

New Jersey Department of Environmental Protection

Division of Fish and Wildlife

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Endangered and Nongame Species Program

New Jersey Bald Eagle Project, 2009

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Duke Farms Eagle Cam
Courtesy of Duke Farms Foundation

Cover photo: The Chatsworth eagle released near the Kennebec River in Maine, after begin recovered and rehabilitated following Tropical Storm Bill. Photo by Glori Berry, Avian Haven in Maine.

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Abstract

The Division of Fish and Wildlife's Endangered and Nongame Species Program (ENSP) biologists and volunteer observers located and monitored bald eagle nests and territories. A new record high of 84 eagle pairs was monitored during the nesting season; 69 of those were active (with eggs). Nine pairs were territorial and six other pairs were seen in and around previous nest territories, but it was unknown if and where they nested. New Jersey's Delaware Bay region remained the state's eagle stronghold, with 40 percent of all nests located in Cumberland and Salem counties. Twelve new eagle pairs were found this season, six in the south, two in central and four in northern NJ. Fifty-six nests were successful in producing 99 young, for a productivity rate of 1.43 young per active nest. ENSP staff banded and took blood samples from 30 eaglets at 16 nests. Ten nests failed to fledge young; the outcome of one nest was unknown. For three nests we could attribute the failures to weather (2) and a nest collapse (1). In January's Midwinter Eagle Survey, ENSP staff, regional coordinators and volunteers reported a total of 282 bald eagles, a new record high count. Forty-two eagles were recorded in northern NJ and 240 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), has resulted in a population increase to 69 active pairs by 2008. ENSP recovery efforts – implemented since the early 1980's – have resulted in an exceptional 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, 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 continually 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 work to 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 also 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 nesting 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. In recognition of the national resurgence in the eagle population in the lower 48 states, the federal government removed the bald eagle from its list of Endangered Species in August 2007. 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. The bald eagle's official New Jersey status remains state-endangered, 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. 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.

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. 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 levels. The ENSP contracts 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 surveying 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 fifth 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 84 pairs in 2009, up from 69 in 2008. Sixty-nine pairs were known active (meaning they laid eggs). Fifty-six nests were known to be successful in producing 99 young, for a productivity rate of 1.43 young per active nest, which is above the required range of 0.9-1.1 young per nest for population maintenance (Figure 2). Of the territories that were not active, two new pairs, at Yard's Creek and Woodcliff Lake, were housekeeping; seven pairs were seen at nests but failed to lay eggs and it was unknown where six other pairs nested.

Most nests were located in the southern part of the state, particularly within 20 km of Delaware River and Bay (Figure 3). All nests and significant dates are listed in Table 1. Most nests (61%) 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 success.

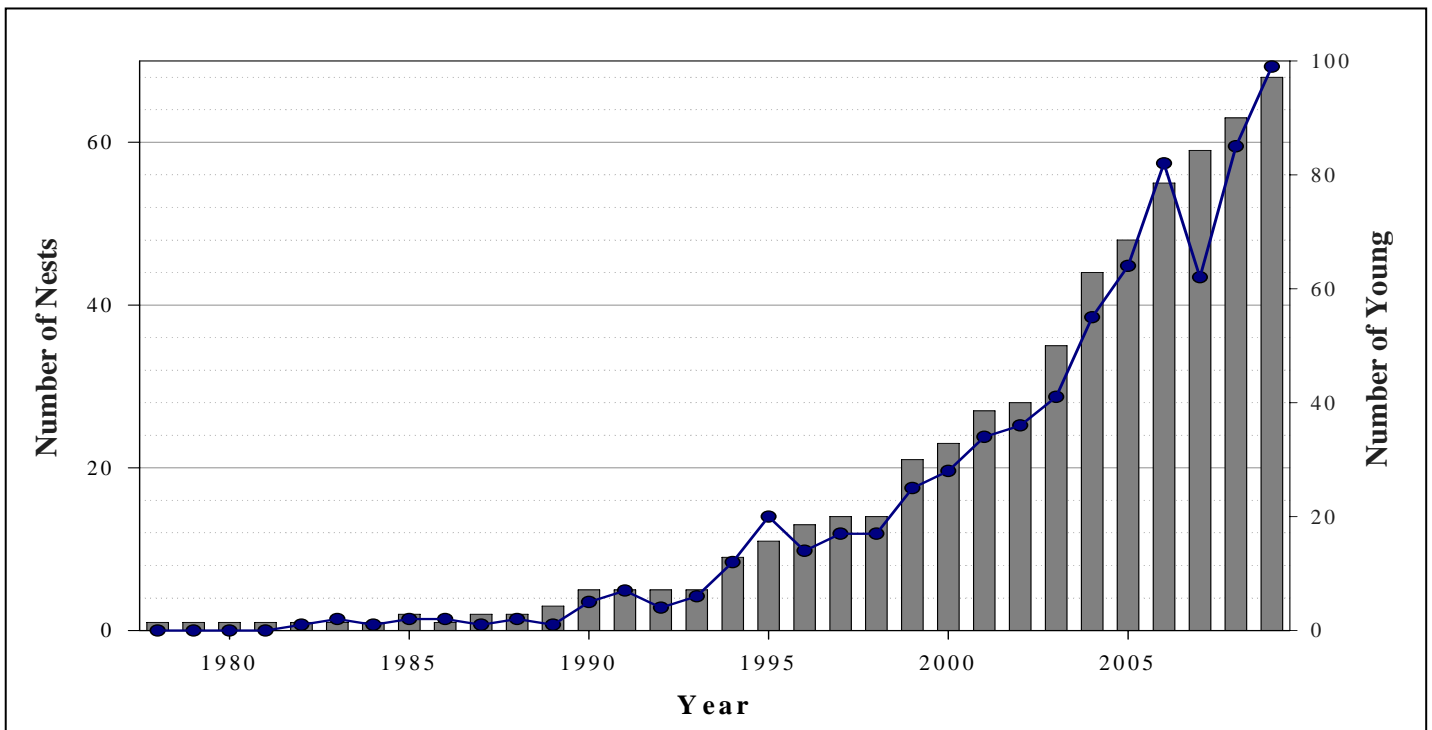


Figure 1. The number of active bald eagle nests (bars) and the young produced (lines) each year, 1978-2009.

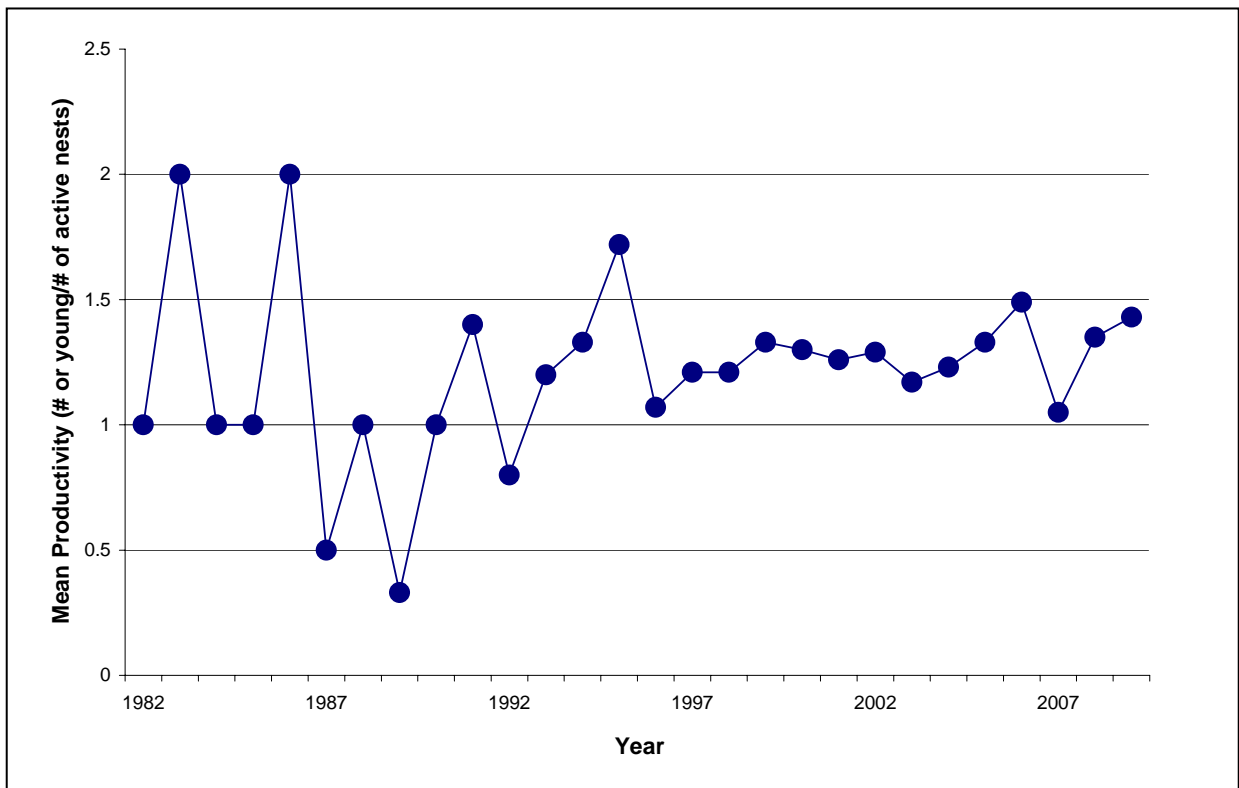


Figure 2. Productivity of bald eagles in New Jersey, 1982-2009

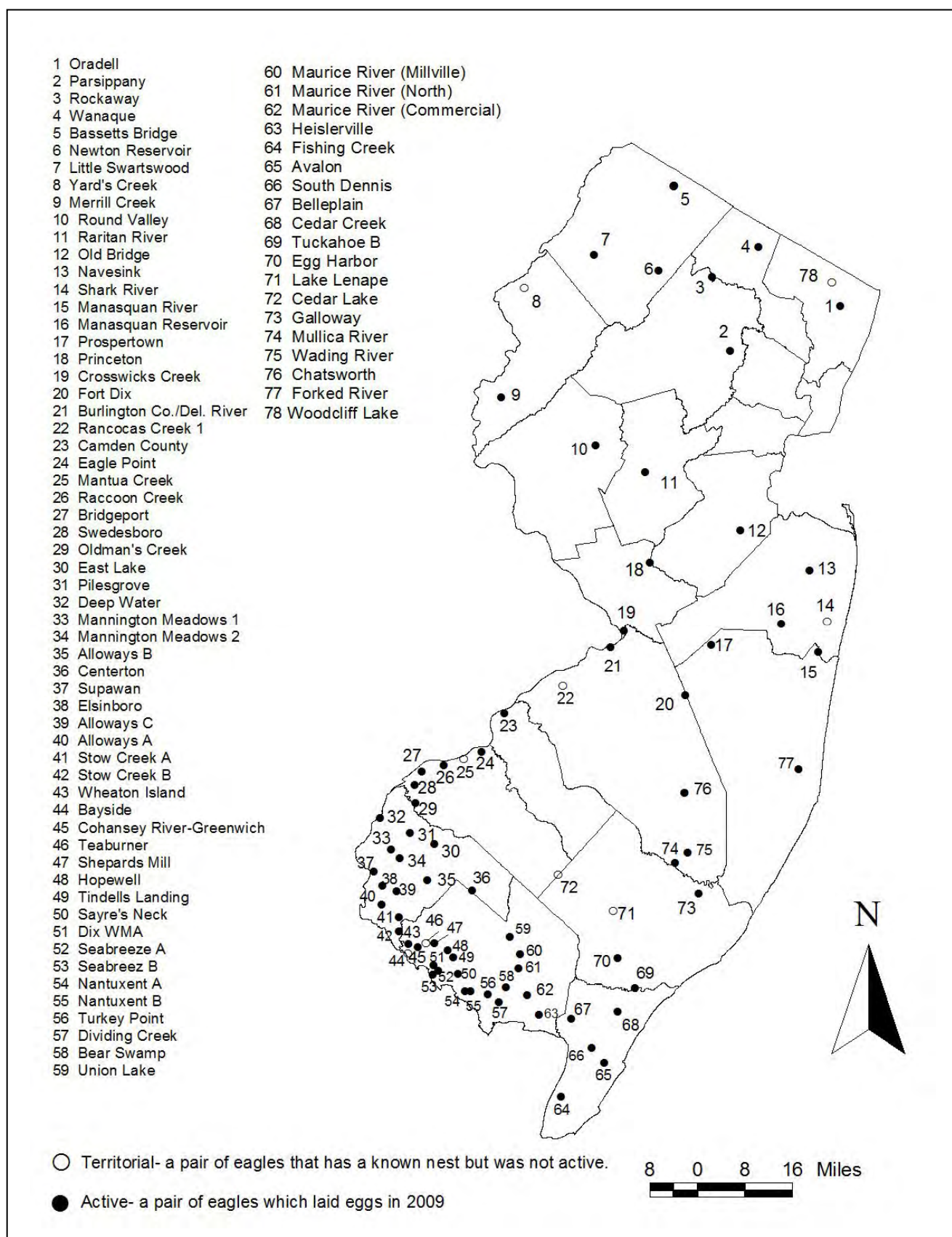


Figure 3. Bald eagle nest sites, 2009

Table 1. Production and significant dates of bald eagle nests in NJ, 2009.

NEST SITE	Incubation	Hatching	Banding	Fledging	No. Fledged	Failed-Reason	Notes
Alloways Creek 1-Hancocks	3/9	4/13		7/6	1		
Alloways Creek 2-CE	2/23	3/30	5/11	6/22	1		
Alloways Creek 3-Quinton	2/12	3/20		6/19	2		
Assunpink							Unknown where nesting
Avalon	2/15	~3/24			0	4/20-weather	3 chicks
Bassetts Bridge				6/26	2		New pair found with 2 chicks
Bay Point Road							Unknown where nesting
Bayside							Territorial pair
Bear Swamp	~2/26	3/19		6/26	2		
Belleplain	F 3/5	~4/1			2		Fly-over 4/28 - 2 chicks; fledging assumed
Bridgeport	2/11	3/21	5/8	6/21	1		
Burlington Co./Del. R.	~2/7	~3/14?			2		2 chicks~5 wks old 4/18
Camden County	3/4	4/19		7/12	1		
Cedar Lake (Gloucester)							New territorial pair; unknown if nested
Cedar Swamp Creek	2/15	3/22		7/3	2		
Centerton (Elmer)	?	?		~7/17	1		Built new nest
Chatsworth	3/7	4/4	5/20	7/10	1		
Cinnaminson							Unknown where nesting
Cohansey (Middle Marsh A)							Unknown where nesting
Cohansey (Middle Marsh B)							Unknown where nesting
Cohansey (Greenwich)	2/1	3/11	4/24	5/24	1		
Cohansey (Dix)	~2/24				2		
Cohansey (Teaburner)							Territorial pair
Cohansey (Shepards Mill)	2/21	3/26	5/11	6/22	2		
Cohansey (Hopewell)	2/9	3/16		6/8	3		New nest tree
Cohansey (Tindells Landing)	2/9	3/20		6/18	1		
Crosswicks Creek	2/22	3/29		6/15	2		
Deepwater	<4/10						New pair: outcome unknown
Dividing Creek	2/13				0	3/7-weather	Nest fell out of tree due to storm
Eagle Point	2/18	3/27		6/23	2		New pair
East Lake	1/30	3/10		5/9	3		
Egg Harbor River	2/9	~3/16		6/2	2		
Elsinboro	1/29	3/6		6/5	1		New nest tree

Fishing Creek	F3/5	<4/28			?		Assumed fledged
Forked River	~3/26				0	4/15	New pair; found incubating 3/26
Fort Dix	2/10	~3/20	5/6	6/17	1		
Galloway	1/31-2/7	~3/12			0	4/18-nest collapsed	2 chicks had been observed prior to nest loss.
Heislerville	2/19	3/26		6/11	2		
Lake Lenape							Unknown where nesting
Little Swartswood	2/22				0	3/27-unknown	
Manasquan Reservoir	1/4	3/10	3/24	5/6	2		
Manasquan River	2/12	3/25	5/6	6/14	2		
Mannington Meadows 1	~3/7	4/1		6/17	2		
Mannington Meadows 2	2/21	3/27	5/13	6/6	2		
Mantua Creek							Territorial—one adult missing as of 3/9.
Maurice River (Mauricetown)	F3/5			?	2		Fly-over 6/19; 2 chicks assumed fledged- new nest tree
Maurice River North	2/12	3/17	5/1	6/30	3		
Maurice River (Millville)	2/20	4/1		~6/24	2		
Merrill Creek	3/31	4/29	6/8	7/20	2		
Mullica River	3/7	~4/19		6/23	1		
Nantuxent Creek A	?	?		6/14	1		1 fledged chick confirmed 6/14
Nantuxent Creek B	2/7	3/15		6/14	2		
Navesink River	2/17				0	4/6-unknown	
Newton Reservoir	2/19	3/28	5/18	6/19	2		
Old Bridge	~3/17	~4/2		6/20	1		New pair; found incubating
Oldmans Creek	3/7				0	4/7-unknown	
Oradell Reservoir	2/15-2/25	3/23		6/13	1		
Parsippany	3/17				0	4/2-unknown	
Pilesgrove	2/15	3/27		6/12	2		New pair
Princeton	2/20	3/27	5/8	6/22	3		
Prospertown	2/27	3/14		6/19	2		
Raccoon Creek	2/26	4/14		6/29	1		New nest tree
Rancocas Creek 1							Territorial--2 competing females at nest
Raritan River (South Branch)	3/2	4/6	5/18		3		
Rockaway	~3/8	4/27-51			2		
Round Valley	2/21	3/30		7/12	2		
Sayres Neck	2/2	3/9		6/18	1		New pair
Sea Breeze 1	~2/24	3/28	5/13	6/24	2		
Sea Breeze 2	~2/22	3/29		6/14	2		
Shark River							Territorial pair

South Dennis	1/4	2/6		5/15	1		
Stow Creek N. (Canton)	2/7	3/19		6/11	2		
Stow Creek S. (Raccoon Ditch)	~2/21	3/19		6/11	3		
Supawna Meadows	2/21	4/3		5/31	2		
Swedesboro-Birch Creek	2/19				0	4/15-unknown	
Tuckahoe A							Unknown where nesting
Tuckahoe B	~5/15				0	3/27- Osprey interference	New pair; found incubating on osprey structure.
Turkey Point	2/21	3/21		6/19	2		
Union Lake							Unknown where nesting
Wading River	1/22	3/18		5/23	2		
Wanaque	2/27					5/10-unknown	
Wheaton Island	2/12	3/19	5/1	7/14	2		
Woodcliff Lake							Territorial; new pair
Yards Creek							Territorial; new pair
Total: 85 territorial pairs	Active: 69				Fledged: 99		

New Nesting Pairs/Territories

In 2009 twelve new pairs of eagles were located in New Jersey.

Bassetts Bridge- A nesting pair of eagles was found on the Wallkill National Wildlife Refuge. They were discovered with two nestlings that both fledged successfully.

Cedar Lake- This new pair was found early in the year at nest in Gloucester County. The pair did not use the nest and it is unknown whether they nested elsewhere.

Deepwater- A nesting pair of eagles had been reported in the Deepwater, Salem County area for the past few years. Early in 2009 a nesting pair was confirmed during the Midwinter Eagle Survey. Incubation was confirmed on April 10 by a state biologist. This nest was very difficult to view after leaf-out, so the outcome was unknown.

Eagle Point- This new nesting pair was found in January and incubation was confirmed February 18. The pair is nesting in Gloucester County along the Delaware River. The pair fledged two young.

Forked River- This pair was found incubating on March 26 on an osprey platform on western Barnegat Bay. The nest failed around April 15, most likely due to competition from ospreys returning to nest.

Old Bridge- A nesting pair of eagles was found incubating and was observed throughout incubation and the successful fledging of one young.

Pilesgrove- This new pair built a nest in a patch of woods next to a farm field in Salem County. They began incubating in mid-February and fledged two eaglets in June.

Sayre's Neck- This pair was found incubating in early February on The Nature Conservancy Property in Cumberland County. The pair fledged one eaglet in mid-June.

Shark River- A pair of eagles has been in the Shark River area for the past few seasons. This year they built a nest but did not incubate. It is unknown whether they nested in a different location.

Tuckahoe B- A new pair of eagles was found incubating on an osprey platform on the Tuckahoe River, prior to ospreys returning to NJ. This was an active osprey nest in 2008. We received reports that ospreys were harassing the eagles, and the following week the eagles (and their eggs) were gone and ospreys were at the nest.

Woodcliff Lake – This pair set up a housekeeping nest and did not incubate during the 2009 season.

Yard's Creek- This pair set up a housekeeping nest but did not incubate during the 2009 season.

2009 Nesting Season Highlights

This season, a new and exciting venture was announced between the ENSP, the Conserve Wildlife Foundation of NJ and Duke Farms of Hillsborough, Somerset County. A camera was installed at the bald eagle nest at Duke Farms that has been active since 2005. The camera, installed during the off-season and activated prior to incubation, provided live stream video of the eagles' nesting activities over the Internet. Eagle Cam viewers monitored the incubation of three eggs, hatching and rearing of three eaglets. In May, when the chicks were 5-6 weeks old, biologists visited the nest to band the young. We took measurements, a blood sample, and banded all three, noting the third (last-hatched) was a full week behind the others developmentally. All three were males, and all fledged successfully at the end of June. To learn more about these eagles and to see a video of the banding go to the Duke Farms website: <http://www.dukefarms.org/page.asp?pageId=565>

Three pairs of eagles attempted to nest on osprey platforms this season. The Avalon pair returned to the same platform after a successful season in 2008. The pair hatched three nestlings that were four weeks old when they died due to exposure in a severe, cold rainstorm. Two other pairs attempted to nest on osprey platforms but evidence suggests they were chased away by returning ospreys.

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, Williamstown, Raritan River, Cheesquake Creek, Evesham, Culvers Lake, Hyper Humous, Canoe Brook Reservoir, Pointview Reservoir, 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 282 bald eagles were observed during the Midwinter Survey on January 10-11, 2009 (Table 2). This was the highest count since the survey began in 1978, with 18 more birds than last year's record of 264 (Figure 3). Southern New Jersey's Delaware Bay region continued to host the majority of the state's wintering birds.

Two hundred forty bald eagles were counted in southern NJ, of which 134 were adults (Table 2; Elia 2009). Most southern eagles were observed in the Delaware Bay region (41%), followed by the lower Delaware River (32%) and Atlantic Coast watersheds (27%). The transects with the highest counts were Salem County with 62 eagles, Maurice River/Turkey Point/Bear Swamp with 41 eagles, and Mullica and Wading Rivers with 34 eagles.

In northern NJ, the best winter habitats are along the Delaware River, in the Delaware Water Gap National Recreation Area, and the inland reservoirs. The Water Gap hosted 14 bald eagles while the inland reservoirs and lakes had 25. Three eagles were counted in northeastern NJ along the Palisades on the Hudson River.

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.

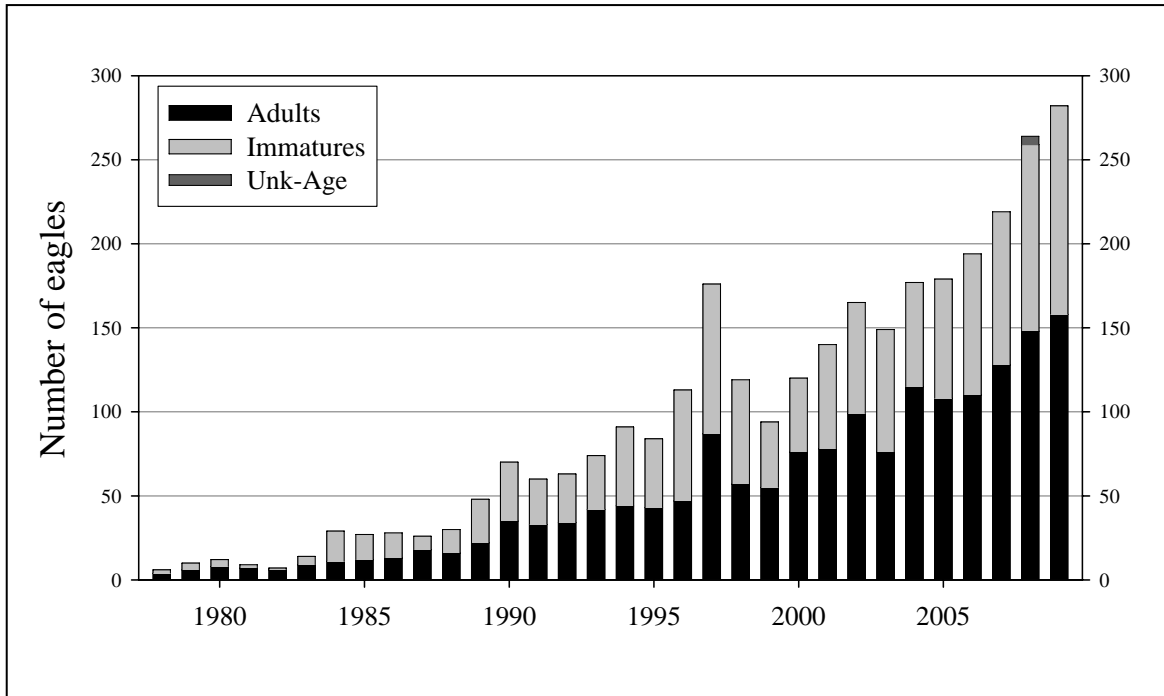


Figure 4. Bald eagles counted during Midwinter Eagle Surveys, 1978–2009.

Table 2. Eagles counted in the NJ Midwinter Eagle Survey, January 10-11, 2009.

Region	Survey Transect	Subregion	BE Total	Adult	Immature	Unkn. BE	Golden
South	Brigantine NWR	AC	4	1	3	0	0
	Cohansey River	DB	17	10	7	0	0
	Delaware River - Riverton to Trenton	SD	3	2	1	0	0
	Fortescue to Stow Creek	DB	16	12	4	0	0
	Fort Dix	AC	2	2	0	0	0
	Great Egg Harbor & Tuckahoe Rivers	AC	17	10	7	0	0
	Manahawkin to Lower Bass River	AC	1	0	1	0	0
	Manasquan Reservoir	AC	3	2	1	0	0
	Maurice River, Turkey Point, Bear Swamp	DB	41	26	15	0	0
	Mullica & Wading Rivers	AC	34	12	22	0	0
	Oldman's Creek	SD	2	2	0	0	0
	Princeton	SD	3	2	1	0	0
	Raccoon Creek	SD	2	2	0	0	0
	Rancocas Creek	SD	4	4	0	0	0
	Salem County	SD	62	29	33	0	0
	Stow Creek	DB	9	6	3	0	0
	Swimming River Reservoir	AC	2	2	0	0	0
	Thompson's to Reeds Beach	DB	15	8	7	0	0
	Whitesbog	AC	3	2	1	0	0
South	Subtotal		240	134	106	0	0
North	Delaware River - Columbia to Trenton	ND	na	na	na	na	na
	Delaware Water Gap	DWG	14	10	4	0	0
	Hudson River - Palisades	P	3	3	0	0	0
	Jersey City Reservoirs (Boonton & Split Rock)	IR	6	3	3	0	0
	Merril Creek Reservoir	IR	3	2	1	0	0
	Newark Watershed (Clinton, Oakridge, & Charlottesville)	IR	3	3	0	0	0
	Oradell Reservoir	IR	6	2	4	0	0
	Round Valley Reservoir	IR	na	na	na	na	na
	Wanaque & Monksville Reservoir	IR	7	1	6	0	0
North	Subtotal		42	24	18	0	0
State	Total		282	158	124	0	0

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 NJ

On November 18, 2008, an unbanded, dead bald eagle was found near an intersection in Harrison Township, Gloucester County. The cause of death was unknown pending a necropsy.

An injured eagle was brought to Tri-State Bird Rescue and Research in Delaware from Cecil County, MD on November 23, 2008. The bird had an advanced case of chronic lead toxicity and died. The bird had been banded May 17, 2004 at the Mannington Meadows nest in NJ (band # 629-45879).

On April 7, 2009 an adult bald eagle was struck and killed instantly by a car on the Black Horse Pike in Atlantic County, NJ. The bird was not banded.

A first year bird was found unable to fly and taken to The Raptor Trust where it recovered. On July 23, 2009 it was banded (#679-01734) and released in Downe Township, Cumberland County.

On August 19, 2009, a dead bald eagle (band number 629-45873) was found in Goshen, Cape May County, NJ. The bird was a 5-year old female that had been banded on May 14, 2004 at the Galloway nest in Atlantic County, NJ. Cause of death was unknown, but a necropsy will be conducted by the U.S. Fish and Wildlife Service.

The eagle that fledged from Chatsworth (#679-01733, color band C/99) in July was recovered on August 25, 2009, along the eastern shore of Maine near the town of Stueben. The bird was found weak and emaciated and was taken to the Avian Haven rehabilitation center in Freedom, Maine. We thank Diane Winn and Marc Payne for restoring her to full health, and releasing her with two other young eagles in Dresden, Maine (on the Kennebec River) on October 11.

On November 4, 2009, an unbanded male eagle was found dead of electrocution at the base of a power pole in Franklin Township, Gloucester County. The power company alerted NJDFW and USFWS staff of the find, and ENSP staff retrieved the bird. The eagle was a four year-old bird based on its plumage. It will be sent to the National Wildlife Health lab for necropsy.

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