82 pairs by 2010. ENSP recovery efforts – implemented since the early 1980's – have resulted in a steady recovery as New Jersey's eagle population has rebounded from the edge of extirpation.

Recovery efforts were multifaceted. In 1982, after the Bear Swamp nest – New Jersey's only remaining nest since 1970 – had failed at least six consecutive years, ENSP biologists removed the egg for artificial incubation at Patuxent Wildlife Research Center in Maryland, and fostered the young nestling back to the nest. As a result of residual DDT contamination, the Bear Swamp eggs were too thin to withstand normal incubation. Artificial incubation and fostering chicks continued with success until 1989, when the female of the pair was replaced and the pair was able to hatch their own eggs.

Increasing the production from a single nest, however, was not enough to boost the state's population in a reasonable period of time; mortality rates are high in young eagles (as high as 80%), and they do not reproduce until about five years of age. ENSP instituted a hacking project in 1983 that resulted in the release of 60 young eagles in NJ over an eight-year period (Niles et al. 1991). These eagles contributed to the increase in nesting pairs since 1990.

Bald eagles nesting in NJ face many threats, with disturbance and habitat loss the greatest threats in our state. In addition, contaminants in the food web may negatively affect the eagles nesting in some areas of NJ.

Disturbance is defined as any human activity that causes eagles to change their behavior, and takes many forms, including mere presence of people in nesting or foraging areas. In general, people on foot evoke the strongest negative reaction (see Buehler 2000). The problem is that when eagles change their behavior in reaction to people, they cease doing what is best for their survival and the well-being of their eggs and young; ultimately, that reduces the survival of individuals and the population. ENSP biologists work to manage and reduce disturbance in eagle habitats, especially around nest sites. A corps of experienced volunteers, as well as public education and established, safe viewing areas, are essential to this effort. Viewing eagles from safe distances, where eagles continue to act normally, is best for eagles and satisfies our natural desire to see them. Biologists also protect habitat in a variety of ways, including working with landowners, land acquisition and management, and applying the state's land use regulations. ENSP is continuing to investigate the impacts of organochlorines and heavy metals in eagles and other raptors nesting in the Delaware Bay region. Bald eagles, ospreys, and peregrine falcons nesting in the region exhibited some reproductive impairment relative to other areas (Steidl et al. 1991, Clark et al. 1998), but recent research indicates problems may be limited to very local areas of contamination (Clark et al. 2001). ENSP biologists collect samples that allow monitoring of contaminants in eagles during the nesting season, and monitoring nest success is an integral part of this research.

ENSP biologists, with the Division's Bureau of Law Enforcement staff and project volunteers, work year round to protect bald eagle nest sites. However, with increasing competition for space in the most densely populated state in the nation, it is clear that critical habitat needs to be identified and, where possible, protected. Critical habitat for eagles includes areas used for foraging, roosting and nesting, and is included in the program's Landscape Project mapping of critical wildlife habitats.

The population of wintering bald eagles has grown along with the nesting population, especially in the last ten years. This growth reflects increasing populations in NJ and the northeast, as each state's recovery efforts continue to pay off for eagles.

In 2007, a major milestone was reached for bald eagles in the U.S. The federal government removed the bald eagle from its list of Endangered Species in August 2007, in recognition of the national resurgence in the eagle population in the lower 48 states. The U.S. Fish and Wildlife Service will oversee a 20-year monitoring period (through 2027) to watch for and investigate any problems that could compromise the eagle recovery. In addition, the Bald and Golden Eagle

Protection Act was recently revised, and remains in effect to protect nest and roost sites for bald eagles nationwide. The bald eagle's official New Jersey status remains state-endangered for the breeding season and state-threatened for the non-breeding season, and state regulatory protection will remain unchanged by the federal action.

Objectives of the New Jersey bald eagle program:

- 1) monitor the recovery of the bald eagle in the state by documenting the status, distribution, and productivity of breeding bald eagles in NJ;
- 2) enhance nest success by protecting bald eagles and their nest sites;
- 3) monitor wintering areas and other concentration areas and plan for their protection;
- 4) document locational data in the Biotics database and apply it to identify critical habitat using the Landscape Project mapping;
- 5) provide information and guidance to landowners and land managers with regard to bald eagles on their properties;
- 6) increase our understanding of bald eagle natural history in New Jersey.

Methods

Nest Survey

All known nest sites are monitored January through July or through fledging. Volunteer observers watch most nests from a distance of 1,000 feet, using binoculars and spotting scopes, for periods of two or more hours each week. Observers record all data including number of birds, courtship or nesting behaviors, incubation, feeding, and other parental care behaviors that provide essential information on nesting status. ENSP staff contact volunteers weekly with an update and are available to discuss observer questions and data. Dates are recorded for incubation, hatching, banding, fledging, and, if applicable, nest failure. A nesting territory is considered "occupied" if a pair of eagles is observed in association with the nest and there is some evidence of recent nest maintenance. Nests are considered "active" if a bird is observed in an incubating position or if eggs or young are detected in the nest.

Observers report other bald eagle sightings to ENSP biologists, who review the information for clues to potential new nest locations. ENSP staff and volunteers investigate territorial bald eagles for possible nests through field observations. When enough evidence has been collected to suggest a probable location, ENSP biologists often conduct aerial surveys of the region to locate a nest. Following guidance from the US Fish and Wildlife Service's post-delisting monitoring plan (USFWS 2009), we maintain a list of occupied nests and territories for population monitoring.

When necessary, nests are secured from disturbance with barriers or posted signs. ENSP staff works in partnership with landowners and land managers to cooperatively protect each nest. Volunteers notify ENSP staff immediately if any unusual or threatening activities are seen around the nest site. The Division's Bureau of Law Enforcement conservation officers act to enforce protection measures as needed, and provide routine assistance as well.

At select nests, biologists enter the nest site to band young when nestlings are between five and eight weeks old. A biologist climbs the tree and places nestlings into a large duffel bag and lowers them, one at a time, to the ground. A team records measurements (bill depth and length, eighth primary length, tarsal width, and weight) and bands each eaglet with a federal band and a green state color band with an alpha-numeric code. A veterinarian examines each bird and takes a blood sample for contaminant analysis. Blood is collected and stored following techniques in Bowerman et al. (1994). Samples are stored frozen pending analysis by a technical lab. Nest trees are generally not climbed the first season to avoid associating disturbance with the new site.

Wintering Eagle Survey

The nationwide Midwinter Eagle Survey is conducted every January to monitor population numbers across the country. The ENSP has contracted New Jersey Audubon Society's Cape May Bird Observatory to coordinate the survey across southern NJ, and relies on biologist Allan Ambler of the Delaware Water Gap National Recreation Area to survey in the upper Delaware River area. ENSP staff coordinates volunteers who survey northern NJ reservoirs. The volunteer effort is aimed at covering all suitable and known wintering habitats, and data are analyzed to track (to the extent possible) the number of individual eagles observed on both days of the survey using plumage characteristics and time/place observed. ENSP biologists compile all results to determine statewide totals and totals along standardized survey routes, which are provided to the Raptor Research and Technical Assistance Center in the U.S. Bureau of Land Management. For the sixth year volunteers also mapped eagle activity during the two-day survey; these data delineating critical eagle wintering habitat will be incorporated into the NJ Landscape Project.

Results

Nest Survey

The statewide population increased to 148 territorial pairs in 2013, up from 135 in 2012. One hundred-nineteen pairs were known active (meaning they laid eggs). Ninety-six nests (81%) were known to be successful in producing 176 young, for a productivity rate of 1.49 young per active nest, which is above the required range of 0.9-1.1 young per nest for population maintenance (Figure 2). Nine eagle pairs maintained territories but did not lay eggs. The nest activity of twenty pairs was unknown due to lack of observations or searches.

Most nests were located in the southern portion of the state, particularly within 20 km of Delaware River and Bay (Figure 3). All nests and significant dates are listed in Table 1. The majority of nests were located on private land, while the rest were on state, federal, county and conservation-organization lands. Disturbance was a management issue at many nests, and posting and regular surveillance by staff and nest observers were essential to increase the chance of success.

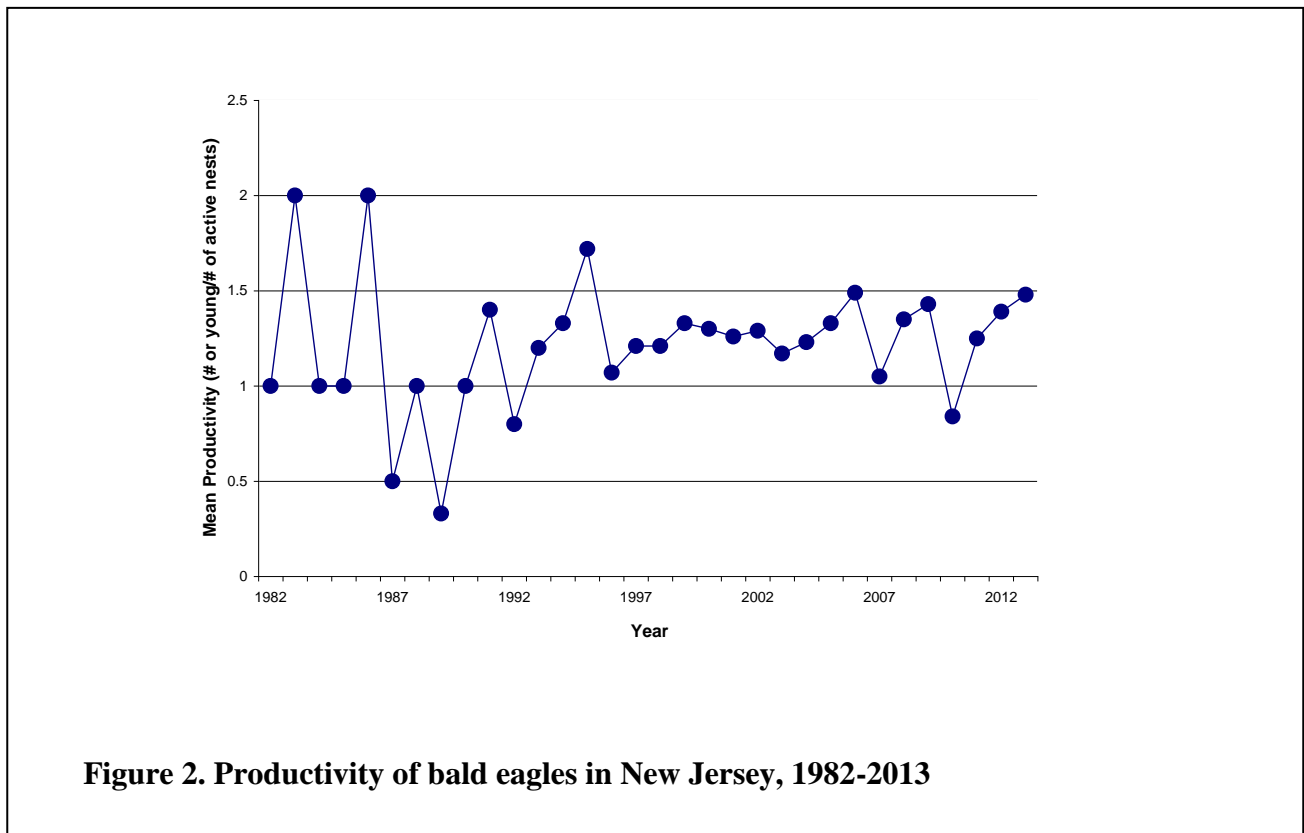
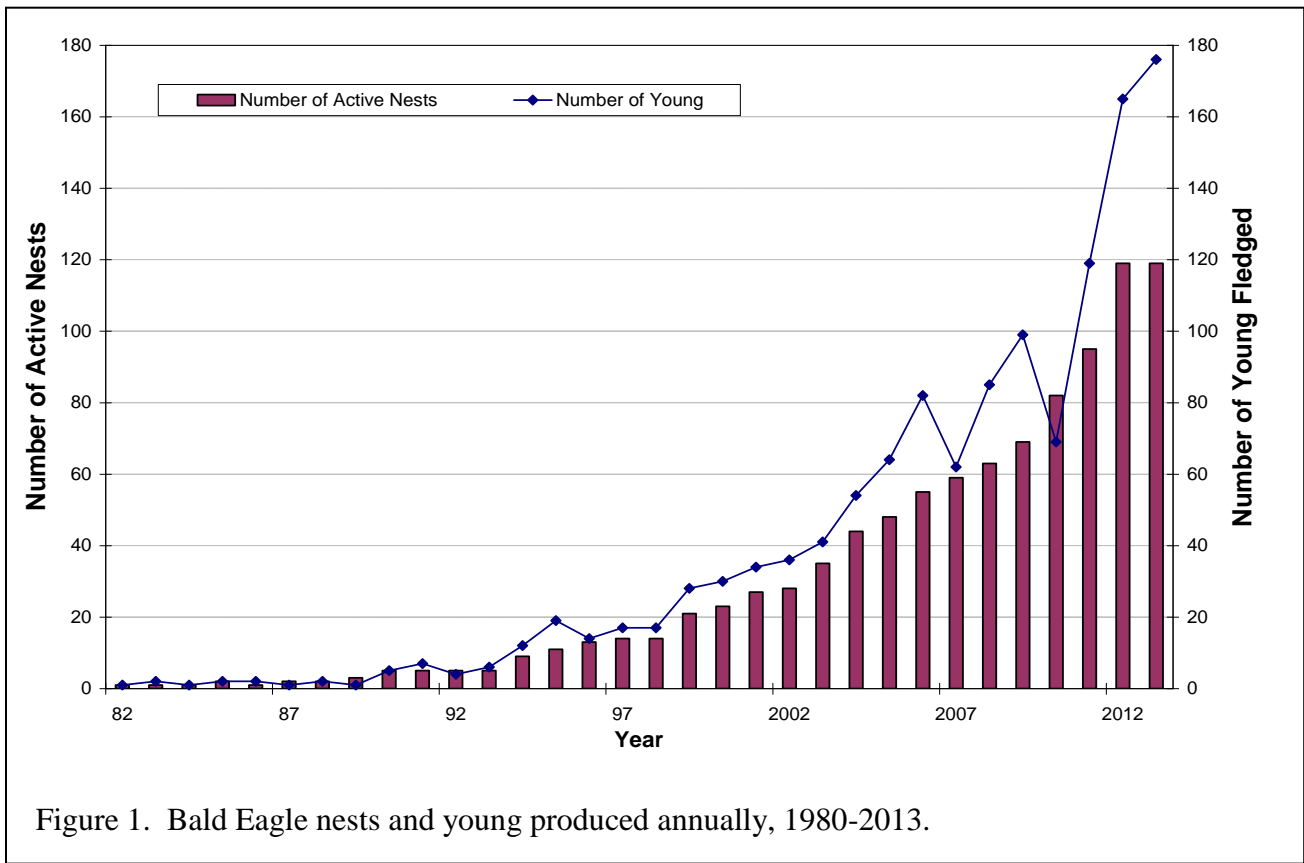


Figure 3. Bald Eagle nest sites, 2013.

1 Liberty Loop	51 Woodbury Creek	101 Seabreeze B
2 Bassett's Bridge	52 Mantua A	102 Sayres Neck
3 Dingman's Ferry	53 Mantua B	103 Baypoint
4 Culver's Gap	54 Raccoon Creek	104 Nantuxent A
5 Lewisburg Swamp	55 Gibbstown	105 Nantuxent C
6 Wanaque	56 Mond's Island	106 Nantuxent D
7 Woodcliff Lake	57 Bridgeport	107 Nantuxent B
8 Palisades A	58 Swedesboro	108 Turkey Point A
9 Oradell	59 Oldmans Creek	109 Turkey Point B
10 Palisades B	60 Penns Grove	110 Egg Island
11 Overpeck Creek	61 Harrisonville	111 Dividing Creek
12 Pompton Lakes	62 Silver Lake	112 Bear Swamp
13 Rockaway	63 Daretown	113 Union Lake
14 Newton	64 East Lake	114 Maurice (MillvilleNorth)
15 Hyper Humus	65 Salem River	115 Maurice (Millville)
16 Little Swartswood	66 Pilesgrove	116 Maurice (North)
17 Poxono Island	67 Deepwater	117 Maurice (Burcham)
18 Yards Creek	68 Pennsville	118 Mauricetown
19 Lake Denmark	69 Mannington A	119 Port Norris
20 Mount Hope Lake	70 Penns Neck	120 Maurice (Bowkers)
21 Musconetcong	71 Mannington B	121 Heislerville
22 Parsippany	72 Fenwick Creek	122 Riggins Ditch
23 Pequest	73 Alloways B	123 Stipson Island
24 Merrill Creek	74 Centerton	124 Bidwell Creek
25 Ravine Lake	75 Keasbey's Creek	125 Dias Creek West
26 Great Swamp	76 Supawna	126 Fishing Creek
27 Linden	77 Elsinboro	127 Higbee
28 Round Valley	78 Alloways C	128 Wildwood Bay
29 Stanton Station	79 Alloways D	129 South Dennis
30 Raritan River	80 Alloways-Hope Creek	130 Cedar Creek
31 Manville	81 Stow Creek A	131 Tuckahoe A
32 Old Bridge	82 Arrowhead	132 Tuckahoe B
33 Bull's Island	83 Sunset	133 Patcong Creek A
34 Princeton	84 Newport Meadows	134 Patcong Creek B
35 Navesink	85 Mad Horse Creek	135 Scull Bay
36 Shark River	86 Davis Mill	136 Egg Harbor
37 Manasquan Reservoir	87 Wheaton	137 South River
38 Manasquan River	88 Bayside A	138 Lake Lenape
39 Kettle Creek	89 Bayside B	139 Cedar Lake
40 Prospertown	90 Greenwich A	140 Galloway
41 Trenton	91 Greenwich B	141 Ballanger Creek East
42 Crosswicks Creek	92 Sheppards Mill	142 Ballanger Creek West
43 Burlington County	93 Loatman	143 Mullica
44 Burlington Island	94 Hopewell West	144 Wading
45 Fairgrounds	95 Hopewell Central	145 Blue Anchor
46 Fort Dix	96 Tindells Landing	146 Chatsworth
47 Pemberton	97 Tindall Island	
48 Rancocas Creek	98 Middle Marsh B	
49 Camden	99 Green Swamp	
50 Eagle Point	100 Seabreeze A	

The following nests are not shown on the map because their location is unknown: Green Pond & Spruce Run

2013 Bald Eagle Nest Status

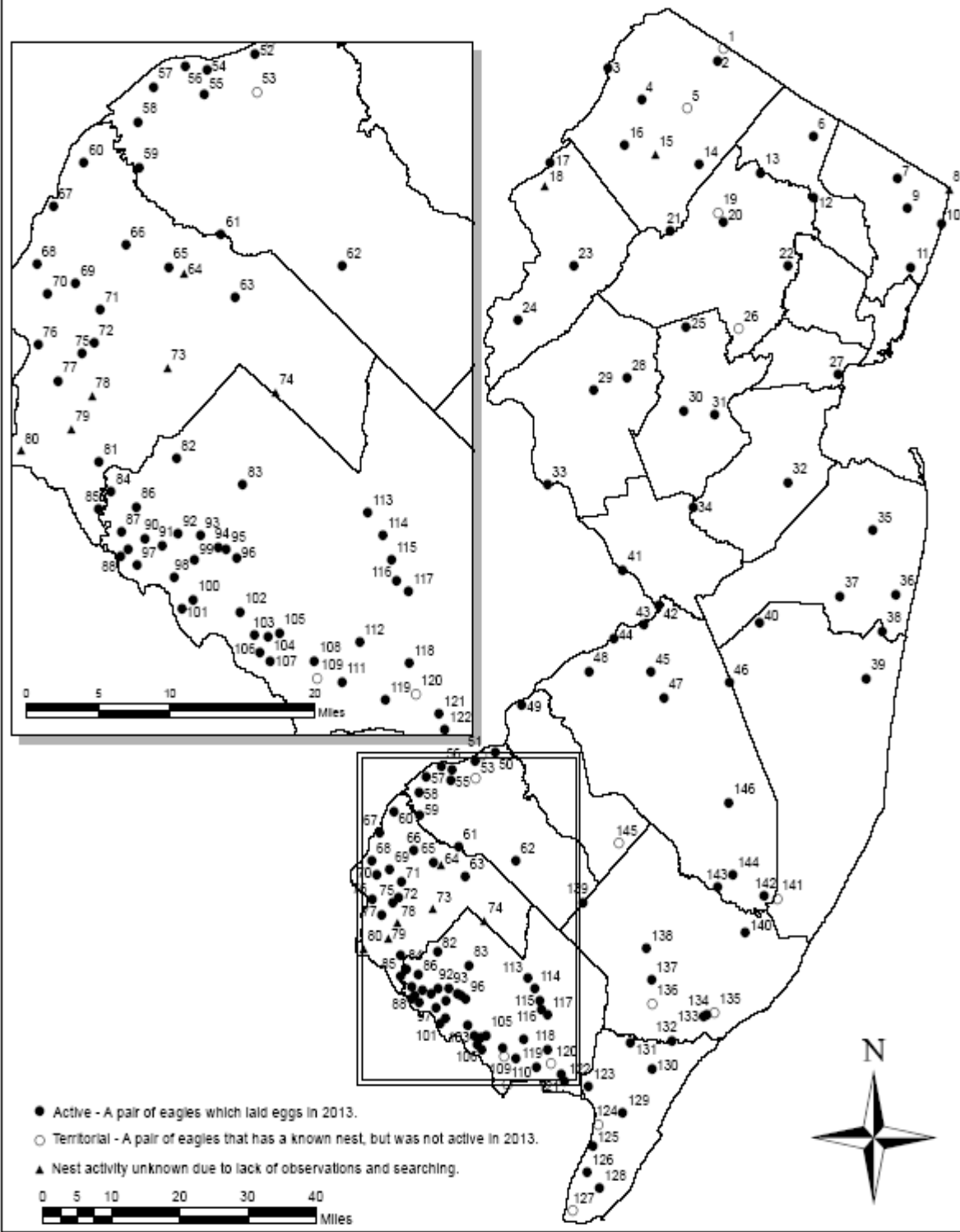


Figure 3, continued. Bald Eagle Nest Sites, 2013

Table 1. Production and significant dates of bald eagle nests in NJ, 2013.

T=Territorial, U=Unknown (nest activity unknown due to lack of observations and searches)

NEST SITE	Incubation	Hatching	Banding	Fledging	No. Fledged	Failed date/ Reason	Notes
Alloways Creek B-CE	U						
Alloways Creek C-Quinton	U						
Alloways Creek D	U						
Alloways-Hope Creek	U						
Arrowhead	<3/30						Outcome unknown
Ballanger Creek East	T						New pair
Ballanger Creek West		~3/29		~6/21	3		New pair; aerial survey 4/26
Bassetts Bridge	2/15	3/25		6/27	1		
Bay Point	2/3	3/17		6/8	3		
Bayside A	2/22	<3/30		~6/22	2		
Bayside B	2/13	3/17		6/9	2		
Bear Swamp	~2/13	~3/20			0	~4/19- unknown	4/19 aerial survey nest empty
Bidwell Creek	U						4/19 aerial survey; nest in disrepair
Blue Anchor	T						New pair; housekeeping
Bridgeport	2/26	4/11		7/4	2		
Bulls Island	~3/5	4/4		6/28	2		New pair
Burlington Co./Del. R.	1/25						Outcome unknown
Burlington Island	1/21	3/1		5/18	1		
Camden	3/3	4/18		7/7	1		Originally 2 chicks
Cedar Lake (Gloucester)	<1/13				0	2/23 unknown	
Cedar Swamp Creek	2/15	3/24		6/16	2		
Centerton (Elmer)	U						
Charlottesburg (Rockaway)	3/17	4/21		7/8	1		
Chatsworth	~2/7	~4/2		~6/25	1		
Cohansey (Middle Marsh B)	2/17	3/24		6/22	3		
Cohansey (Green Swamp)	U						
Cohansey (Greenwich A)	1/24	2/25		6/5	1		
Cohansey (Greenwich B)	1/24	2/22		5/12	1		
Cohansey(Sheppards Mill)	1/15				0	3/31 unknown	
Cohansey (Hopewell West)	<3/13						Outcome unknown
Cohansey(HopewellCentral)	<3/13						Outcome unknown
Cohansey (Loatman)	<3/13						Outcome unknown
Cohansey(Tindells Landing)	2/17	3/24		6/2	1		

Crosswicks Creek	2/18	3/24		6/23	1		
Culvers Gap	3/5	4/11		7/4	3		
Daretown	2/5	3/13		6/1	1		
Davis Mill	2/7	<3/30		6/22	1		
Dias Creek West	2/12	3/19		6/17	2		
Dingman's Ferry	2/26	4/9		7/2	2		
Deepwater	~2/15	~3/22		~6/14	1		
Dividing Creek	2/16	3/30		6/8	2		
Eagle Point	2/18	3/25	5/10	6/27	1		1 of 2 chicks fostered to Ft Dix nest
East Lake	U						
Egg Harbor River	U						
Egg Island	U						4/19 aerial survey; nest gone
Elsinboro	2/10	3/15		6/11	3		
Fairgrounds	2/17	3/24		6/16	2		
Fenwick Creek	2/14	3/21		6/19	2		
Fishing Creek	U						4/19 aerial survey; tree lost to Sandy
Fort Dix	2/12	3/26			0	predation	Originally 3 chicks
Fort Dix (foster chick)				6/19	1		Eagle Pt chick fostered here 5/10
Galloway	2/10	3/31	5/13	7/4	2		
Gibbstown	1/31	3/9		6/9	1		
Great Swamp	T						
Green Pond	U						
Harrisonville	3/5				0	unknown	
Heislerville	2/10	3/17		6/9	1		
Higbee	T						Nest destroyed during Sandy; built new nest
Hyper Humus	U						Great horned owl took over nest
Keasbeys Creek	2/10	3/23		6/3	1		
Kettle Creek	2/10	3/21		6/11	2		
Lake Denmark	T						
Lake Lenape	2/15	3/22		6/14	1		4/26 aerial survey; assumed fledged
Lewisburg Swamp	T						New pair
Liberty Loop	T						New pair
Linden	~3/4	~4/8		7/1	1		New nest tree (from NJTP to cemetery?)
Little Swartswood	2/12	3/20		6/9	2		
Mad Horse Creek	U						
Manasquan Reservoir	1/26	3/4		5/27	2		New nest tree
Manasquan River	2/10	3/17	5/1	6/9	3		
Mannington Meadows A	2/8				0	3/17 unknown	

Mannington Meadows B	2/19	3/26		6/18	2		
Mantua Creek A	3/3	4/10		7/3	2		
Mantua Creek B	T						New pair
Manville	3/7	4/11		7/4	1		New pair
Maurice River- North	2/6	3/20		6/12	2		
Maurice River- Bowkers	U						4/19 aerial flight; nest in disrepair
Maurice River- Burcham	2/14	3/29		6/21	3		
Maurice River(Mauricetown)	T				0		4/19 aerial flight; nest maintained
Maurice River-Millville	2/12	3/16		6/15	2		
Maurice River-Millville North	2/19	4/16		7/5	1		
Merrill Creek Res.	2/28	4/4	5/31	6/19	3		Transmitter placed on chick
Mond's Island	2/27	4/3		6/26	2		
Mount Hope Lake	3/14	4/22		>8/2	1		
Mullica River	3/10				0	Unknown	
Musconetcong	3/3	4/7		6/17	2		
Nantuxent Creek A	2/16	3/30	5/13	6/8	2		
Nantuxent Creek B	2/2	3/17	5/3	6/16	3		
Nantuxent Creek C	2/24	3/30		6/16	2		
Nantuxent Creek D	2/16	3/30		6/16	2		
Navesink River	2/13	3/20	5/1	6/14	2		New nest tree
Newport Meadows	2/7	3/14		6/16	3		
Newton Reservoir	2/20	3/29		6/25	1		2 chicks;1 lost to June storm
Old Bridge	<3/18				0	5/20-unknown	New nest
Oldmans Creek	2/1				0	3/10-unknown	
Oradell Reservoir	2/13	3/20		6/14	2		
Overpeck Creek	3/1	4/3		6/26	2		
Palisades A	U						
Palisades B	2/19	3/24			0	Unknown	Originally 2 chicks
Parsippany	2/20	3/29		6/21	3		
Patcong Creek A	1/23	2/26		5/18	2		
Patcong Creek B	1/23					3/21 unknown	New pair
Pemberton	1/25	3/1		5/24	3		
Penns Grove	3/2	4/7		6/30	2		
Penns Neck	2/18	3/21		6/15	2		
Pennsville	2/15	3/19		6/11	2		
Pequest	unk				1		New pair
Pilesgrove	2/9	3/13		6/12	1		
Pompton Lakes	unk						New pair; outcome unknown
Port Norris	2/2				0	3/6-storm	Nest damaged in storm
Poxono Island	2/26				0	4/20 unknown	
Princeton	2/26	3/31		6/23	2		

Prospertown	1/28	3/4	4/15	6/8	2		
Raccoon Creek/Dupont	3/2				0	3/17 unknown	
Rancocas Creek	2/13	3/18		6/13	1		
Raritan River (Duke)	2/14	3/24		6/17	2		
Ravine Lake	<3/31	Unk		Unk	2		
Riggins Ditch	2/18	3/13		6/9	2		New nest tree
Round Valley	2/25	4/1		6/19	1		
Salem River	1/19	2/24		5/22	3		New pair
Sayres Neck	1/27	3/2			0	3/9 unknown	
Sea Breeze A	1/27	3/5		6/22	1		
Sea Breeze B	2/17	3/24	5/3	7/7	2		
Scull Bay	U						
Shark River	2/17	3/27		6/15	2		
Silver Lake	3/3	4/7		7/6	1		New nest tree
Spruce Run	U						
South Dennis A	1/9				0	2/22 unknown	
South River-Atlantic	3/5				0	Unknown	
Stanton Station	3/11	4/15		7/3	2		
Stipson Island	2/8	3/15		6/7	2		4/19 aerial; assumed fledged
Stow Creek A	2/7	3/14		6/22	1		
Sunset	2/4	3/11		6/10	2		New nest tree
Supawna Meadows	2/19	3/24	5/7	6/23	1		
Swedesboro-Birch Creek	1/28	3/5		5/28	2		
Tindall Island	1/24	2/28		6/1	2		
Trenton	Unk	Unk		~7/5	1		New pair; found 4/23
Tuckahoe A	3/1	4/5		6/18	2		4/26 aerial survey
Tuckahoe B	4/25	4/2	5/14	6/26	2		4/26 aerial survey
Turkey Point A	2/16	3/30		6/8	3		
Turkey Point B	U						
Union Lake	2/8	3/15		6/7	1		
Wading River	2/2	3/19		6/11	2		
Wanaque	2/24			6/22	2		
Wheaton Island	1/29	3/13		6/20	3		
Wildwood Bay	2/15						Outcome unknown
Woodbury Creek	T						New pair
Woodcliff Lake	2/13	3/25		6/13	2		
Yards Creek	U						

New Nesting Pairs/Territories

In 2013, fourteen new pairs of eagles were found in New Jersey.

Ballanger Creek East – This new pair was seen working on a nest early in the season but did not lay eggs.

Ballanger Creek West – Found during a winter aerial survey, this pair nested along the marshes of Burlington County. Another flight recorded three chicks which were assumed to have fledged.

Blue Anchor – This housekeeping pair was found nesting in Atlantic County.

Bulls Island – This new pair was found nesting along the D and R Canal path near Bulls Island State Park and successfully fledged 2 chicks.

Lewisburg Swamp – This housekeeping pair was found nesting in Sussex County.

Liberty Loop – This housekeeping pair was discovered near the Appalachian Trail in Sussex County.

Mantua Creek B – This pair was found housekeeping along the Mantua Creek.

Manville – This new pair was found nesting along the Raritan River and fledged at least one chick.

Patcong B – A second pair of eagles nested along the Patcong Creek; they incubated but failed to hatch.

Pequest – This new pair was found nesting near the Pequest Trout Hatchery and fledged one chick.

Pompton Lakes – A new pair was found nesting in Pompton Lakes but it was unknown if they were successful.

Salem River – Three chicks fledged from this new nest located along the Salem River in Salem County.

Trenton – One chick fledged from this new nest right outside downtown Trenton, on an island in the Delaware River.

Woodbury Creek – Located in Gloucester County, this housekeeping pair tended to their nest located near the Delaware River.

2013 Nesting Season Highlights

Staff built two eagle “starter” nests: one at Manasquan Reservoir, where the existing nest was on a dead branch that could break with continued use. The pair ended up building their own nest and did not use the biologist-built nest. The second nest was on a refinery property where the old nest had fallen, and we wanted to avoid having the eagles build a new nest on man-made structures in the refinery due for demolition; the eagle pair had been laying sticks on one of the tallest towers. The eagles used the biologist-built nest.

At Fort Dix, where eagles have been nesting since 2000, nest watchers had observed at least two eaglets in the nest in April. However, when ENSP biologists and nest observers went to band the chicks on May 10, we found one badly injured eaglet and the remains of two other nestlings. We removed the injured eaglet to transport it to Tri-State Bird Rescue, but it died en-route. Post-mortem examination indicated the injuries came from an avian predator, likely to be either a great-horned owl or an intruding eagle. On the same day, May 10, ENSP biologists made the decision to obtain a foster from the Eagle Point nest, which was the next destination for banding two nestlings about six weeks of age. The foster chick was placed in the nest that afternoon, and watched by observer Roger Smith, who visited daily to confirm that the chick was accepted and fed. The fostering was clearly a success, and the eaglet fledged successfully in June.

Merrill Creek Reservoir

Merrill Creek Reservoir owners have continued their support of the eagle project by enabling eagle telemetry. In 2013, they generously provided continuing data collection of previously-tagged eagles, and provided a new transmitter.

On May 31, 2013, the largest of three eagle nestlings (female, D/88) at Merrill Creek was fitted with a new transmitter. This transmitter, like earlier ones, uses satellites to record GPS fixes for the eagle’s locations, but is different in that it uses cell towers to transmit the data. In the cell-powered eastern U.S., this is a great new option that makes data transmission much easier and cheaper. This eagle fledged in mid-June and was tracked in western NJ, eastern PA and southern NY. In September, she starting heading south and has been ranging around northern Chesapeake Bay in Maryland.

On January 18, 2013, the male eagle (D/41) that had been fitted with a transmitter in 2011 was found dead. The bird was found in a small patch of woods along Route 78 in Clinton, NJ, and had been likely hit by a vehicle that caused a fractured left wing and impact injuries.

The female (D/64) that fledged in July, 2012, continues to be tracked. She spent the winter around the southern tip of the Delmarva Peninsula in coastal Virginia. In March, she headed north and spent most of the summer in southern Maine. At the end of August she starting heading south and spent the fall in Connecticut. Maps of the transmittered eagles’ movements are included in Appendix 1.

We are looking forward to more research in 2014, when we will deploy satellite transmitters made possible by a generous donation from Six Flags–Great Adventure.

Potential Nest Sites

ENSP biologists and observers actively searched for possible nesting eagles in several locations. The searches were in response to the many reports of eagles engaging in breeding behaviors. Areas that remain promising are Big Timber Creek, Batsto Lake, Oswego Lake, Indian Mills Lake, Williamstown, Cheesequake Creek, Evesham, Flemington/Raritan River, Farrington Lake, Canoe Brook Reservoir, Pointview Reservoir, White Lake, Musconetcong River and middle Delaware River, which all have year-round eagle activity. In addition, several inland reservoirs in the north hold promise for eagle nesting.

Wintering Eagle Survey

A total of 297 bald eagles were observed during the Midwinter Survey on January 12-13, 2013 (Table 2). Southern New Jersey's Delaware Bay region continued to host the majority of the state's wintering birds.

Two hundred sixty-four bald eagles were counted in southern NJ, of which 179 were adults (Table 2). Most southern eagles were observed in the lower Delaware River (41%), followed by the Delaware Bay region (40%) Atlantic Coast watersheds (19%). The transects with the highest counts were Salem County with 75 eagles, Maurice River/Turkey Point/Bear Swamp with 36 eagles, and the Cohansey River with 30 eagles.

In northern NJ, some of the best winter habitats are along the Delaware River, in Delaware Water Gap National Recreation Area, and the inland reservoirs. The Water Gap hosted 17 bald eagles while the inland reservoirs, lakes and Hudson River had 16.

Most survey volunteers recorded details on individual eagles sighted, including point locations on maps. Point locations were digitized and will be used to design critical wintering habitat areas.

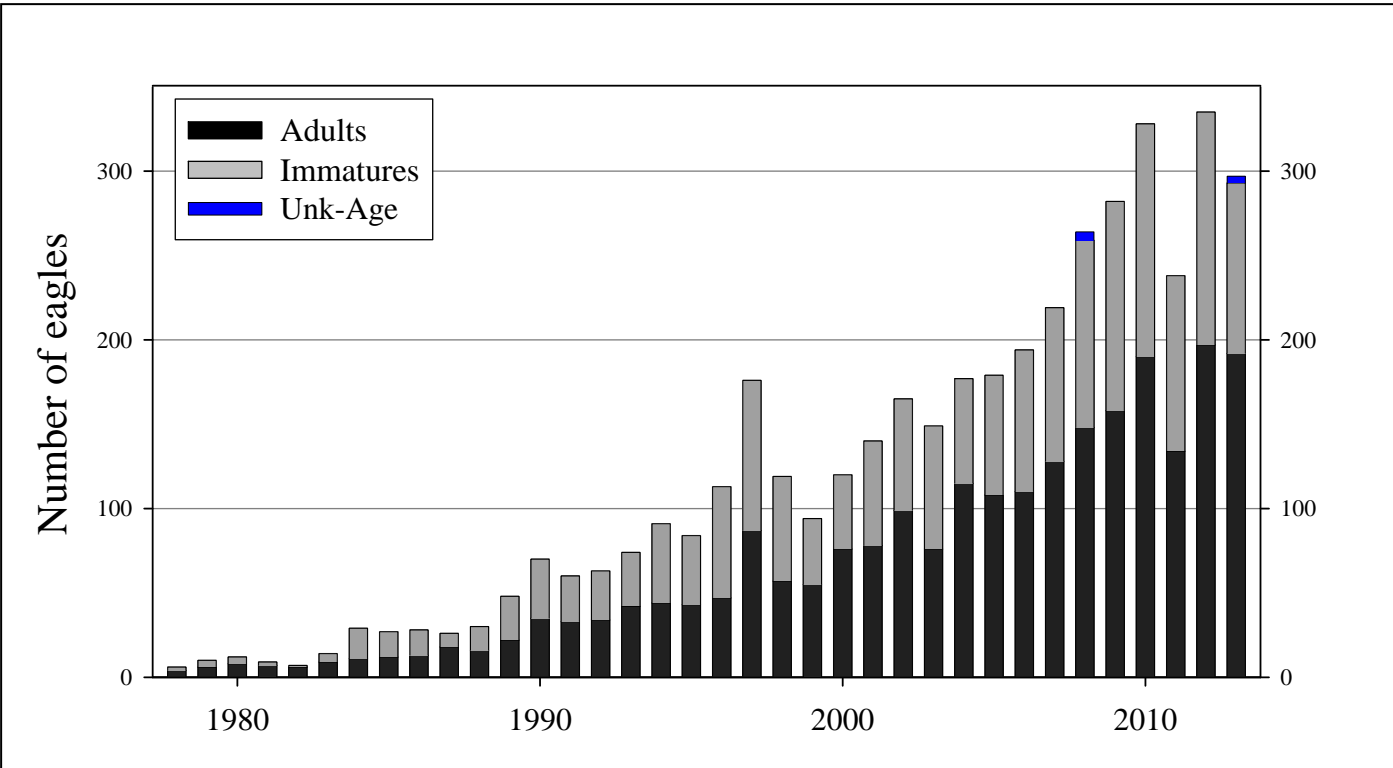


Figure 4. Bald eagles counted during New Jersey's Mid-winter Eagle Survey, 1978-2013.

Table 2. Eagles counted in the NJ Midwinter Eagle Survey, January 12-13, 2013.

Region	Survey Transect	Subregion	BE Total	Adult	Immature	Unkn. BE	Golden
South	Brigantine NWR	AC	9	5	4	0	0
	Cohansey River	DB	30	24	4	2	0
	Delaware River - Riverton to Trenton	SD	6	5	1	0	0
	Fortescue to Stow Creek	DB	19	15	4	0	0
	Fort Dix/Pemberton	AC	4	4	0	0	0
	Great Egg Harbor & Tuckahoe Rivers	AC	15	13	2	0	1
	Manahawkin to Lower Bass River	AC	4	3	0	1	0
	Manasquan Reservoir	AC	2	2	0	0	0
	Maurice River, Turkey Point, Bear Swamp	DB	36	16	20	0	0
	Mullica & Wading Rivers	AC	7	2	5	0	0
	Oldman's Creek	SD	5	4	1	0	0
	Princeton	SD	3	2	1	0	0
	Raccoon Creek	SD	18	15	2	1	0
	Rancocas Creek	SD	NA	na	na	0	0
	Salem County	SD	75	47	28	0	0
	Stow Creek	DB	NA	NA	NA	0	0
	Swimming River Reservoir	AC	4	2	2	0	0
	Thompson's to Reeds Beach	DB	21	17	4	0	0
	Whitesbog	AC	6	3	3	0	0
South	Subtotal		264	179	81	4	1
North	Delaware River - Columbia to Trenton	ND	NA	NA	NA	NA	NA
	Delaware Water Gap	DWG	17	6	11	0	0
	Hudson River - Palisades	P	0	0	0	0	0
	Jersey City Reservoirs (Boonton & Split Rock)	IR	1	0	1	0	0
	Merril Creek Reservoir	IR	2	2	0	0	0
	Newark Watershed (Clinton, Oakridge, & Charlottesville)	IR	4	2	2	0	0
	Oradell Reservoir	IR	9	3	6	0	0
	Round Valley Reservoir	IR	0	0	0	0	0
	Wanaque & Monksville Reservoir	IR	na	na	na	na	na
North	Subtotal		33	13	20	0	0
State	Total		297	192	101	4	1

Subregions: AC=Atlantic Coast, DB=Delaware Bay, DWG=Delaware Water Gap, IR=Inland Reservoirs, ND=Northern Delaware River, P=Palisades-Hudson River, SD=Southern Delaware River

Recoveries of Eagles in New Jersey

An unbanded adult male was found injured on the side of the road on December 22, 2012, in Hammonton and is suspected to have been hit by a vehicle. The bird was taken to Cedar Run Wildlife Refuge and then transferred to Tri-State Bird Rescue and Research on December 24, 2012. Due to the extent of its injuries, the bird was euthanized.

On January 17, a 4th year bird was picked up by Bergen County Animal shelter at Oradell Reservoir, Bergen County and taken to The Raptor Trust. The bird had a wing injury but recovered and was released on March 4, 2013.

On January 18, 2013, the male eagle from Merrill Creek Reservoir that had been fitted with a transmitter in 2011 was found dead. The bird's left wing was severely broken and he most likely died as a result from this injury. The bird was found in a small patch of woods along Route 78 in Clinton, NJ and was most likely hit by a vehicle.

A sub-adult was found injured in February, 2013, in Holmdel and taken to Toms River Avian Care. This unbanded bird recovered and was released on June 22, 2013.

An adult eagle was found injured on February 1, 2013, at a golf course in Egg Harbor Township, Atlantic County. The bird was a female that had been banded (#629-45852, B/47) on May 21, 2003, at the Mannington Meadows B nest. The bird was taken to Tri-State Bird Rescue and Research and found to have wounds to her head and right eye that were most likely inflicted by another eagle during combat. She also had an old injury to her left eye which left her mostly blind; she would not be able to survive on her own with injuries to both eyes and was euthanized.

A five year-old bird was found injured on February 22, 2013, at the U.S. Naval Weapons Station, Colts Neck, Monmouth County. The bird was a male that had been banded on April 8, 2008, at Manasquan Reservoir (#629-46855, C/47). The bird was taken to the Barnegat Animal Clinic where it was treated but died on February 25, 2013. A necropsy showed the bird died from trauma. This eagle had been identified (through the leg bands) as having been in competition with a territorial male at a nest about five miles away about three weeks earlier.

On February 8, 2013, an immature eagle was picked up in Colts Neck by the Monmouth County SPCA and brought to Toms River Avian Care. The bird recovered and was released the end of April.

An adult bald eagle was found dead in a cornfield in Belvidere, Warren County, on February 24, 2013. This female had been banded (#629-01752, D/17) on May 17, 2010, at the Camp Edge nest in Salem County. A necropsy was performed and cause of death was chronic in nature, possibly West Nile Virus or lead poisoning.

On March 17, 2013, a banded male eagle was rescued from Chesapeake Bay waters by a fisherman in Cecil County. The bird was taken to Tri-State Bird Rescue and Research where he was treated for his injuries that suggested a territorial battle with another bird. The male had been banded (#629-46853, C/45) at the Union Lake nest on May 15, 2007. He recovered and

was released on May 6, 2013.

A nine year-old eagle was found dead on April 3, 2013, in Gibbstown, Gloucester County. The bird had been banded (#629-45886, B/81) on June 6, 2004, at the Mannington Meadows B nest. Cause of death was unknown.

On April 9, 2013, an adult eagle was reported to be in a fight with another large bird most likely another eagle at Horseshoe Lake Park in Morris County. Roxbury animal control responded and found the eagle injured and took it to the Raptor Trust, where it was found to have puncture wounds and a fractured humerus. The bird died on April 19, 2013. A necropsy showed the bird had become septic which caused the kidneys to fail.

On April 19, 2013, an unbanded bald eagle was found dead in Pittsgrove, Cumberland County. The carcass was decomposed so cause of death was unknown.

Two adult eagles were hit by a vehicle near Cape May Court House, Cape May County, on April 19, 2013. Middle Township Animal Control responded and found one eagle dead and the other injured; neither was banded. The injured bird was transferred to Tri-State Bird Rescue and Research. Due to the severity of its injuries, the bird had to be euthanized. It is suspected that these birds were from the South Dennis nest, located within two miles of the accident site.

A 25 year-old female eagle was found dead after a wire-strike on April 26, 2013, at the Aberdeen Proving Ground in Maryland. This female was banded (629-26381, red color band), revealing that she was one of the eagles of a hack-release in 1988 at the Dividing Creek hack site. Local observer Lynda Hartzell at Aberdeen believes she was the female observed nesting at the Aberdeen nest for the last 20 years. There were three nestlings in the nest at the time, and the resident male successfully raised them to fledging. The Ms. Hartzell expressed admiration for the long-term eagle mom.

An unbanded adult female eagle was found on April 28, 2013, at the PSEG nuclear plant in Salem. The bird was taken to Tri-State Bird Rescue and Research where she was euthanized due to her injuries.

On April 29, 2013, an unbanded adult eagle was found injured on Nacote Creek, Atlantic County. The bird was taken to the Freedom Center for Wildlife, but was euthanized due to a severe wing injury.

A recent fledgling was found injured June 30, 2013, in Elizabeth, Union County. The bird was captured by an Elizabeth police officer who took the bird to the Raptor Trust. The female had a minor fracture of the wing radius, was rehabilitated, and released on August 23, 2013, at Merrill Creek Reservoir in Warren County where it could be around other young eagles.

On September 17, 2013, a first year bird was recovered dead on Bulls Island State Park. We assumed that it was one of the two fledglings from the Bulls Island nest.

On October 10, 2013, a four year-old male eagle was found grounded in a yard in New

Brunswick. Unfortunately, the bird's presence was unknown to the homeowner and their dogs may have caused additional trauma before the bird was picked up. A necropsy determined that there was an impact trauma (perhaps from a vehicle collision) that had most likely caused the bird to become grounded.

The skeletal remains of a banded eagle were found on October 26, 2013, in Eastville, Virginia. The bird had been banded (#679-01790, D/51) on April 27, 2013, at the Maurice River Bluffs nest. It was noted at the time of the banding that the nestling had an injury to its right eye causing it to be blind in that eye.

The remains of a 24 year-old eagle were found in November, 2013, on Nantuxent Wildlife Management Area. This eagle was one of two eaglets that fledged from the Tuckahoe hack site in 1989, having been brought to New Jersey from Canada as orphaned birds after their nest was lost. The discovery of this bird reveals another success in the eagle hacking that helped eagles rebound statewide.

Acknowledgments

We thank these people for their dedication and work to preserve and protect Bald Eagles in New Jersey:

Allan Ambler, Rusty Asdourian, Al Barrera, Maureen Barrett, Bruce Beans, Don Bishop, Peter Bosak, , Blais Brancheau, William Brader, Ed Bruder, Frank Budney, Jane Burman, Karin & Kevin Buynie, Gerry & Harry Byrne, Andy Campbell, Dorie Capiello, Jody Carrara, Bunny and Elmer Clegg, Jack Connor, Kathryn Conrad, Barb Craig, Loretta Dunne, Charles Dzwonkowski, Todd Edwards, Marian Evans, Eileen Ferguson, Walt Ford, John Fox, Peter & Jane Morton Galetto, Victor Gano, Don Garrison, Steve Gates, Richard Gauer, David George, Elaine Giberson, Nancy Sklavos-Gillett, Steven Glynn, Thomas Gorman, Stanley Grom, Doug Haeuber, Nancy Hall, Mary Harper, Ed Hazard, John Healy, Bonnie Hiles, Earl & Mary Ellen Holton, Debbie & Bob Holzinger, Mary Jane and Leroy Horner, Matt Ilic, Allen Jackson, Judy Jerolman, Robert Johnson, Joe Jupin, John and Carol Knapp, Brady Little, Judy Little, Teri Loy, Gina and George Mackey, Kevin McCarthy, Jim McClain, Tom McKelvey, Belford Miller, Mike Muller, Cherly Murphy, Mary-Ann Nied, Reino Niemela, Dan & Lisa Obermeier, Tom Palchanes, George Palir, Brett Palmer, Dan Palyca, James andCarolynn Pauze, Dennis Pegg, Albert Pelura, Donna and Heiki Poolake, Todd Pover, Ginny Powell, Roger and Valerie Pullen, Buster Raff, Dr. Bill Rives, Director of the Safari Park at Six Flags Great Adventure, Doug Roscoe, Eric Sambol, Skip Schuber, Rick Sedevic, Ed Sheppard, Roger and Terry Smith at the Fort Dix Military Reservation, Tracy Smith, Jonathan Stillwell, Ken Strait, Keith Strockbine, John Stuebing, Clay & Pat Sutton, Daniel Thomas, Elizabeth Thompson, Hans Toft, Alex Tongas, Matthew Tribulski, Fred Vanderburgh, Bob Verdon, The Wells Family, Jeffrey & Cathy White, Walt Wilkins, Alice Louise Wilkens, Peter Wilner, John Winsted, Chris Yoda, David Yundt, Jim Zamos. Thanks to Clayton Ingersoll and the staff at Atlantic County Parks; Gary Lizzi, Lorraine McCay, superintendent of Belleplain State forest and Kathleen Myer of Belleplain State Forest; Jack McCrossin at Citgo Petroleum Corporation; Staff at DuPont Chamber works; staff at Duke Farms; Moe Pirestani and Bob Soplop at DuPont; Fred Carl and the volunteers at InfoAge along with John Spinapont and staff of Wall Township Public Works Department; Joseph Weber at Logan Twp MUA; Jane Bullis, Jim Mershon and the staff of the Merrill Creek

Reservoir; Joe Reynolds and Ken Thoman of the Monmouth County Park System; Tom Koeppel, Chief Forester of the Newark Dept. of Water and Sewer Utilities Division; Kevin Keane of New Jersey-American Water; Melissa Castellon of Round Valley Recreation Area; Ray Sexton of the Sunrise Rod and Gun Club; Bill Caldwell and Jim Markel at Unimin; Richard Steady at Weeks Marine, Security personnel of the Wanaque Reservoir & Ron Farr forester at Wanaque Reservoir; Bill Grennille and Jack Smalley and the staff at Newton Reservoir; Bill Seagraves and Henry Patterson III and the New Jersey Water Supply Authority; Tom Koeppel and staff at the Newark Watershed Conservation & Development Corporation; Richard Lear at the Middlesex County Park Commission; Blanca Chevrett and the Parks & Forestry staff at Little Swartswood; Emile DeVito of the NJ Conservation Foundation; Rick DeLea and David Giordano at East Coast Sod; Barry Dirkin and the Burlington County staff. We also thank Mr. and Mrs. Bowers, Anna and Asa Caterwald at Waldac Farms, Geoffrey Cramer, David Fogg, Richard Fogg, Paul Galleta, the Glaspey family, Harriet Harris, the Hinchmans, Don and Valerie Ireland, Paul Ludwig, Vincent and Christine Petka, Ranch Hope personnel, Jeanne Riley, Barbara Somes, John Streep. We also thank David Mizrahi, Eric Stiles, Vince Elia and NJ Audubon staff.

We are grateful to Dr. Erica Miller and Tri-State Bird Rescue and Research for her outstanding veterinary assistance in the field. Additional veterinary support was provided by Don and Karen Bonica of Toms River Avian Care and Len Soucy and Cathy Malok of The Raptor Trust.

We thank the Cape May County Department of Mosquito Control and the New Jersey Forest Fire Service for donations of aerial surveys.

We appreciate the tree-climbing work of Mick Valent and Jeremy Webber and thank them.

Special thanks to Division Conservation Officers for their help protecting the state's eagles.

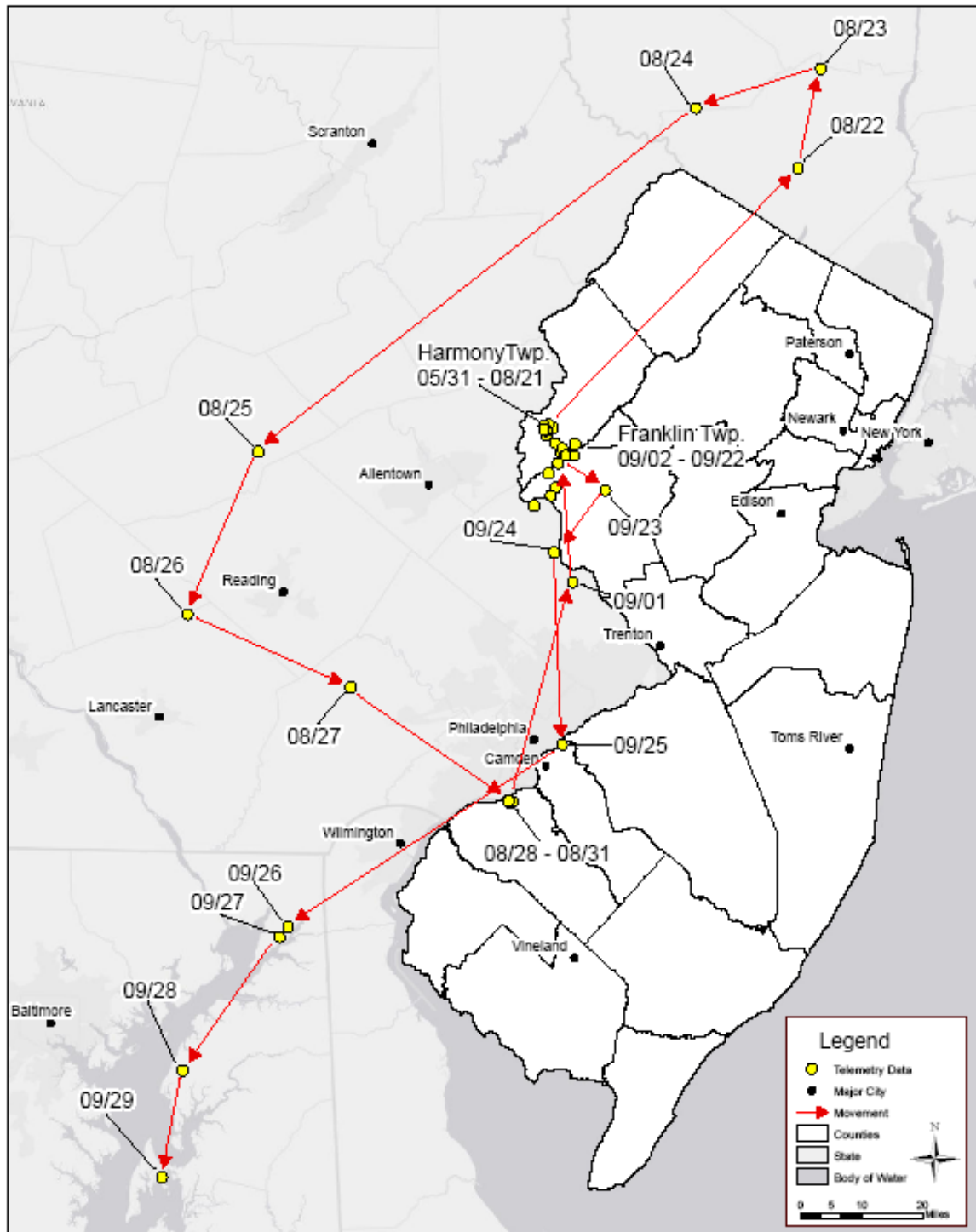
This project is funded by people who donate to the NJ *Tax Check-Off for Wildlife* and buy *Conserve Wildlife* license plates, and by the U.S. Fish and Wildlife Service's State Wildlife Grants program.

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Appendix 1

D/88 - Female, 2013 (05/31/2013 - 09/29/2013)



D/64 - Female, 2013 (10/01/2012 - 09/31/2013)

